Investigation of Gasoline Price Manipulation and Post-Katrina Gasoline Price Increases

Federal Trade Commission

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Federal Trade Commission

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Introduction and Executive Summary

As recently as January 2002, the average retail price of regular grade conventional gasoline in the United States was about $1.10 per gallon, including taxes. It rose to nearly $2.00 per gallon by May 2004 and to about $2.50 per gallon by August 2005. Then, at the end of the summer of 2005, Hurricanes Katrina and Rita hit major portions of the Gulf Coast region. Gasoline prices rose more than 45 cents per gallon in the week following Katrina. Moreover, the ranges of prices following the hurricanes were substantially larger than the ranges that prevailed in more normal times – not only between different cities and regions, but also between individual stations within a city. The huge and rapid price increases observed within particular regions and at some individual stations led to allegations of price gouging. Congress directed the Federal Trade Commission ("Commission" or "FTC") to investigate whether these developments resulted from market manipulation or price gouging practices in the sale of gasoline.[1]

Section 1809 of the Energy Policy Act of 2005 requires the Commission to "conduct an investigation to determine if the price of gasoline is being artificially manipulated by reducing refinery capacity or by any other form of market manipulation or price gouging practices."[2] In addition, in Section 632 of the Commission's appropriations legislation for fiscal 2006, Congress directed the Commission to investigate nationwide gasoline prices and possible price gouging in the aftermath of Hurricane Katrina.[3] Because the issues raised by these two statutory commands are closely related, the Commission conducted a single investigation in response to these directives. Congress directed the Commission to report its findings within 180 days of the enactment of Section 632. This Report contains the Commission's findings and recommendations.

Since August 2005, the Commission has expended substantial resources on this investigation, including the full-time commitment of a significant number of attorneys, economists, financial analysts, paralegals, research analysts, and other support personnel with specialized expertise in the petroleum industry. Even with this commitment of resources, it was not possible to study every pricing and output decision in this very complex industry. Thus, based on our knowledge and expertise from previous investigations and studies – and the concerns raised by knowledgeable observers and market participants about competition in this industry – the Commission and its staff focused substantially on levels of the industry and parts of the country where problematic behavior was most likely to have occurred and to have had an effect on consumers.[4]

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[1] The U.S. petroleum industry is complex and comprises thousands of firms operating at one or more levels of the industry – crude oil exploration and production, refining, crude oil and product transportation, terminaling, trading, and wholesale and retail distribution. Firms vary greatly in size and scope of operations, ranging from multinational corporations that do business around the globe to the individual retailer that runs one gas station.

[2] Energy Policy Act of 2005, Pub. L. No. 109-58 § 1809, 119 Stat. 594 (2005) ("Energy Policy Act").

[3] Science, State, Justice, Commerce, and Related Agencies Appropriations Act, 2006, Pub. L. No. 109-108 § 632, 119 Stat. 2290 (2005) ("Section 632").

[4] The Commission's investigation examined the subjects that Congress directed the Commission to study in the Energy Policy Act and Section 632, but this Report does not address certain other issues of public interest in the petroleum industry that are beyond the purview of the investigation. For example, the Report does not examine crude oil production and exploration, in which – as recent Commission reports have shown – U.S. refiners compete

Part I of this Report, described in more detail below, focuses on the refinery production and transportation of large volumes of gasoline (*i.e.*, "bulk supply"), as well as product inventory practices and other issues involving potential gasoline price manipulation. It explores, for example, whether refiners underinvested in new refinery capacity to keep supply tight relative to demand and thereby drive up prices, whether firms manipulated spot prices to adversely affect the flow of imports into certain parts of the United States, and whether control of certain infrastructure assets permitted manipulation of the prices of futures contracts.

Part II of the Report, also described below, focuses on the effects of Hurricanes Katrina and Rita on gasoline markets. It describes the wholesale and retail price increases in the wake of those storms and assesses whether the findings of the investigation were consistent with a competitive marketplace.

Part III of the Report addresses a number of important policy issues arising from the investigation and presents the Commission's recommendations. Among the issues discussed in Part III are the critical role of prices in a market economy; the important role of the antitrust laws in preventing collusion, monopolization, and other forms of anticompetitive conduct; and experience in dealing with alleged price gouging at the state and federal levels.

"Price manipulation" and "price gouging" are not defined legal or economic terms and therefore must be defined for purposes of this Report. Neither antitrust law nor economics defines "price manipulation" precisely,[5] and Section 1809 does not provide a definition for the Commission to apply. As used in this Report, the term "price manipulation" includes (1) all transactions and practices that are prohibited by the antitrust laws, including the Federal Trade Commission Act, and (2) all other transactions and practices, irrespective of their legality under the antitrust laws, that tend to increase prices relative to costs and to reduce output.[6] Transactions and practices that violate the antitrust laws include anticompetitive mergers,

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with refiners around the world to obtain crude oil (and currently rely on foreign crude oil for more than 65% of their needs). Even the largest private oil companies control only a very small fraction of world crude oil production, and significant price manipulation through control of crude oil by private oil companies therefore appears highly unlikely. The Organization of Petroleum Exporting Countries ("OPEC"), however, plays a significant role in the pricing of crude oil and, accordingly, in the pricing of gasoline. For a discussion of OPEC's effect on crude oil prices, *see* FEDERAL TRADE COMM'N, GASOLINE PRICE CHANGES: THE DYNAMIC OF SUPPLY, DEMAND AND COMPETITION 22-23 (2005) ("GASOLINE PRICE CHANGES REPORT").

[5] Price "manipulation" is a term that appears in areas of the law other than antitrust, however. For example, although the Commodity Exchange Act bans price manipulation in futures markets, *see* 7 U.S.C. § 13(a)(2), the statute does not define manipulation, and courts and others have struggled to define the term. *See, e.g., In re* Soy Bean Futures Litig., 892 F. Supp. 1025, 1043 (N.D. Ill. 1995) ("[T]here is a 'dearth of settled caselaw' on price manipulation; as a result the courts and the CFTC are still struggling to define the basic elements of the claim and to differentiate between fair means and foul in futures trading."). In addition, the Federal Energy Regulatory Commission ("FERC") recently imposed a condition on all current and future market-based tariffs that prohibits "[a]ctions or transactions that are without a legitimate business purpose and that are intended to or foreseeably could manipulate market prices, market conditions, or market rules for electric energy or electricity products." *See* Order Amending Market-Based Rate Tariffs and Authorizations, 105 FERC ¶ 61,218 (2003).

[6] Under this definition, "price manipulation" includes instances in which one or more firms temporarily may each have an increased incentive and ability to raise prices relative to costs and reduce output because markets have been disrupted by supply problems arising from natural disasters or by sudden and unanticipated changes in demand. In our view, this type of conduct should not be illegal because it entails each individual firm's independent decisions about how to allocate sales of its products among markets.

acquisitions, and joint ventures, collusion among competitors to fix prices or output, and monopolization or attempts to monopolize.

Although widely understood to refer to significant price increases (typically during periods of unusual market conditions), the term "price gouging" similarly lacks an accepted definition. It is neither a well-defined term of art in economics, nor does any federal statute identify price gouging as a legal violation. States that prohibit price gouging have not adopted a common definition or standard to describe the practice. For example, the statutes do not describe the extent to which cost or other considerations (such as whether a declared emergency is pending) play a role in determining whether a price increase is "price gouging." In Section 632, Congress directed the Commission to treat as evidence of price gouging any finding that "the average price of gasoline available for sale to the public in September, 2005, or thereafter . . . exceeded the average price of such gasoline in that area for the month of August, 2005, unless the Commission finds substantial evidence that the increase is substantially attributable to additional costs in connection with the production, transportation, delivery, and sale of gasoline in that area or to national or international market trends." Accordingly, we analyzed whether specific post-Katrina price increases were attributable either to increased costs or to national or international trends.

I. The Expertise of the Commission on Petroleum Industry Matters

The Commission's Bureau of Competition and Bureau of Economics have significant petroleum industry experience, both from enforcing the antitrust laws and from conducting research and industry analyses. The Commission has investigated every major merger in the petroleum industry over the past twenty-five years. The Commission also has conducted major investigations of petroleum marketing and pricing practices on the West Coast and in the Midwest. During each investigation, the Commission obtained documents, economic data, and testimony from merging parties and other industry participants and used this evidence to determine whether to take law enforcement action to prevent potential anticompetitive effects.

Since 1981, the Commission has identified 20 large petroleum mergers that it believed would have reduced competition and harmed consumers.[7] The agency obtained relief that resolved the competitive issues in sixteen of these transactions, and the parties abandoned the other four after the Commission formally challenged the transactions. The Commission

[7] Investigations in which the Commission determined that the merger presented a problem, and significant structural relief was obtained, include Valero L.P., FTC Dkt. No. C-4141 (July 26, 2005) (divestiture of Kaneb terminal and pipeline assets in northern California, eastern Colorado, and greater Philadelphia area); Phillips Petroleum Co., FTC Dkt. No. C-4058 (Feb. 14, 2003) (divestiture of Conoco refinery in Denver, Phillips marketing assets in eastern Colorado, Phillips refinery in Salt Lake City, Phillips marketing assets in northern Utah, Phillips terminal in Spokane, Phillips propane business at Jefferson City and East St. Louis); Valero Energy Corp., FTC Dkt. No. C-4031 (Feb. 22, 2002) (divestiture of UDS refinery in Avon, California, and 70 retail outlets); Chevron Corp., FTC Dkt. No. C-4023 (Jan. 4, 2002) (divestiture of Texaco's interests in the Equilon and Motiva joint ventures, including Equilon's interests in the Explorer and Delta pipelines); Exxon Corp., FTC Dkt. No. C-3907 (Jan. 30, 2001) (divestiture of all Northeast and Mid-Atlantic marketing operations of the two parties and Exxon's Benicia, California, refinery); British Petroleum Co. p.l.c., 127 F.T.C. 515 (1999) (divestiture of terminals in nine markets, and divestiture of BP's or Amoco's retail outlets in eight geographic areas); and Shell Oil Co., 125 F.T.C. 769 (1998) (resulting in divestitures of Shell's refinery in Anacortes, Washington, pipeline interests in the Southeast, and retail outlets in San Diego County, California).

conducted a careful evaluation of each transaction to ensure that the Commission obtained adequate remedies where necessary.

In addition to merger enforcement, the Commission's economists have researched pricing and other competition issues in the petroleum industry.[8] Since 2002, the Commission's economists also have monitored wholesale and retail prices of gasoline to identify potential anticompetitive activities that might require greater investigation. Today, this project tracks retail prices of gasoline and diesel in some 360 cities and wholesale (terminal rack) prices in 20 major urban areas. Over the past several decades, the Commission has gained an understanding of the domestic petroleum industry, how participants in the industry compete, and how prices of gasoline and other refined petroleum products are set.

II. The History of the Investigation

In August and September of 2005, the Commission, through its staff, began planning and organizing the investigation mandated by Section 1809 of the Energy Policy Act and the anticipated legislation that became Section 632. The planning process focused in part on how to seek the best and most complete information in the time permitted. Staff identified issues requiring analysis, information necessary to analyze those issues, and strategies to obtain that information. Staff then identified the targets of the investigation, including all gasoline and petroleum distillate wholesalers with $500 million or more in annual sales, as well as appropriate retailers. Staff began conducting voluntary interviews with a number of firms and also consulted with various federal agencies, including the Department of Energy, the Department of Commerce, the Commodity Futures Trading Commission, the Department of the Treasury, and the Internal Revenue Service.

The Commission's staff conducted more than 65 voluntary interviews with industry participants and state and federal agencies. Staff interviewed petroleum refiners, wholesalers, retailers, terminal companies, pipeline owners and operators, traders, price reporting services, and representatives from various state agencies, including the National Association of Attorneys General and individual representatives from state attorney general offices and state consumer protection agencies.

In early November 2005, the Commission issued the first of 139 Civil Investigative Demands ("CIDs") – similar to subpoenas – to a wide spectrum of petroleum industry firms in order to obtain information relevant to the investigation. CID recipients included integrated and unintegrated refiners, pipeline owners and operators, terminal owners, and petroleum

[8] Representative research includes Jeremy I. Bulow, *et al., U.S. Midwest Gasoline Pricing and the Spring 2000 Price Spike*, 24 ENERGY J. 121 (2003); Christopher T. Taylor & Jeffrey H. Fischer, *A Review of West Coast Gasoline Pricing and the Impact of Regulations*, 10 INT'L J. ECON. BUS. 225 (2003); DAVID W. MEYER & JEFFREY H. FISCHER, THE ECONOMICS OF PRICE ZONES AND TERRITORIAL RESTRICTIONS IN GASOLINE MARKETING (Bureau of Econ., Fed. Trade Comm'n, Working Paper 271, 2004); JOHN SIMPSON & CHRISTOPHER T. TAYLOR, MICHIGAN GASOLINE PRICING AND THE MARATHON-ASHLAND AND ULTRAMAR DIAMOND SHAMROCK TRANSACTION (Bureau of Econ., Fed. Trade Comm'n, Working Paper 278, 2005); CHRISTOPHER T. TAYLOR & DANIEL S. HOSKEN, THE ECONOMIC EFFECTS OF THE MARATHON-ASHLAND JOINT VENTURE: THE IMPORTANCE OF INDUSTRY SUPPLY SHOCKS AND VERTICAL MARKET STRUCTURE (Bureau of Econ., Fed. Trade Comm'n, Working Paper 270, 2004) (forthcoming in Journal of Industrial Economics).

marketers.[9] One set of CIDs sought information directly relevant to Section 632. Another set of CIDs directed individual terminal owners to provide information relevant to aspects of petroleum futures markets. The Commission also issued 99 orders pursuant to Section 6(b) of the Federal Trade Commission Act,[10] seeking profitability and tax expenditure information required by Section 632 from retailers that were investigated by state attorneys general for post-Katrina price gouging,[11] as well as follow-up CIDs seeking from refiners certain additional data necessary to conclude our profitability analysis under Section 632. In February 2006, staff conducted sworn investigational hearings (similar to depositions) of industry officials regarding various issues in the investigation. The Commission also purchased a large volume of wholesale and retail pricing data from the Oil Price Information Service ("OPIS"), a private data-collection company, to complement information secured directly from market participants and from firm-level EIA data.

III. Organization of the Report

This Report is divided into three parts. Part I includes four chapters that examine possible gasoline price manipulation at the refining level and other stages of the industry. Chapter 1 assesses refinery capacity expansions and patterns of planned and unplanned refinery downtimes, among other topics. Chapter 2 focuses on bulk supply distribution infrastructure and whether constraints on pipeline or marine transportation or on product terminals afford opportunities for price manipulation. Chapter 3 examines product inventory holding practices in the industry, and Chapter 4 examines possible manipulation of gasoline futures prices and publicly reported bulk spot prices, and also reviews evidence regarding the effects of past mergers.

Part II of the Report, consisting of Chapters 5 through 9, focuses on gasoline prices and possible price gouging in the aftermath of Hurricane Katrina. Chapter 5 examines the national and regional impact of Hurricanes Katrina and Rita upon gasoline prices. Chapter 6 takes a narrower and more detailed look at gasoline prices after the hurricanes by examining wholesale and retail pricing in selected urban areas, while Chapter 7 assesses whether price gouging, as it is defined in the statute, occurred at the refining, wholesale, and/or retail levels after Katrina. Chapter 8 provides a summary of tax expenditures as defined by the Congressional Budget and Impoundment Control Act of 1974 for companies with sales of gasoline and petroleum distillates in excess of $500 million in 2004, as required by Section 632. Chapter 9 considers the effect of

[9] The Commission based its request for profitability data on a form used by the Energy Information Administration ("EIA") of the U.S. Department of Energy. The EIA uses this form to collect revenue, cost, and profit information from major energy-producing firms operating in the United States. Each company submitted its response to the FTC's data request. The companies also granted waivers that allowed the EIA to provide other company-specific information that that agency routinely collects from the industry, including data on production, capacity, shipments, and inventory.

[10] Section 6(b), 15 U.S.C. § 46(b), empowers the Commission to require the filing of annual or special reports or answers in writing to specific questions for the purpose of obtaining information about "the organization, business, conduct, practices, management, and relation to other corporations, partnerships, and individuals" of the entities to which the inquiry is addressed.

[11] Staff identified more than 105 retailers accused of price gouging by state law enforcement authorities. Due to the late timing of identification and previous data requests sent to retailers identified in state actions, the Commission issued the ninety-nine orders pursuant to Section 6(b) of the Federal Trade Commission Act.

higher prices after the hurricanes on consumer purchasing power and economic activity in the United States, also as required by Section 632.

Part III concludes the Report with an analysis of the policy implications of this investigation, along with the recommendations of the Commission.

IV. Summary of Key Findings and Recommendations

A. Part I of the Report

1. Refining. Evidence indicated that the price of crude oil, the largest cost component of gasoline, contributed to most of the gasoline price increases that occurred from early 2002 until just before Hurricane Katrina struck the United States. Higher refining margins caused some of the remaining increase, although margins in any competitive market can be expected to increase, at least in the short run, during periods of strong demand.[12]

The Commission analyzed various aspects of refinery operations to determine whether refiners manipulated, or tried to manipulate, gasoline prices. Staff investigated whether refiners manipulate prices in the short run by running their refineries below full productive capacity in order to restrict supply, by altering their product output to produce less gasoline, or by diverting gasoline from markets in the United States to less lucrative foreign markets. Staff also investigated allegations that companies refused to invest sufficiently in new refineries for the purpose of tightening supply and raising prices in the long run. Staff's investigation revealed no evidence to suggest that refiners manipulated prices through any of these means.

The best evidence available through our investigation indicated that companies operated their refineries at full sustainable utilization rates. Companies scheduled maintenance downtime in periods when demand was lowest in order to minimize the costs they incur in lost production. Internal company documents suggested that refinery downtime is costly, particularly when demand and prices are high. Companies track these costs, and their documents reflected efforts to minimize unplanned downtime resulting from weather or other unforeseen calamities.

The evidence also showed that companies operated their refineries – and determined the product quantities they would produce – with the goal of maximizing their profits, taking market prices as a given factor. Our investigation uncovered no evidence indicating that refiners make product output decisions to affect the market price of gasoline. Instead, the evidence indicated that refiners responded to market prices by trying to produce as much higher-valued products as possible, taking into account crude oil costs and other physical characteristics.

The evidence collected in this investigation indicated that firms behaved competitively. Firms employ computer models that rely on simplified assumptions in order to make decisions about production and capacity. These models allow refineries to determine the most profitable slate of products, given refinery input costs and market-based price forecasts. To the extent that these models take price as a given, refiners' use of such models does not signify an ability to influence prices through short-run production decisions. Refiners may occasionally modify or override the computer models to take into account market factors, such as limited product

[12] One measure of "refining margin" is the price at which the refiner sells finished product minus the refiner's acquisition cost of crude oil.

demand for some fuel specifications, but such departures appeared limited during our investigation.

Our investigation revealed no evidence that companies export product from the United States in order to raise domestic prices. Export levels are relatively low, compared to the level of imports entering the United States. Pre-existing supply commitments and product that is unacceptable for use in the United States constitute the bulk of exported refined products. Further, our investigation indicated that an attempt to manipulate gasoline prices by exporting products from the United States likely would result in more imports into the domestic market, as indicated by the increased imports that arrived in response to the hurricanes.

Refining capacity has increased over the past 20 years, even as the number of refineries has declined. The industry added capacity by expanding existing refineries, which appears to be more economical than building new refineries. Domestic refinery expansions have been significant, but they have not kept pace with rising demand over the same period. Nevertheless, our investigation did not uncover evidence suggesting that expansion decisions resulted from refineries, either unilaterally or in concert, attempting to acquire or exercise market power. Rather, the evidence suggested that the rate of capacity growth was a response to competitive market forces that made further investment in refining capacity unprofitable.

2. Bulk Distribution Infrastructure. The bulk supply distribution infrastructure, consisting of pipelines, marine vessels and terminals, adds very little to the delivered cost of gasoline. The Commission examined the extent to which infrastructure constraints gave firms the ability or incentive to manipulate gasoline prices, or limited the ability of marketers to move additional supply to specific markets when an unexpected need arose.

Pipelines generally are the most cost-effective way to transport refined petroleum products. In the short run, pipelines can affect the flow of supply into markets through the rates they charge for transporting product. In the long run, decisions whether to expand play an important role in the ability of pipelines to respond to increasing demand. The evidence we obtained during our investigation did not suggest that pipeline companies made rate or expansion decisions to manipulate gasoline prices. First, FERC generally regulates the rates that interstate pipelines charge; pipeline companies generally charge the FERC maximum rate unless competition from other pipelines compels them to offer discounted rates to win business. Second, pipeline companies appear to make expansion decisions for reasons unrelated to gasoline prices, except to the extent that rising gasoline prices may signal a need for more pipeline capacity to serve a given market. Pipeline companies generally expand only when they are assured of having a sufficient volume of product committed to the new pipeline, because expansion involves significant sunk costs, regulatory barriers, and the risk of idle pipeline capacity.

Gasoline also moves to markets within the United States on marine vessels – tankers and barges – along the nation's waterways and coasts. Two federal laws, the Jones Act and the Oil Pollution Act, apply to marine vessels and have had the effect of reducing the supply of ships qualified to move gasoline within the United States. The evidence indicated that refiners have reacted to this by increasingly entering into long-term charter arrangements with shipping companies to ensure supply of vessels to transport their product during normal market conditions. This has, however, reduced the number of ships available on the spot market to traders seeking to move fuel in response to supply shortages.

Terminals are essential to the bulk supply infrastructure because they provide storage for marine vessel and pipeline deliveries. Many refiners who also sell gasoline ("refiner/marketers") own terminals in various markets, and use those terminals primarily – if not exclusively – to store product for their own needs. Public terminals, *i.e.*, terminals owned by companies that do not refine or market gasoline, exist in many markets and provide access to any bulk seller willing to pay to use the terminal. The presence of public terminals minimizes the ability of refiner/marketers to use their terminals to restrict supply into specific markets. In recent years, refiner/marketers have sold terminals to public terminal companies, reducing even further any ability to manipulate prices by restricting terminal access. As a result, competition appears sufficient in most areas to limit the potential for price manipulation.

3. Product Inventory Practices. Inventory levels have declined since at least the early 1980s, covering periods when the real price of gasoline was declining and increasing. In more concrete terms, inventory levels have declined since 1993 from a level sufficient to meet consumption for a full month to a level sufficient to meet consumption for less than 80% of a month. Our investigation did not produce evidence, however, that oil companies reduced inventory in order to manipulate prices or exacerbate the effects of price spikes due to supply disruptions. Instead, the decline in inventory levels reflects a trend that is not limited to the petroleum industry. Like many other major industries, lower inventory holdings allowed oil companies to become more efficient and to lower costs. The evidence indicated that oil companies attempt to use historical experience to determine what inventory levels would be sufficient to meet unanticipated changes in demand or supply. Inventories were a significant factor in enabling the markets to recover from the shocks stemming from Hurricanes Katrina and Rita, as discussed more fully below.

4. Other Issues Involving Potential Gasoline Price Manipulation. The evidence did not reveal a situation that might allow one firm (or a small collusive group) to manipulate gasoline futures prices by using storage assets to restrict gasoline movements into New York Harbor, the key delivery point for gasoline futures contracts. In addition, the evidence did not support a theory that firms used published bulk spot prices to manipulate prices, either (a) by falsely reporting trades to the major price publishing services, or (b) by affecting published prices in thinly traded markets by reporting actual, legitimate, small-volume trades opportunistically priced above or below competitive levels.[13]

B. Part II of the Report

In the week after Hurricane Katrina – which caused the immediate loss of 27% of the nation's crude oil production and 13% of national refining capacity – the average price of gasoline increased by about 50 cents per gallon in six representative cities analyzed in this part of the Report. About 35 cents per gallon of the post-Katrina price increase dissipated by the time Hurricane Rita hit. Rita damaged another 8% of crude production and, even accounting for the refineries affected by Katrina and back online, 14% of domestic refining capacity was lost. In the six selected cities, during the first week after it hit, Rita caused an increase of 25 cents per gallon in the average price of gasoline. Four weeks after Rita, these prices returned to pre-

[13] Any evidence of this form of manipulation would more likely exist in individual company trader files – a massive volume of documents that staff did not seek and could not have reviewed within the given time. Such a detailed investigation would be appropriate when a federal agency becomes aware of specific allegations or suspicions that such conduct is occurring.

Katrina levels. By the beginning of December 2005, these prices had returned to the levels prevalent at the start of summer 2005, showing that most of the price effects of the hurricanes had dissipated by that time.

The price increases after the hurricanes varied substantially by region. For example, the average price in Baltimore increased by 65 cents per gallon after Katrina, while the average price in Los Angeles increased by 20 cents per gallon. In addition, the range (or "dispersion") of both wholesale and retail prices within particular cities far exceeded typical levels immediately after the hurricanes. For example, the typical range of prices within a band encompassing the middle 50% of prices in a given urban area, on average, spans from 3 to 10 cents per gallon. After Katrina, prices in that middle 50% range rose by a factor of 2 to 3, or 12 to 18 cents per gallon. High dispersion is evidence that some firms increased prices more than most other firms – evidence that should be considered in a search for price gouging as defined in Section 632.

In light of the amount of crude oil production and refining capacity knocked out by Katrina and Rita, the sizes of the post-hurricane price increases were approximately what would be predicted by the standard supply and demand paradigm that presumes a market is performing competitively. The regions of the country that experienced the largest price increases were those that normally receive supply from areas affected by the hurricanes. In the cities with the largest price increases, the sizes of the increases were consistent with the standard supply and demand competitive paradigm. Moreover, in general, the wholesalers and retailers that raised prices the most within particular cities in the weeks following the hurricanes were not firms that experienced increases in market power (stemming, for example, from the closing of rivals). Rather, they were firms that experienced the largest reductions in their own supplies and the greatest increases in their own costs.

Evidence gathered during our investigation indicated that the conduct of firms in response to the supply shocks caused by the hurricanes was consistent with competition. After both hurricanes, companies with unaffected assets increased output and diverted supplies to high-priced areas. This is what we would expect in competitive markets. Refiners deferred scheduled maintenance in order to keep refineries operating. Imports increased and companies drew down existing inventories to help meet the shortfall in supply.

In its assessment of potential gasoline price gouging as defined in Section 632, the FTC examined price, cost, and profit margin data for large sellers of petroleum products – refiners and wholesalers – and for retailers that were targets of state price gouging enforcement actions in the aftermath of Katrina. Financial data for 30 refiners were analyzed. Although there were exceptions, refiners generally saw increased profit margins in September 2005 compared to August 2005. Between August and September 2005, the average gasoline price charged by eight of the 30 refiners analyzed increased five or more cents per gallon more than the national average price trend for this period. Seven of these eight refiners also had increased profit margins during the same period, indicating that average cost increases did not substantially explain the firms' higher average prices. Accordingly, the findings that individual refiners' prices increased substantially more than the national average trend, accompanied by increased profit margins, meet Section 632's definition of price gouging.

Further investigation and analysis revealed evidence that may explain the price increases of these refiners and their profit uplifts. Refiners vary significantly in terms of where, and through which channels, they distribute product. Hurricane Katrina's impact on prices differed

significantly across geographic regions, and refiners that sold relatively more of their gasoline in higher-priced regions had average price increases greater than the increase in the national average. In addition, refiners varied significantly in the extent to which they sold gasoline through their owned-and-operated retail outlets, through franchised dealers supplied on a delivered price basis, through branded jobbers supplied on a branded rack price basis, through unbranded jobbers supplied on an unbranded rack price basis, and through bulk sales to other refiners or other major resellers on a bulk spot price basis. Because of time lags and differing contractual relationships between sellers and buyers, the relative prices for sales through these various distribution channels changed significantly in response to changing market conditions, such as those associated with the major supply disruptions from last year's hurricanes. Once geographic locations of sales and channels of distribution were taken into account, individual refiners' price increases appeared comparable to local market trends, except in one case. In that case, which involved a very small refiner, further inquiry indicated that the refiner's acquisition costs for the gasoline it was obligated to supply increased significantly beyond the level suggested by the aggregated accounting data because of hurricane damage.

Staff also evaluated financial operating data for 23 large wholesalers that had no refinery operations (8 of which also had some retail operations). Staff found that the operating margins of these wholesalers generally did not increase, suggesting that higher costs primarily caused their price increases. A few non-refining wholesalers did, however, enjoy significantly higher operating margins, and their price increases constitute price gouging under the Section 632 definition. A further analysis of the evidence, however, reveals that they derived these gains from either (1) retail operations in areas that experienced the largest post-Katrina price increases, or (2) activities such as futures market trading or distillate sales.

The Commission also examined margin and price data for 24 individual retailers that had been the targets of state price gouging actions. Although one might have expected these retailers generally to satisfy the criteria for price gouging set forth in Section 632, this proved not to be the case. As a group, these retailers did not have significantly increased operating margins in September 2005, nor were their average price increases much different from the change in the national average retail price from August to September 2005. Nevertheless, in September, six of these retailers (1) earned significantly higher monthly average gross margins, and (2) increased their average prices at least five cents per gallon more than the national average price increase in September compared to August 2005. Accounting for regional price differences associated with the hurricanes' impact, one retailer of the six significantly exceeded the benchmark average price increase.

Based on these findings and other analyses of retail pricing data and retailer interviews, the Commission concludes that some price gouging by individual retailers, as defined by Section 632 (which is premised on a comparison to national average prices), did occur to a limited extent. Local or regional market trends, however, seemed to explain the price increases in all but one case. Exceptionally high prices on the part of individual retailers generally were very short-lived. Interviews with retailers that charged exceptionally high prices indicated that at least some were responding to station-level supply shortages and to imprecise and changing perceptions of market conditions.

C. Part III of the Report

Part III, the concluding section of the Report, addresses a number of important policy issues arising from this investigation and sets forth the Commission's recommendations. First, Part III discusses the role of prices in a market-based economy and evaluates the misallocation of resources in the economy that can stem from attempts to cap or control prices. Second, Part III explains the role of the antitrust laws in ensuring that consumers are offered competitive market prices for gasoline. Third, Part III describes the experience of several states in enforcing price gouging and other applicable statutes as information relevant to the enactment and enforcement of a possible federal price gouging statute. Finally, Part III concludes by describing the Commission's ongoing efforts to protect consumers in petroleum markets – for example, by conducting further inquiry into current gasoline prices and the reasons for their recent increases – and offers the Commission's participation and expertise in the ongoing debate among policymakers regarding the costs and benefits of all regulation that impacts supply and demand in petroleum markets.

PART I

INVESTIGATION OF PRICE MANIPULATION

This part of the Report provides the Commission's analysis of business strategies and practices which, in theory and under certain conditions, could enable firms to manipulate gasoline prices. This part investigates possible manipulation at various levels of the industry, including refining, transportation, and wholesale distribution. This part also discusses the investigation into price manipulation through inventory management, through control of storage assets relevant to futures market prices, and through the reporting and publishing of bulk spot prices.

Chapter 1 addresses the potential for price manipulation at the refinery level. This chapter first considers whether refiners engaged in short-term price manipulation by running their refineries at lower than optimal utilization rates or by other tactics of limiting product supplies, such as accumulating excess inventory, diverting refinery production to products other than gasoline, or exporting gasoline to foreign markets. Chapter 1 then considers whether firms manipulated prices over the longer term by failing to invest in new refining capacity.

Chapter 2 examines whether firms have manipulated gasoline prices through control over infrastructure assets including pipelines, marine vessels, or terminals. The investigation included an inquiry into whether firms can affect product prices by raising pipeline transportation rates, curtailing pipeline tariff discounts, or forgoing capacity expansions on refined product pipelines.

In Chapter 3, the Report discusses trends in product inventory management and investigates whether firms could use inventory management to manipulate gasoline prices. Chapter 4 addresses two other forms of manipulation: first, whether firms can manipulate gasoline prices by controlling storage assets that are necessary for futures markets, and second, whether firms can manipulate gasoline prices by exploiting the process of reporting and publishing bulk spot prices. This chapter also addresses whether the investigation uncovered evidence that past consummated transactions contributed to potential price manipulation.

Chapter 1

Refining

Congress directed the FTC to investigate "if the price of gasoline is being artificially manipulated by reducing refinery capacity or by any other form of market manipulation or price gouging practices."[1] This chapter discusses whether gasoline prices have been manipulated by actions at the refinery level. Specifically, staff investigated whether refiners manipulated gasoline prices through decisions on capacity expansions, refinery production levels, or exports.

Even before Hurricanes Katrina and Rita, gasoline prices increased precipitously in the summer of 2005. These price increases followed on the heels of more gradual but sustained price increases that began in March 2002. Until the hurricanes hit, increasing crude oil prices explained nearly all of the increasing gasoline prices.[2] Some of the increases were, however, attributable to an increase in refining margins. Thus staff investigated allegations that refiners might have manipulated supply to raise or maintain these higher operating margins.[3]

This chapter is divided into two sections, the first describing staff's investigation into short-run price manipulation and the second describing its investigation into long-run market manipulation. In the short run, firms could conceivably manipulate gasoline prices by running their refineries at lower than optimal rates. In principle, they could also limit product supplies by allowing excessive inventories to accumulate,[4] diverting gasoline production to other refined products,[5] or exporting domestic gasoline production.[6] In the long run, refiners could

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[1] Energy Policy Act of 2005, Pub. L. No. 109-58 § 1809, 119 Stat. 594 (2005) ("Energy Policy Act").

[2] Chapter 5 of this Report addresses post-hurricane pricing.

[3] As used in this chapter, market manipulation means withholding output that can be produced at a cost less than the market price. Cost here refers to the full economic opportunity cost, not accounting cost. The qualification that the cost be less than the market price makes manipulation a subtle concept. If a refiner does not produce an extra barrel of gasoline because the incremental cost is $100 and the market price is only $95, that is not manipulation. Such a decision would be a response to market prices, not an attempt to manipulate the market. If, however, the incremental cost is only $95, the market price is $105, and a refiner withholds gasoline it could refine (Chapter 1), exports product (Chapter 1), or withholds product it holds in inventory (Chapter 3) from the market to prevent a reduction in the price of gasoline below $105, then the refiner is manipulating the market.

[4] Chapter 3 discusses inventory behavior in more detail, including the general concern that refiners maintain low inventories to keep prices high.

[5] Refineries are highly complex plants. To meet the U.S. appetite for transportation fuel, refineries are designed to pull as much gasoline as possible out of the crude oil and other inputs. Thus, the majority of the fuels produced are various grades of gasoline, with the remainder a mixture of diesel, heating oil, and jet fuel. Refiners have little flexibility to produce more gasoline when a U.S. refinery is running at operational capacity. A refiner, however, might choose to make less gasoline in favor of producing greater amounts of distillate products. As discussed below, making a greater percentage of distillate products accounts for the lower overall capacity utilization during the winter months, when gasoline demand decreases. By itself, the fact that a refinery produces something other than gasoline, even if it decreases gasoline production to do so, cannot be evidence of manipulation. Rather, manipulation would mean using capacity to refine a product other than gasoline that offers a lower profit margin.

[6] Just as diverting capacity to a more profitable product is not manipulation, diverting output to a more profitable geographic market is a response to market forces, not an attempt to manipulate price.

conceivably manipulate markets, individually or in concert, by failing to invest in new refining capacity.

As discussed in this chapter, staff's investigation revealed no evidence of illegal anticompetitive behavior or price manipulation in the context of refinery operation, exports, or investment decisions. In the short run, refiners make a multitude of daily operational decisions regarding refinery utilization rates and product mixes. They take into account a number of factors in determining output volumes and product mixes at a refinery, including, on one end, the costs of crude oil, other refinery inputs, and energy, and on the other end, the likely market value of the slate of products the refinery can produce. Refiners generally run their processing units to maximize profits, taking market prices as given. No strategic documents or testimony supported the allegation that refiners are operating in today's high-margin environment at anything other than full sustainable utilization rates. Staff also found no indication that refiners export product to raise price. In the period under investigation, refiners typically appear to assume their short-run operational decisions do not affect market prices.

Although refiners have expanded capacity at existing refineries, these expansions have not kept up with increased gasoline and diesel demand.[7] Furthermore, no new refineries have been built since 1976. Some, generally smaller, refineries have shut down. As described below, the available facts do not support the theory that these decisions reflected attempts to manipulate prices. Most of the refineries shut down over the past 20 years produced little or no gasoline. Those that did produce gasoline shut down because of the cost of complying with new environmental standards. Refiners appear to make capacity expansion decisions based on internal financial criteria and long-term forecasts about market conditions. No evidence suggested that, when making these decisions, refiners take into account any effect their capacity additions will have on prices. Staff found that building greenfield refineries would have been uneconomical given the relatively lower costs associated with expanding existing facilities.

In sum, as detailed in this chapter, the best available evidence suggests that companies have not restricted the level of capacity below competitive levels and that they have used their capacity to the fullest practical extent. Further, the price increases in summer 2005, as well as the more gradual increases since March 2002, do not appear to have resulted from short-run capacity utilization or export market manipulation by refiners.

[7] While the number of refineries has fallen, the average size of existing refineries has increased so that overall industry distillation capacity increased from 15.3 million barrels per day in 1996 to 17.1 million barrels per day in 2005, or about 11.7%. This increase is equivalent to the addition of over 15 average-sized refineries (at the 2005 average size of about 115,700 barrels per day). With respect to demand, the Commission has previously noted that the average U.S consumption of petroleum products increased on average by 1% per year from 1985 to 2003, and that motor gasoline accounts for the largest share of daily consumption of all petroleum products. *See* BUREAU OF ECONOMICS, FEDERAL TRADE COMM'N, THE PETROLEUM INDUSTRY: MERGERS, STRUCTURAL CHANGE, AND ANTITRUST ENFORCEMENT 65 (2004) ("PETROLEUM MERGER REPORT"); *see also* Energy Info. Admin, U.S. Dep't of Energy, *Short-Term Energy Outlook: Summer 2005 Motor Gasoline Outlook,* Apr. 2005, at 7 (projecting 1.8% growth in summer 2005 motor gasoline demand relative to summer 2004, above the average growth rate for the previous 5 years), *at* http://www.eia.doe.gov/emeu/steo/pub/pdf/sum0405.pdf.

I. Industry Background

A refiner's ability to produce gasoline is limited by the configuration and sophistication of the refinery's processing units. The most frequently cited measure of refining capacity is atmospheric distillation, which, in its simplest form, is the process of heating crude oil in a still and condensing various cuts into lighter streams for further processing. These streams are turned into finished products, like gasoline and diesel fuel, through downstream processes.[8] The capacity to produce gasoline or other products, however, depends on the capacity of both upstream and downstream units. Two refineries with the same atmospheric distillation capacity, however, may be capable of producing very different amounts of light petroleum products.[9]

A refiner can increase production of a particular product by expanding either upstream or downstream units. For example, a refiner could increase gasoline production by increasing the capacity of its downstream units and purchasing intermediate streams from other refineries.[10] Transactions in intermediate products among refiners make it possible for groups of refineries to produce more light petroleum products than they otherwise could produce if trade in intermediates were disallowed. Refiners also have been able to meet new environmental regulations for fuel products through investments in downstream unit capacity.

Refiners have added refining capacity over the years, both upstream and downstream. Table 1-1 shows atmospheric distillation capacity growth from 1996 to 2005. Over this period, demand for gasoline and other refined products has also grown. Driven by the strong demand for gasoline and diesel, downstream capacity has increased, and, since the mid-1990s, it has increased faster than distillation capacity. Between 1996 and 2004, total downstream capacity increased 16.5% while distillation capacity increased 10.7%. The more rapid expansion of downstream capacity made it possible for U.S. refiners to increase light products production by 12.9% from 1996 to 2004.[11] As stated above, domestic production has not kept pace with

[8] Downstream processes include vacuum distillation, thermal cracking, catalytic cracking and catalytic hydrocracking, catalytic reforming, and hydrotreating. *See* BUREAU OF ECONOMICS, FEDERAL TRADE COMM'N, THE PETROLEUM INDUSTRY: MERGERS, STRUCTURAL CHANGE, AND ANTITRUST ENFORCEMENT 129-36 (2004) ("PETROLEUM MERGER REPORT") at 182 n.12 ("Vacuum distillation is further distillation under reduced pressure of the bottom fractions from atmospheric distillation. Thermal cracking converts heavier, large molecules into lighter, smaller ones and is effective in boosting yields of light petroleum products such as gasoline. Catalytic cracking and catalytic hydrocracking are more advanced cracking techniques used to upgrade heavier materials into lighter, higher value products. Catalytic reforming is a catalytic process to increase octane values by rearranging oil molecules, while hydrotreating is a catalytic process to upgrade petroleum fractions and to remove contaminants such as sulfur.").

[9] *See* ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, DOE/EIA-0545(99), PETROLEUM: AN ENERGY PROFILE 1999, at 25-33, *available at* http://www.eia.doe.gov/pub/oil_gas/petroleum/analysis_publications/petroleum_profile_1999/profile99v8.pdf. Because the downstream processes at some refineries rely on intermediate products produced at other refineries, refinery output may exceed distillation capacity.

[10] It is important to note that unless a refinery has increased its overall capacity to make refined products, an increase in the production of one product, such as gasoline, decreases the yield of the other refined products.

[11] *See* ENERGY INFO. ADMIN., DOE/EIA-0340 (04)/1, U.S. DEP'T OF ENERGY, PETROLEUM SUPPLY ANNUAL 2004, at 17 tbl.S4, 19 tbl.S5 & 23 tbl.S7, *available at* http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/petroleum_supply_annual/psa_volume1/current/pdf/volume1_all.pdf.

demand, however, and imports of gasoline and gasoline blending components increased from 7% of U.S. gasoline production in 1996 to 11% of U.S. gasoline production in 2004.[12]

The shortfall in domestic production and the distance that imports have to travel raised concerns that refiners might make operational decisions or export product to manipulate supply and increase prices. This is the first theory we address.

II. Capacity Utilization and Other Short-Run Output Decisions

The investigation examined the potential for shorter-run gasoline price manipulation at the refinery level. Refinery capacity is relatively fixed in the short run. Other than imports from outside of a geographic area, there is no quick way to make up for consumer demand that is greater than local production. Thus if a refiner or group of refiners created a shortfall in a particular region (or nationally) relative to demand, prices would increase if alternative sources were more costly to produce and deliver to the affected area. As described above, staff attempted to determine whether refiners fully utilize their refinery capacity. If refiners are running their operations full-out, it is difficult to envision a scenario whereby refiners are manipulating price in a local area through this mechanism. Accordingly, staff focused on whether firms keep refineries shut down longer than necessary in an attempt to reduce the amount of fuel supplied to the market. Staff also considered whether refiners have inappropriately reduced output of particular refined products by changing the mix of products a refinery produces, and whether refiners have inappropriately reduced the amount of gasoline available for sale in the U.S. through uneconomic exports.

A. Capacity Utilization Rates

Refinery capacity utilization data are publicly available from the Energy Information Administration ("EIA"), the information arm of the Department of Energy. Figure 1-1 shows monthly petroleum refinery capacity utilization for March, a month when capacity utilization is generally low, and July, a month when capacity utilization is generally high, from 1985 to 2005. The difference between the two, about 6% on average, reflects the seasonal pattern in capacity utilization that follows seasonal changes in demand.[13] As there is some variation around the 6%, the lines are not exactly parallel. Still, their similar shape reveals two broad trends. First, from 1985 through 1998, utilization rates increased steadily. Over the entire period, the increase was about 20%. In all three of the summer months in 1998, capacity utilization was over 99%.

[12] Table 1-2 shows U.S.- and PADD-level gasoline production, as well as U.S. imports of finished gasoline and blending components. PADD ("Petroleum Administration for Defense District") regions were defined during World War II and are still used by the Energy Information Administration ("EIA") as a basis for data collection. PADD I is the East Coast, defined as Connecticut, Delaware, District of Columbia, Florida, Georgia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, North Carolina, Pennsylvania, Rhode Island, South Carolina, Vermont, Virginia, and West Virginia. PADD II is the Midwest, defined as Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, Oklahoma, South Dakota, Tennessee, and Wisconsin. PADD III is the Gulf Coast, defined as Alabama, Arkansas, Louisiana, Mississippi, New Mexico, and Texas. PADD IV is the Rocky Mountains, defined as Colorado, Idaho, Montana, Utah, and Wyoming. PADD V is the West Coast, defined as Alaska, Arizona, California, Hawaii, Nevada, Oregon, and Washington.

[13] Summer gasoline demand is historically greater than winter demand, especially in colder parts of the country. Because refiners must perform regular maintenance, doing so in the winter months allows them to maximize gasoline production during the higher demand summer driving season. This factor likely explains much of the seasonal pattern observed from the EIA data.

Second, since then, and as shown in Figure 1-1, July capacity utilization has declined somewhat, and appears to have leveled off. While about 5% below the peak capacity utilization rates achieved in 1998, current capacity utilization rates are high by historical standards, again as illustrated in Figure 1-1.[14]

Staff considered whether the decline from the peak utilization rates in the late 1990s was evidence of market manipulation. Because of the need to perform scheduled maintenance, refiners cannot operate at 100% of theoretical capacity. It is difficult to determine exactly the practical maximum capacity utilization rate. While refineries can maintain near-100% utilization for short periods, such rates cannot be sustained over the long term. High sustained utilization rates may lead to excessive equipment failure and unanticipated shutdowns, although several operational changes in recent years have allowed higher practical utilization rates. These changes include increased hardware reliability, more efficient maintenance procedures, and extended run times due to better-performing catalysts.

Table 1-3 shows average monthly capacity utilization over the summer months June, July, and August, since 2001, the period over which capacity utilization seems to have reached a plateau. Capacity utilization was 3% lower in the summer of 2005 than it was in 2004. Staff examined whether this decline was evidence of manipulation. As Table 1-3 shows, however, capacity utilization in summer 2004 was unusually high (compared to what has prevailed since 2001).

Capacity utilization in summer 2005 was about the same as it was in the summers of 2001, 2002, and 2003. Thus staff investigated whether refinery outages that occurred in summer 2005 prior to Hurricanes Katrina and Rita might be responsible for the capacity utilization decrease. Although U.S. refinery utilization was at or near record levels in June, production in July and August was affected by Hurricanes Dennis and Emily, which, while not as destructive as Hurricanes Katrina and Rita, nevertheless interrupted crude oil supplies to the Gulf Coast and the Midwest. During this period, several refineries were forced to reduce output because of refinery damage or power problems.[15]

Because capacity utilization was about the same in summer 2005 as it was in each of the summers of 2001, 2002, and 2003, and because there were good explanations for the refinery outages that did occur in summer 2005, staff concluded that the data on capacity utilization in isolation provided no evidence of market manipulation.

[14] One might expect, however, that as refiners bump up against limits that affect safe and reliable operations, they would expand capacity. As discussed below in the section on capacity expansion, refiners state that capacity investment decisions are based on expected margins; if refiners anticipate margins will be relatively high and there is no lower cost alternative, *e.g.*, imports, they will expand. For example, while there is no direct evidence that these expansions are related to the high margins and high utilization rates of the prior year, U.S. refiners as a group increased capacity by over 6% in 1999, by far the largest percentage expansion in recent years at the time.

[15] See Chapter 5 for more detail on these events.

B. Refinery Downtimes and Output Slates

From previous investigations, staff has considerable knowledge of how oil refiners make short-run output decisions. Utilizing this expertise, staff investigated two additional short-run price manipulation theories. The first is whether refiners are somehow coordinating refinery downtimes to keep refined product supply tight. Staff investigated this theory nationally and regionally, specifically in PADD V (West Coast).[16] Following this discussion, this section then addresses whether individual refiners may be manipulating prices by the choice of what products to produce.

1. Planned and Unplanned Refinery Downtimes. A refinery is a complicated assortment of expensive equipment designed to process crude oil and intermediate refinery inputs at extreme temperatures and pressures. To start and stop units and refinery operations takes a great deal of energy, which is costly. Thus, until a physical constraint is reached or the refined product margins fall to the point where the economic incentives are to reduce operations, it is more profitable to process additional barrels of crude oil or intermediate feeds, rather than to run the refinery at a lower utilization level. Nonetheless, as discussed above relating to utilization rates, refineries cannot run full-out all of the time, despite strong economic incentives to run refineries at or near capacity.

Refinery downtime can be divided into *planned* downtime, which often is designed months or even years in advance, and *unplanned* downtime, which occurs because of the failure of one or more refinery units or from incidents beyond the refiner's control, such as a hurricane or other natural disaster. In either case, the entire refinery may be down, or only specific processing units may be shut down while the rest of the refinery continues to operate (albeit at a reduced throughput).

Refiners schedule planned down times based on three central factors: maintenance schedules, the availability of contract labor, and seasonal variations in demand.[17] Of primary importance is the maintenance schedule. Major units must go offline for maintenance on a regular schedule.[18] Companies schedule maintenance based on historical operation, along with factors such as the vibration a unit undergoes, catalyst replacement, and metal fatigue.[19] Although there is some leeway in these schedules – generally on the order of a few weeks to months – refiners cannot delay scheduled maintenance too long without incurring safety risks.[20]

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[16] A recent EIA data publication suggested that refiners in PADD V operate at lower utilization rates than do refiners in the rest of the country. *See* Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: West Coast (PADD 5) Percent Utilization of Refinery Operable Capacity*, *at* http://tonto.eia.doe.gov/dnav/pet/hist/mopuep52a.htm (last modified Mar. 15, 2006).

[17] *See* [Confidential material redacted.]**;** Janet McGurty, *Update 2 – NCRA Moves up Kansas Refinery Work to July*, Apr. 7, 2006, *at* http://yahoo.reuters.com/stocks/QuoteCompanyNewsArticle.aspx?storyID=urn:newsml:reuters.com:20060407:MTFH37792_2006-04-07_19-37-10_N07232554&symbol=CHSCP.O&rpc=44 (NCRA refinery maintenance revised based on labor availability). Companies with multiple refineries also tend to schedule turnarounds so that only one company refinery is undergoing a turnaround at any given time.

[18] For example, one refiner reports that normal maintenance schedules would require a shutdown of a catalytic cracking unit every five years, a hydrotreating unit every one to two years, a sour crude distillation unit every two years, a delayed coking unit every five to six years, and a sweet crude distillation unit every five years. [Confidential material redacted.]

[19] [Confidential material redacted.]

Most refiners also attempt to schedule maintenance in the winter months, when overall refining margins are generally lowest.[21]

Refiners generally strive to reduce downtime because the cost of shutdowns and major maintenance is significant and negatively affects earnings.[22] Refiners testified that they try to maximize utilization and reduce downtime. Company strategic planning documents reviewed during the course of the investigation are consistent with these statements. For example, some refiners complained internally about lower utilization levels than they wanted to achieve.[23] Others tracked opportunity costs for refinery downtime,[24] displaying an understanding that greater frequency and duration of downtimes directly harm company finances. Firms generally take downtime during periods of the year when demand is low in order to minimize the adverse effect of the downtime on profits. Furthermore, the computer models the companies use to guide their decisions have, at least over the last few years, instructed that refineries be run all out for maximum profit.[25]

The existence of internal concerns about unnecessary downtime, recognition that downtime has adverse effects on company profits, and decisions to schedule downtime during periods of low demand provide evidence that refiners do not use downtime to raise prices.

2. Examination of Turnarounds in California. This section looks at firm-level data on refinery turnarounds or partial shutdowns in order to ascertain whether the pattern of turnarounds supports the hypothesis that refiners use these periods to reduce output in order to raise prices. Commission staff focused on data on gross refinery inputs of California refineries over 2000-2005, because California's unique fuel specification limits the number of firms that ordinarily supply product to the state.[26]

Commission staff used non-public data from EIA to assess whether California refineries exhibited unusual patterns of turnarounds and downtime. Based on the data, staff identified what appear to have been 14 major refinery turnarounds in California between 2000 and 2005. Most turnarounds (13 of the 14) occurred during the off-peak demand season from October through March.[27] This is consistent with competitive behavior, rather than collusive price manipulation: one would expect colluding firms to maximize the effect of any output reduction by taking downtime when demand for the collusive group is most inelastic, which tends to be during the summer.

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[20] *See, e.g.*, [Confidential material redacted.]**;** Jeffrey Tomich, *Wood River Refinery Trims Flow*, ST. LOUIS POST-DISPATCH, Sept. 27, 2005 (company could not delay maintenance at Wood River refinery longer than two weeks for safety reasons and unavailability of contract labor), *available at* http://obama.senate.gov/news/050927-wood_river_refinery_trims_flow/index.html.

[21] [Confidential material redacted.]

[22] [Confidential material redacted.]

[23] [Confidential material redacted.]

[24] [Confidential material redacted.]

[25] [Confidential material redacted.]

[26] Although an individual state is ordinarily unlikely to be a properly defined market for antitrust analysis, because of its unique fuel specification and geographic isolation, among other factors, the FTC has argued that California is a relevant antitrust geographic market in certain merger investigations. *See* Exxon Corp., FTC Dkt. No. C-3907 (Jan. 26, 2001); Valero Energy Corp., FTC Dkt. No. C-4031 (Feb. 19, 2002).

[27] [Confidential material redacted.]

Many of the turnarounds had a minimal impact on market capacity, particularly because the turnarounds were taken during off-peak months, when capacity constraints are not always binding, and because refiners build inventories in anticipation of planned turnarounds. To determine the amount of unused capacity, Commission staff compared gross inputs for each refinery in turnaround against market capacity. Of the 15 months affected by a turnaround, more than 5% of market capacity was affected only in seven turnarounds, and more than 10% of market capacity was affected only once.

The data also show that turnarounds tend to be spread out over the off-season, rather than concentrated in particular months. There was only one month during the 2000-2005 period in which more than one refinery had a turnaround.[28] Thus, the data generally are inconsistent with the theory that refiners collude by shutting down their refineries at the same time.

The data also show that most of the California refineries had only one or two major turnarounds over the five-year period, which is what one would expect based on normal refinery maintenance. Consistent with Commission staff's experience, and with public and company documents, most refiners stated in interviews that a major turnaround is necessary every three or four years. Thus, the facts do not support the claim that refineries performed major turnarounds more often than necessary.

3. Choice of Output. Refineries produce multiple refined products from multiple inputs. Gasoline accounts for just under half of total refinery output, on average, with distillates such as diesel, home heating oil, and jet fuel accounting for about another 30% of total output.[29] At the same time, refineries typically consume multiple types of crude oil, which have somewhat different chemical properties.[30] Along with crude oil, refineries also typically process various intermediates and blendstocks, which are produced at the refinery or purchased on the open market. Individual products, particularly gasoline, may have to meet multiple distinct specifications to satisfy varying regulatory requirements depending on where the product is to be sold.

The fundamental problem that refinery operators face is finding the best combination or "slate" of various products given the cost and types of available crude oil and other refinery inputs. The profit-maximizing input and output slates will depend on the costs of inputs and the prices received for product sales. Within a relatively narrow range, a refinery can produce more of one product at the cost of producing less of another and can process different types of crude oil, but the extent of such flexibility will depend on the sophistication and capacities of its various processing units.

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[28] [Confidential material redacted.]

[29] *See* Energy Info. Admin., U.S. Dep't of Energy, *Refinery Yield Data,* at http://tonto.eia.doe.gov/dnav/pet/pet_pnp_pct_dc_nus_pct_a.htm (last modified Mar. 15, 2006). In 2004, gasoline accounted for 46.8% of refinery yields, distillate fuel oil accounted for 23.9%, and jet fuel accounted for 9.7%.

[30] *See* WILLIAM L. LEFFLER, PETROLEUM REFINING IN NONTECHNICAL LANGUAGE, at ch.2 (3d ed., 2000). As a result, different types of crude oil are imperfect substitutes for one another. Heavy and sour (high-sulfur) crude oils generally sell at lower prices compared to lighter and sweeter crude oils, but heavier crudes yield smaller quantities of higher-valued products, such as gasoline. Although the prices of different types of crude oil tend to move in the same direction with changing market conditions, the differences in prices among crude oil types may vary over time. For example, in periods of generally high crude oil prices, the premium between light and heavy crude oil types tends to increase.

The choice of exactly what products to produce is highly complex. As is the case with many complex business problems, refiners base their decisions on computer models. These models necessarily rest on assumptions. While the models are highly mathematical and difficult to understand, the assumptions underlying them provide insight into whether oil refiners try to manipulate markets. In particular, oil refiners use a class of models known as "linear programming" ("LP") models.

Refiners use LP models to help optimize refinery operations.[31] A linear program, however complex, is a simplified model of a refinery (or group of refineries) that takes as a given the capabilities and constraints of each refinery and allows the refiner to input costs and likely refined products prices to determine the best slate of crude oil and other intermediate stocks to run to achieve the greatest profit.[32] All other things being equal, when product prices are high relative to costs of refinery inputs, the LP models are more likely to direct the refiner to run at capacity. However, interpreting LP output is complex, and reconciling different LP runs can be difficult. A refinery faces many constraints, including distillation capacity, downstream refining unit capacities, and even the size and number of tanks to hold crude oil and products.[33] If refiners input market-based prices (such as NYMEX future prices or EIA forecasts) into the LP model, the market will help determine the refiner's output. This would be a strong signal that they do not manipulate prices through output or product slate decisions.

Although refiners state that they generally adhere to the LP model, some refiners occasionally deviate from the model if their internal analyses and judgment indicate that such a deviation is necessary to maximize refinery profitability.[34] LP models rest on a variety of simplifying assumptions that can cause them to produce results that, in the judgment of management, are not the best choice of action. Similarly, the refinery planner could simply constrain the program solution output by modifying a constraint. For example, limiting the total crude oil run through the refinery's distillation unit, even using market prices as an input, will necessarily result in lower product output. Staff uncovered no evidence that refiners change the underlying LP to manipulate prices.

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[31] These models are customized for each refinery (or complex of physically separate refineries operating as an integrated unit). For example, Marathon Petroleum operates its seven refineries as a single system, while Valero Energy uses intermediate feedstocks from its Texas City refinery to feed downstream units at its Corpus Christi and Houston refineries. Tesoro Petroleum produces surplus heavy vacuum gas oil from its refineries in Alaska and Hawaii, which lack sufficient downstream capacity, and processes these at its Washington State refinery. PETROLEUM MERGER REPORT at 184 nn.20, 22.

[32] A typical refiner would run the LP model 30 to 90 days prior to actual refinery operation to lock in crude oil and other input purchases. Because the model rests on forecasted prices, as the refiner gets closer to actually running crude oil and making products, it will re-run the LP software to fine-tune the production process given potential changes in price forecasts. If prices show an unanticipated downward trend, the LP result may change from earlier runs to suggest lower run rates or a different product slate. In this case, the refiner does not deviate from the LP solution – it simply produces at a lower output rate in accordance with the revised LP plan.

[33] *See* WILLIAM L. LEFFLER, PETROLEUM REFINING IN NONTECHNICAL LANGUAGE 225-27 (3d ed. 2000). As the refinery reaches one or more of these constraints, the cost of producing an extra barrel of a product may increase substantially. Which constraint actually binds at any point may depend on the relative prices of inputs and outputs. For example, when the price of gasoline is relatively low compared to the price of crude oil, a refinery may find it profitable to run less crude oil and not fill up its downstream processing units that produce gasoline. As the price of gasoline increases relative to other products, the refinery may fill up gasoline-producing units to take advantage of the higher gasoline prices.

[34] [Confidential material redacted.]

C. Other Short-Run Output Decisions

The two final short-run manipulation theories investigated by staff involve boutique fuels and exports. These manipulation theories involve a refiner, or group of refiners, taking advantage either of the production of a specialized fuel or of an insulated geographic market.

1. Thinly-Traded Markets. In areas that require "boutique" fuel specifications that are not widely used, refiners may find that coordinating gasoline prices is easier than in areas of the country with widely-used fuel specifications.[35] Given the limited volume of demand for a boutique fuel, only a limited number of refineries may produce that fuel. Refineries that do not produce the boutique fuel are not able immediately to offer their fuels in the area to make up for any decrease in supply. For example, following the price increase in the Midwest in the summer of 2000, when (among other factors) Midwest refineries had unexpected difficulties in producing a new gasoline specification and key product pipelines suffered outages, gasoline prices rose substantially relative to historical levels. In order to provide additional gasoline to the market, Gulf Coast refiners had to produce a gasoline specification they had never made before, and then transport the product by pipeline or barge to the affected areas. Even so, Gulf Coast refiners started the process almost as soon as a profit opportunity arose, restoring Midwest prices to historical levels within a matter of weeks.[36] Thus, boutique fuel specifications do not always enable a small group of refiners to collude, as profit-seeking refiners outside the group may have the incentive and the ability to begin production of the fuel specification and deliver products relatively quickly if prices rise. The investigation did not identify any collusion involving boutique fuels.

2. Geographic Allocation of Product. Under certain circumstances, refiners with market power in one geographic area might be able to manipulate gasoline prices in that area by exporting product to other areas.[37] If a refiner, or a group of refiners acting collusively, has

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[35] A boutique fuel specification is a specification mandated by the government for a given geographic area to reduce the emission of pollutants into the air. For example, California and parts of Arizona require lower emissions reformulated gasoline, and parts of the country, such as Atlanta, require special fuel requirements to meet EPA evaporation standards. [Confidential material redacted.]

[36] *See* Jeremy Bulow et al., *U.S. Midwest Gasoline Pricing and the Spring 2000 Price Spike*, 24 ENERGY J. 121, 129 (2003).

[37] For refined products such as gasoline, the Commission has regularly assessed such "export" theories in evaluating the competitive effects of petroleum mergers. For example, in the *Valero/Ultramar Diamond Shamrock* transaction, the Commission concluded that refineries in Northern California and the Pacific Northwest constituted a relevant geographic market for antitrust analysis for the sale of California-specification gasoline because other refineries capable of producing this gasoline specification, such as those in Los Angeles, would be unlikely to ship gasoline to Northern California in response to a small but significant and non-transitory price increase. Gasoline typically flows from north to south in California, with Los Angeles supplied in part by Pacific Northwest and Northern California refineries. One issue in the analysis was whether the merger would enhance Valero's market power and change Valero's incentives such that the firm (perhaps in coordination with remaining competitors) might ship more gasoline to Los Angeles than it did pre-acquisition, even though the netback for the marginal barrels would be higher in Northern California. The Commission's concerns in this matter, including concerns over market power in Northern California, were resolved through a divestiture of the Ultramar Golden Eagle refinery and associated retail assets to Tesoro. *See* Valero Energy Corp., FTC Dkt. No. C-4031 (Dec. 18, 2001) (Analysis of Proposed Consent Order to Aid Public Comment).

Such a concern also underpinned the Commission's allegations in the *BP/ARCO* merger, which involved the export of Alaska North Slope ("ANS") crude oil to the Far East in order to raise prices on the U.S. West Coast. Refineries on the U.S. West Coast, particularly those in Washington, were configured to use ANS crude oil efficiently, and thus were major consumers of ANS crude. As a major producer and seller of ANS crude oil, BP

market power in one area but faces a highly elastic demand in a second area (that is, increased sales in the second area do not depress price there very much, if at all), it may be profitable to ship lower volumes of refined product to the first area and more to the second area so as to increase prices in the less competitive area.

Because concerns about refined product exports from the U.S. have been raised, the investigation assessed the geographic allocation issue in this context, focusing on gasoline exports. Exports from the United States are relatively rare. In 2005, the U.S. consumed 9.125 million barrels per day of finished gasoline and exported only 136,000 barrels per day, or about 1.5% of consumption.[38] The vast majority (81%) of finished gasoline exports in 2005 were to Mexico, while another 6% went to Canada.[39] Almost no gasoline exports involved reformulated gasoline. Most (88%) gasoline exports are from PADD III, with another 5% from PADD I and 7% from the West Coast (PADD V). Both PADD I and PADD V are net importers of finished gasoline, and import a substantial amount of gasoline blending components as well.[40] As a

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sought to price discriminate between West Coast refineries and customers in the Far East. To do so, BP used excess shipping capacity to send small amounts of ANS to the Far East at a price net of shipping slightly below what it could have obtained on the West Coast, taking into account that selling the oil on the West Coast would reduce prices there. *See* Jeremy Bulow & Carl Shapiro, *The BP Amoco-ARCO Merger: Alaskan Crude Oil (2000)*, *in* THE ANTITRUST REVOLUTION: ECONOMICS, COMPETITION, AND POLICY 128, 140 n.19 (John E. Kwoka, Jr. & Lawrence J. White eds., 4th ed. 2004). Bulow and Shapiro estimate that the lower netback in the Far East at that time could be no more than 40 cents per barrel, or about a penny per gallon, for the plan to be profitable for BP. The Commission was concerned that BP's acquisition of ARCO would enhance BP's market power over West Coast refiners, inducing BP to export even more ANS. These concerns were resolved when BP agreed to divest ARCO's Alaskan interests. *See* BP Amoco p.l.c., FTC Dkt. No. C-3938 (Apr. 13, 2000) (Complaint). BP essentially stopped exporting ANS by the year 2000, which Bulow and Shapiro attribute to a reduction in BP's tanker fleet.

[38] Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: U.S. Motor Gasoline Supply and Disposition*, *at* http://tonto.eia.doe.gov/dnav/pet/pet_sum_snd_c_nus_epm0f_mbblpd_a.htm (last modified Apr. 13, 2006); Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: U.S. Motor Gasoline Blending Components Supply and Disposition*, *at* http://tonto.eia.doe.gov/dnav/pet/pet_sum_snd_c_nus_epobg_mbblpd_a.htm (last modified Apr.13, 2006). Exports of gasoline blending components were 22 thousand barrels per day in 2005. In contrast, gasoline imports amounted to about 604 thousand barrels per day of finished gasoline and an additional 494 thousand barrels per day of gasoline blending components.

[39] The U.S. is a net importer of gasoline from Canada, with imports in 2004 about 50% above exports. The U.S. is a net importer of crude oil from Mexico, but is a net exporter of gasoline to Mexico, in part because Pemex, the state-owned oil company, owns 50% of the Shell Deer Park refinery in Texas, and in part because capacity at Mexican refineries has not kept up with increases in demand. Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Exports by Destination*, *at* http://tonto.eia.doe.gov/dnav/pet/pet_move_expc_dc_NUS-NCA_mbbl_a.htm and http://tonto.eia.doe.gov/dnav/pet/pet_move_expc_dc_NUS-NMX_mbbl_a.htm (last modified Mar.15, 2006), and *Petroleum Navigator: U.S. Imports by Country of Origin*, *at* http://tonto.eia.doe.gov/dnav/pet/pet_move_impcus_d_nus_NCA_mbbl_m.htm and http://tonto.eia.doe.gov/dnav/pet/pet_move_impcus_d_nus_NMX_mbbl_m.htm (last modified Apr. 25, 2006). In 2002, Pemex imported about 90 thousand barrels per day of gasoline, or about 16% of total consumption. Brendan M. Case, *Petrochemical Imports Draw Criticism to Mexico*, DALLAS MORNING NEWS, Sept. 23, 2003, *available at* http://www.latinamericanstudies.org/mexico/pemex-petrochemical.htm.

[40] PADD I imported 540,000 barrels per day of finished gasoline and 373,000 barrels per day of gasoline blending components in 2005, compared with exports of 7,000 barrels per day of finished gasoline and 2,000 barrels per day of blending components. For PADD V, the comparable import figures are 23,000 barrels per day of finished gasoline and 37,000 barrels per day of blending components, compared with exports of nine thousand barrels per day of finished gasoline and none of blending components. Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Imports by Area of Entry*, *at* http://tonto.eia.doe.gov/dnav/pet/pet_move_imp_a_EPM0F_IM0_mbblpd_a.htm and http://tonto.eia.doe.gov/dnav/pet/pet_move_imp_a_EPOBG_IM0_mbblpd_a.htm (last modified Mar.15, 2006).

result, firms are unlikely to export gasoline for anticompetitive purposes, because imports are likely to increase in response, rendering unprofitable any attempt to raise prices artificially. The Gulf Coast is a sufficiently liquid market that the export of an additional cargo will not significantly raise prices.

Staff found that exports occurred under three circumstances. First, a refiner may have a long-term contract that requires it to export.[41] Second, off-spec product that cannot be sold in the United States is shipped to overseas markets with lower specification standards, where it can be sold.[42] Third, a small amount of product has been exported when overseas prices have increased sufficiently over domestic prices to make such exports profitable. The investigation uncovered nothing to suggest that any firm has exported United States grade product intentionally when prices (adjusting for transportation costs) were higher in the United States than overseas.[43]

III. Long-Run Refining Capacity Decisions

One theory of price manipulation specifically identified in the Energy Policy Act and by others is that refiners have not increased domestic refining capacity sufficiently to meet growing demand in order to raise prices. The failure to add sufficient capacity to keep pace with demand places an upward pressure on prices. As mentioned earlier, a shortfall in local supply relative to demand in a geographic market would raise prices if alternative sources of gasoline are more costly to produce and deliver to the affected area. Underlying this theory is the assumption that imports are not a sufficient constraint on domestic prices.[44]

Table 1-1 lays out the basic facts underlying these concerns. The number of refineries in the United States has shrunk from 170 in 1996 to 148 in 2005. The reduction represents the combination of refinery closures and the fact that no new transportation fuels refinery has been built since 1976. Despite the reduction in the number of refineries, refiners expanded capacity at the remaining refineries from 15.3 million barrels per day in 1996 to 17.1 million barrels per day in 2005, or about 11.7%. This growth rate, annualized, is substantially less than the growth in U.S. demand, which is why imports of refined products have increased.[45]

Marathon Ashland's Garyville, Louisiana 1976 refinery was the last transportation fuels refinery built in the United States. Staff investigated why companies have not built new refineries more recently. Staff concluded that refiners have found that building a new refinery is substantially more costly than other ways of meeting U.S. gasoline demand. Environmental regulations, zoning regulations, and neighborhood objections (and lawsuits) all increase the cost of a new refinery relative to expanding existing refineries or importing finished products from overseas.[46]

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[41] For example, the Deer Park refinery is obligated to deliver gasoline to Pemex. *See U.S. Refiners Find Benefits in JVs with Foreign Partners*, OIL & GAS J., July 22, 1996, at 16. Of course, the buyer of gasoline might find it profitable to resell the gasoline in the U.S., so these sales might not be consumed abroad.

[42] [Confidential material redacted.]

[43] [Confidential material redacted.]

[44] For the sake of the analysis, staff accepted this assumption, although there is no evidentiary basis in the investigational record.

[45] *See* Table 1-2.

[46] *See* FEDERAL TRADE COMM'N, GASOLINE PRICE CHANGES: THE DYNAMIC OF SUPPLY, DEMAND AND

Putting aside new refinery construction, one can ask whether the pace of domestic refinery expansion, which has lagged the growth in U.S. gasoline demand, is the result of market forces – that is, refiners have lacked additional profitable expansion opportunities – or, instead, is an attempt, either unilaterally or collusively, to manipulate the market. As further detailed below, two pieces of evidence are persuasive that the former, rather than the latter, is the correct explanation: first, recent refinery purchases have been made at prices substantially below the cost of expanding capacity (and even more so than the cost of building a new refinery); and, second, until recently the returns to refining over the past 10 to 20 years generally have been very low, making additional investment unprofitable.

A. Market Evidence that Refiners Have Not Underinvested in Capacity Expansion

To manipulate the market by restricting capacity growth, refiners would pass up investments that would be profitable if they were viewed in isolation from the firm's other operations. When any firm—either one operating in a competitive environment or one trying to manipulate the market—chooses not to make an investment, it presumably does so because it concludes that the investment is not in its economic interest. Whether such a decision constitutes market manipulation turns on the reasoning underlying that conclusion. Firms that pass up inherently unprofitable investments are simply responding to market forces. Firms that pass up inherently profitable investments because the investments would lower market prices are manipulating the market.

Determining whether refiners have passed up inherently profitable investments in refining capacity is not simple. When firms invest in refining capacity, they expect to use that capacity for many years. The profitability of investment in capacity turns not just on market conditions prevailing at the time of the investment, but on expectations about future market conditions. A firm could almost always rationalize its decision to forego an investment based on expectations about the future, and disproving such claims is difficult.

Market evidence does, however, exist to assess whether investments in refining capacity have been inherently profitable and, therefore, whether market capacity is below competitive levels. When refinery capacity is below competitive levels, the owner of a refinery should expect to receive profits above competitive levels. If so, then, when one company sells a refinery to another, the sales price should reflect those profits. If not, the owner would not find it in its economic interest to sell. Buyers would rationally take account of the profits in deciding what they are willing to pay, and competition among potential buyers should make it possible for the seller to get a price that reflects these profits.

To determine whether the price for a refinery reflects profits above competitive levels, a benchmark is needed. Based on well-established economic principles,[47] the appropriate benchmark is the cost of building new capacity. If the price for a refinery exceeds the price of building new capacity, then that price reflects the expectation of earning profits above competitive levels. If the price at which a refinery is sold is less than or equal to the price of adding to capacity, then the evidence suggests that there is no expectation of earning profits above competitive levels. Whether or not the sales prices of refineries are greater or less than the

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COMPETITION 57 (2005) ("GASOLINE PRICE CHANGES REPORT").

[47] This ratio is known as Tobin's *q*, named for Nobel Prize-winning economist James Tobin, who formalized the theory in the late 1960s. *See*, for example, DENNIS W. CARLTON & JEFFREY M. PERLOFF, MODERN INDUSTRIAL ORGANIZATION (4th ed., 2004), Chapter 8.

cost of adding new capacity therefore serves as a test of whether refiners have restricted capacity to manipulate the markets.

To perform this test, staff collected evidence on the cost of adding to refining capacity and on the price buyers have paid for refineries. In the refining business, one firm estimated that the cost per barrel of capacity of two major expansions was between about $10,000 and $12,000.[48] In contrast, a review of 11 refinery sales between 2001 and 2004 shows a purchase price per barrel of capacity ranging between $766 and $5,836 per barrel of capacity, with a mean price of $2,837.[49] Consistent with these estimates, one independent refiner believes that it can grow by acquiring refining and complementary assets at a fraction of replacement cost.[50] This evidence suggests that refining capacity has not been held below competitive levels.

Staff believes that the comparison of the market price of refineries to the cost of adding refinery capacity is the best available evidence to test the market manipulation hypothesis. For a variety of reasons, however, it is not perfect. Thus, further study of the inherent profitability of refining may be warranted.

Given that the data on the profitability of refining are imperfect, staff also examined whether it would be feasible for refiners, unilaterally or through collusion, to restrict the level of capacity. A significant barrier to doing so is that the refining industry remains relatively unconcentrated, as shown in Table 1-4. No refiner has a substantial share of crude oil distillation refining capacity, either nationally or regionally. A firm's market share suggests its competitive significance in a properly defined geographic market, where prices can move independently from other markets to some degree. Relevant geographic markets for antitrust analysis do not correspond neatly to PADDs or countries.[51] With that caveat, Valero has a national share of crude oil distillation capacity of 13.0%, followed by ConocoPhillips at 12.9% and ExxonMobil at 11.4%.[52] Shares at the PADD level are higher but still modest. In PADDs I and III, for example, Valero has a share of 15.8%, followed by ExxonMobil (15.4%), ConocoPhillips (13.2%), and Royal Dutch/Shell (12.5%).[53] Even in California, the largest refiner,

[48] [Confidential material redacted.]

[49] Capacity figures from EIA, acquisition price from *Oil & Gas Journal*. The transactions (with cost per barrel of capacity in parentheses) were: Tesoro (Mandan and Salt Lake City) ($5,836), Valero (Corpus Christi) ($2,949), Giant (Yorktown) ($2,176), Tesoro (Martinez) ($5,693), Holly (Woods Cross) ($1,000), Suncor (Commerce City) ($2,500), Valero (St. Charles) ($2,581), Premcor (Memphis) ($1,750), Koch (North Pole) ($1,381), Premcor (Delaware City) ($4,571), and Sunoco (Philadelphia) ($766). Whole-company acquisitions were excluded because of the value of the company generally includes assets, such as brand names, above any acquired refineries. [Confidential material redacted.]

[50] [Confidential material redacted.]

[51] The presence of shipments between PADDs and imports into the United States suggest that PADDs, or even the United States as a whole, do not constitute antitrust markets. Smaller or larger markets are possible. In isolated geographic markets, refiners that have large market shares can potentially affect price. For example, in a market with few local refiners, pipelines radiating outward, and no incoming pipeline, refiners can reduce sales in the local market and ship excess product away. If product cannot be shipped economically from outside the market, local prices will rise.

[52] Capacity shares are as of January 2005, and are calculated from ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, DOE/EIA-0340(04)/1, PETROLEUM SUPPLY ANNUAL 2004, at 82 tbl.38, *available at* http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/petroleum_supply_annual/psa_volume1/current/pdf/volume1_all.pdf. These geographic areas do not necessarily represent relevant antitrust markets.

[53] Concentration in PADD I is higher, with Sunoco holding a 40% share and two other refiners (ConocoPhillips and Valero) with shares over 20%. However, PADD I receives a substantial proportion of its

ChevronTexaco, has a capacity share of 25.1%, and faces competition from six other significant competitors.

In light of the low levels of concentration, refiners would likely have to collude (either tacitly or explicitly) to restrict output below competitive levels. In order for refiners to coordinate successfully, firms must (1) reach agreement, (2) monitor the agreement and detect deviations from the agreement, and (3) punish deviations from the agreement by making violators worse off (thereby inducing firms to adhere to the agreement).[54] Reaching an agreement on capacity expansion would likely be even more difficult than reaching an agreement regarding short-run output decisions because the collusion would have to be maintained over many years and would even have to survive changes in ownership.[55] For coordination to be profitable, the set of coordinating firms must have a large enough combined market share that any underinvestment designed to lead to higher prices is profitable. If firms outside the collusive group can expand sufficiently, the coordination will be unprofitable. Similarly, firms outside the market must not be able to import product economically and offset the capacity restrictions.

B. Documentary Evidence and Testimony that Refiners Have Not Underinvested in Capacity

Refiners tend to look at a project's rate of return as the primary consideration in evaluating a discretionary capital project.[56] Various risks, such as those arising from price fluctuations, new technologies, project costs, and changes in product specifications, affect a refiner's decision about whether to proceed with a capital project.[57]

If firms were manipulating refining capacity, they might have a higher threshold for spending on projects that increase refining capacity relative to other capital projects. Commission staff found that refiners were approving capital projects based on what seemed to be objective criteria, generally the same as for non-refinery projects.[58] No evidence indicated that the criteria used were chosen to limit refinery expansions in an effort to maintain or raise product prices. Although the hurdle rate varies among refiners, most refiners require an annual rate of return between 12% and 15%, which is not much higher than a representative cost of capital.[59]

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petroleum product supply from imports, both from PADD III (via pipeline) and from abroad.

[54] *See* W. KIP VISCUSI, JOHN M. VERNON, & JOSEPH E. HARRINGTON, JR., ECONOMICS OF REGULATION AND ANTITRUST 121-24 (1992).

[55] *See* Section III.C. of this chapter for a discussion of the impact of individual refinery sales on likelihood of coordination.

[56] [Confidential material redacted.] The "hurdle rate" above which a project may be considered is the rate of return on capital necessary for a firm to be willing to invest in a capital project. Because non-discretionary projects are required in order to continue operating a refinery, they are not subject to the same hurdle rates as discretionary projects.

[57] [Confidential material redacted.]

[58] [Confidential material redacted.]

[59] [Confidential material redacted.] In 2000, a Kerr-McGee executive estimated the cost of capital for the natural gas industry to be in the range of 10-12%. *See* Susan H. Holte, *National Energy Modeling System/Annual Energy Outlook Conference Summary*, May 8, 2000, *at* http://www.eia.doe.gov/oiaf/analysispaper/conf_summary.html. More generally, the cost of capital to a firm reflects a variety of factors, including market interest rates and tax rates.

Refiners testified, and no documents contradicted these statements, that low rates of return during the 1990s and early 2000s have discouraged additions to domestic refining capacity.[60] Net refinery margins historically have been small compared to product prices.[61] More importantly, rates of return historically have been low for refining compared to other segments of the oil business, such as exploration and production.[62] During 2002, for example, major refiners lost over $2 billion on domestic refining and marketing operations.[63] The reasons for the historic low profit margins in refining include periods of substantial excess capacity, the increasing cost of compliance with environmental regulations, and unfavorable crude oil price trends.[64] The explanation companies give for not investing more in capacity is corroborated by the market evidence that the price of refineries is less than the cost of adding to refining capacity.

C. Refinery Closures and Sales

The investigation considered two theories by which refinery closures and sales could allow refiners to manipulate capacity, reduce output, and raise price. Just as firms could forgo profitable capacity expansions, firms also could reduce capacity by closing marginally profitable refineries. Alternatively, a collusive group of refiners could attempt to align incentives within the group through the sale of refineries, in an effort to increase the stability of any collusive arrangement.[65]

Refinery closures have overwhelmingly involved small, relatively unsophisticated facilities. Table 1-5 lists the 28 U.S. refineries that EIA reports have been closed since 1995. Sixteen of the closed refineries had distillation capacities less than 15,000 barrels per day; only five had capacities greater than 50,000 barrels per day; and none had a capacity greater than 100,000 barrels per day. The closed refineries represented 16% of the 175 U.S. refineries that existed in 1995, but only 4.6% of distillation capacity and 2.7% of downstream capacity.[66]

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[60] [Confidential material redacted.]

[61] *See* PETROLEUM MERGER REPORT at 72.

[62] [Confidential material redacted.] According to the National Petroleum Council, over the years 1981 through 2001, the return on capital employed for the petroleum industry averaged 7.7%, while the return on capital employed in the refining and marketing segments of the industry averaged only 5.3%. *See* NATIONAL PETROLEUM COUNCIL, OBSERVATIONS ON PETROLEUM PRODUCT SUPPLY at I-14 (2004); *see also* PETROLEUM MERGER REPORT at 71-72 (since 1998, exploration and production return averaged 7.8%, compared with 5.8% for refining and marketing).

[63] *See* PETROLEUM MERGER REPORT at 72.

[64] *See* D.J. PETERSON & SERGI MAHNOVSKI, NEW FORCES AT WORK IN REFINING: INDUSTRY VIEWS OF CRITICAL BUSINESS AND OPERATIONS TRENDS 15 (2003) (recent survey of refining executives conducted for the Dept. of Energy) ("RAND Report").

[65] For example, suppose five refining firms in a particular geographic region attempted to coordinate capacity expansions but that one of the firms owned three refineries, one owned a single refinery, and the other three each owned two refineries. The small firm might have a sufficiently strong incentive to expand capacity in order to increase its market share that the collusive group would quickly fall apart. If the large refiner sold a refinery to the small firm, the effect might be to increase the stability of the collusive group by reducing the incentive of the small firm to expand.

[66] *See* ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, NO. DOE/EIA-0340(04)/1, PETROLEUM SUPPLY ANNUAL 2004, at 121 tbl.41, *available at* http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/petroleum_supply_annual/psa_volume1/current/pdf/volume1_all.pdf.

In addition to being small, many of the refineries that were closed could not produce a significant volume of higher-valued refined products such as gasoline. Table 1-5 shows that six of the closed refineries had no downstream capacity. Four other closed refineries had downstream capacity limited to vacuum distillation.[67] Those ten refineries did not appear capable of producing gasoline.[68]

Most of the larger refinery closures have been related to substantial investments required to meet new fuel specifications. For example, in 2001, Premcor closed its Blue Island, Illinois refinery, which had a crude distillation capacity of about 76,000 barrels per day, because it would have had to invest about $70 million to meet new refined product specifications.[69] In October 2002, Premcor also shut down its 70,000 barrels per day Hartford, Illinois refinery for similar reasons.[70] In addition, several refineries were closed in California at about the time the CARB requirements were imposed. The largest of these were Powerine, with its 46,500 barrels per day refinery, and Pacific Refining, with its 50,000 barrels per day refinery. These companies were gasoline producers in California prior to the imposition of CARB standards, but appear to have exited the market because of the difficulty of meeting the CARB product quality specifications.[71]

In 2004, Shell announced plans to close its small, 66,000 barrels per day Bakersfield, California, refinery. The Commission initiated an investigation to determine whether the closure violated the antitrust laws. Staff reviewed company documents and data and conducted investigational hearings of company officials to explore whether the closing was part of an anticompetitive scheme to reduce capacity and raise the price of gasoline in California, or an illegal exercise of unilateral market power. The investigation found no evidence of collusion among Shell and other refiners, and no evidence that Shell possessed market power.[72] Other

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[67] These four refineries were: Petrolite (Kilgore, Texas), Berry (Stephens, Arkansas), Foreland (Tonapah, Nevada) and Gold Line (Lake Charles, Louisiana). Downstream data were obtained from the *Petroleum Supply Annual*. Note that data were not available for the refineries closed in 1995 and 1996, and thus the number of refiners with downstream capacity limited to vacuum distillation may be higher.

[68] The National Petroleum Council found that about half of the refineries closed between 1990 and 1999 did not have facilities normally associated with producing finished gasoline. The NPC is a federal advisory committee to the Secretary of Energy made up of petroleum industry executives. The purpose of the NPC is to advise and make recommendations to the Secretary of Energy on any oil or natural gas matter the Secretary considers. *See* NATIONAL PETROLEUM COUNCIL, U.S. PETROLEUM REFINING: ASSURING THE ADEQUACY AND AFFORDABILITY OF CLEANER FUELS 23 (2000). According to the *Oil and Gas Journal*, the 34 refineries closed between 1990 and 1996 accounted for only about 1.5% of U.S. gasoline production. *See* OIL & GAS J., Mar. 10, 1997, at 21. Data on the gasoline production of the more recently closed refineries are not available.

[69] *See Special Refining Report*, OIL & GAS J., Mar. 19, 2001, at 60.

[70] *See Worldwide Refining Report*, OIL & GAS J., Dec. 23, 2002, at 63. In April 2003, ConocoPhillips agreed to buy various operating units at the Hartford refinery and integrate their operation into its nearby refinery at Wood River, Illinois. *See Platts Oilgram News*, Apr. 22, 2003, at 1. This integration helped the Wood River refinery increase capacity from 288.3 thousand barrels per day in 2003 to 306 thousand barrels per day in 2005. *See* ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, PETROLEUM SUPPLY ANNUAL tbl.38 (2003-2005).

[71] *See General Interest*, OIL & GAS J., Dec. 11, 1995, at 21 (citing Powerine Oil Co. and Pacific Refining Co. as two that closed because complying with the Phase II CARB gasoline specification would be uneconomical) ("The high cost of regulatory compliance in California – and not just with CARB specs – has shrunk the number of refiners able to compete in the market in recent years.").

[72] *See* Statement of the Federal Trade Commission Concerning *Shell Oil Company*, FTC File No. 041-0087, May 25, 2005, *available at* http://www.ftc.gov/os/caselist/0410087/050525stmnt0410087.pdf. ("There was no evidence supporting a conclusion that Shell possessed, acquired, or exercised market power in any way. We found

refiners could increase output, increased imports could augment the California gasoline supply, and other refiners had plans to increase capacity.[73] Ultimately, Shell sold the refinery to Flying J, and the capacity did not exit the market.

Commission staff also examined sale of refineries. As Table 1-6 shows, outside of whole-company mergers and acquisitions, 33 refinery sales occurred between 1995 and 2004. Of those 33 sales, 11 involved a major integrated firm selling to an independent refiner. BP sold six refineries over the period, to such firms as Tosco, Premcor, Tesoro, and Giant Industries.[74] ChevronTexaco sold its half of the El Paso refinery to Western Refining, and Mobil sold a refinery to Valero. Equilon (a former Shell/Texaco joint venture) sold its El Dorado, Kansas, refinery to Frontier Oil and its Wood River, Illinois, refinery to Tosco, while Motiva (another former Shell/Texaco joint venture) sold its Delaware City, Delaware, refinery to Premcor.[75] Sales of refineries to independents appear to be inconsistent with the theory of price manipulation; as such sales increased the number of firms in various markets and made it more difficult to raise prices through a collusive quantity reduction.

IV. Conclusions

Our investigation revealed no evidence of price manipulation at the refining level. No single refiner has a large enough market share to manipulate prices unilaterally through either underinvestment in capacity or reduction of refinery output, and the investigation revealed no evidence that any unilateral manipulation was occurring. The investigation also revealed no evidence that coordination to manipulate prices has occurred. Coordination to manipulate prices through either underinvestment in capacity or reduction of refinery output (through reductions in utilization, unnecessary turnarounds, or changes in refinery output slate) is unlikely, given the difficulty and complexity of successfully coordinating among refiners with different structures and incentives, and given the potential for imports to respond to any coordinated effort to raise prices. To the contrary, the investigation found evidence that the market is behaving competitively, such as testimony that refiners do not take into account the effect of how changing output affects product prices when they make decisions regarding capacity expansions and refinery utilization. Finally, the investigation uncovered no evidence that firms, either unilaterally or in coordination with one another, have manipulated product prices through exporting product from the United States.

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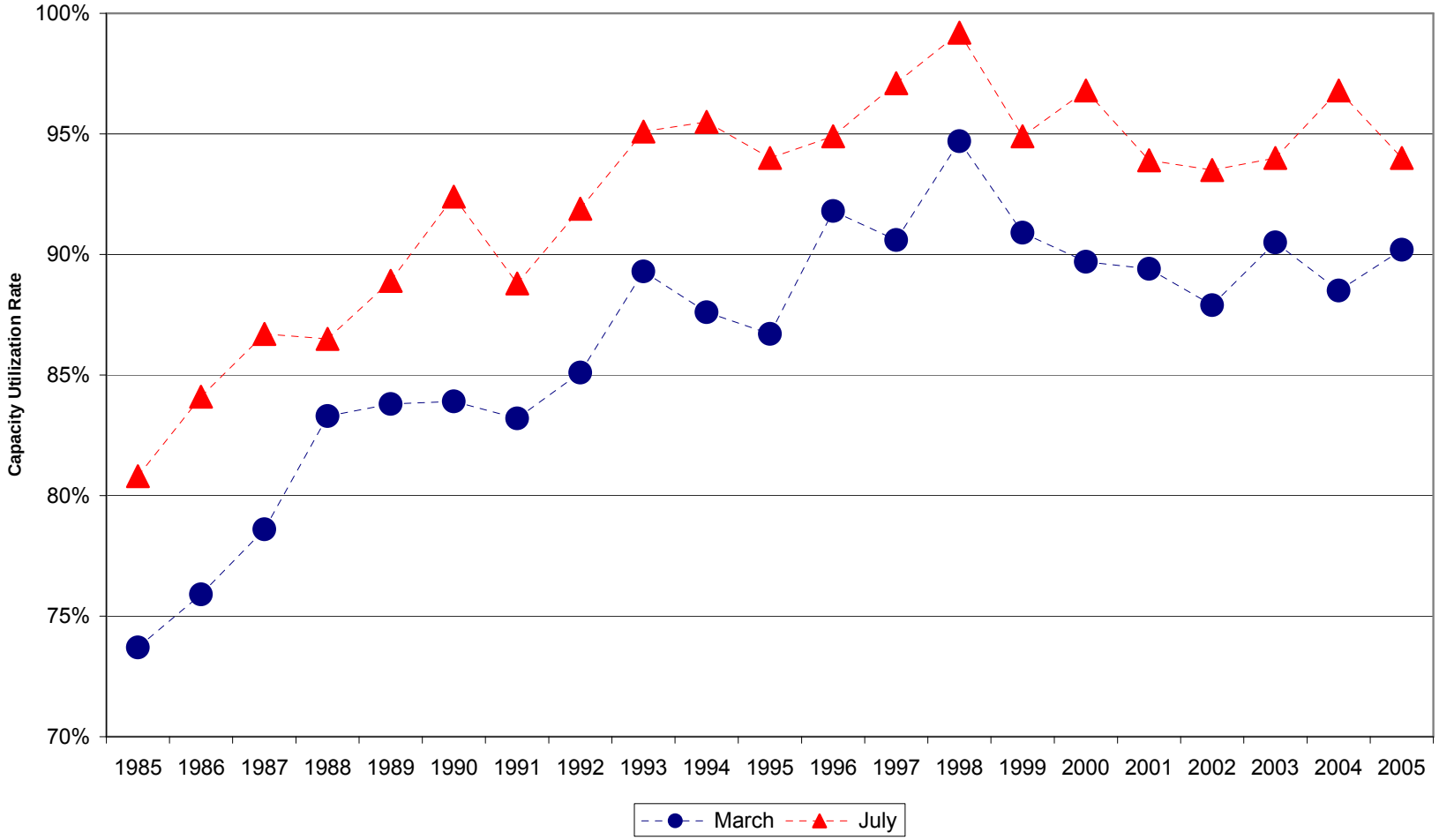
evidence that other refiners could increase output (for example, imports) that would reduce any effect on price that might arise from closing the Bakersfield refinery.") ("FTC Shell Bakersfield Statement").

[73] *See* FTC Shell Bakersfield Statement at 2.

[74] Tosco (now part of ConocoPhillips), and Premcor (now part of Valero Energy), were independent refiners at the times of these sales.

[75] Four of the five refineries sold as part of FTC-mandated divestitures – Exxon's sale of its Benicia, California, refinery to Valero; Shell's sale of its Anacortes, Washington, refinery to Tesoro; Valero's sale of the Martinez, California, refinery to Tesoro; and ConocoPhillips's sale of its Woods Cross, Utah, refinery to Holly Corporation – were to independent refiners. The fifth divestiture was of ConocoPhillips's Denver-area refinery to Suncor Energy. Although Suncor Energy is an integrated firm, it had no prior ownership of a U.S. refinery.

Figure 1-1
U.S. Refinery Capacity Utilization Rate in March and July
1985-2005



Source: Energy Information Administration (EIA).

Table 1-1
Number of Operable U.S. Refineries, Total Capacity, Average Capacity and Utilization, 1996-2005

Year	Number of Operable U.S. Refineries	Total Distillation Capacity (Millions of Barrels per Day)	Average Refinery Capacity (Thousands of Barrels per Day)	Utilization Rate (%)
1996	170	15.33	90.2	94.1
1997	164	15.45	94.2	95.2
1998	163	15.71	96.4	95.6
1999	159	16.26	102.3	92.6
2000	158	16.51	104.5	92.6
2001	155	16.60	107.1	92.6
2002	153	16.79	109.7	90.7
2003	149	16.76	112.5	92.6
2004	149	16.89	113.4	93.0
2005	148	17.12	115.7	90.4

Source: Energy Information Administration (EIA). 1996-2004 data: *Refinery Capacity Utilization, 1949-2004*, EIA, *Annual Energy Review 2004*, Table 5.9. 2005 data: *EIA Petroleum Supply Annual* (2004), Table 36. 2003 and 2004 utilization rates: "Petroleum Navigator," EIA, (http://tonto.eia.doe.gov/dnav/pet/hist/mopueus2A.htm) 2005 utilization rate: annual average calculated from "Petroleum Navigator," EIA, http://tonto.eia.doe.gov/dnav/pet/hist/mopueus2M.htm. Total capacity is in million barrels per calendar day on January 1.

Table 1-2
U.S. and PADD-level Gasoline Production and Imports
(Thousands of Barrels per Day)

	Production						Imports	
Year	U.S.	PADD I	PADD II	PADD III	PADD IV	PADD V	Finished Gasoline	Blending Components
1996	7565	843	1810	3374	250	1286	337	167
1997	7743	959	1823	3397	254	1309	309	200
1998	7892	971	1843	3478	257	1344	311	209
1999	7934	1018	1806	3537	262	1311	382	217
2000	7951	995	1759	3570	270	1357	428	223
2001	8022	1013	1758	3579	268	1403	454	298
2002	8183	1033	1820	3594	281	1455	498	311
2003	8194	1065	1796	3583	285	1465	518	367
2004	8265	1161	1762	3612	285	1446	498	452
% change 1996-2004	9.25%	37.72%	-2.65%	7.05%	14.00%	12.44%	47.59%	170.61%

Source: Energy Information Administration (EIA), Form EIA-810, "Monthly Refinery Report" and Form EIA-814, "Monthly Imports Report."

Table 1-3
U.S. Refinery Summer Utilization Rates

Year	Average Summer Utilization (%)
2001	94.3
2002	93.2
2003	94.6
2004	97.1
2005	94.3

Source: Energy Information Administration (EIA), *Petroleum Navigator: Monthly Refinery Capacity and Utilization*, at http://tonto.eia.doe.gov/dnav/pet/pet_pnp_unc_dcu_nus_m.htm. "Summer" is defined as June, July, and August.

Table 1-4
2005 Capacity Shares of Top Refiners by Geographic Area

Refiner	U.S.	PADD I	PADD II	PADD III	PADDs I and III	PADDs II and III	PADD IV	PADD V	California
Valero	**13.0%**	20.5%	11.8%	14.9%	**15.8%**	14.0%		7.4%	11.5%
ConocoPhillips	12.9%	25.3%	14.0%	10.7%	13.2%	11.7%	9.9%	11.6%	12.7%
ExxonMobil	11.4%		6.7%	**18.5%**	15.4%	**14.9%**	10.2%	4.8%	7.5%
Royal Dutch/Shell	9.9%			15.1%	12.5%	10.4%			12.5%
BP	8.8%		16.0%	5.4%	4.5%	8.7%		15.8%	13.0%
ChevronTexaco	5.9%	4.9%			4.2%	2.8%	7.7%	**17.7%**	**25.1%**
Marathon	5.6%		**17.7%**	3.9%	3.3%	8.1%	12.6%		
Sunoco	5.3%	**40.0%**	6.9%		6.7%				
PDV America	5.1%		4.0%	8.8%	7.3%	6.1%			
Koch	4.5%			3.6%					
Tesoro	3.3%						9.9%	14.2%	8.3%
Total	1.4%	4.5%							
Sinclair	0.9%	7.4%			4.8%		**15.4%**	6.7%	
Other	12.0%	9.3%	31.0%	15.1%	17.1%	18.5%	46.9%	9.2%	9.4%
HHI	797	2713	1104	1080	991	891	935	1194	1391

Source: Energy Information Administration (EIA), *Petroleum Supply Annual* 2004, Table 38, at http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/petroleum_supply_annual/psa_volume1/current/pdf/table_38.pdf. Shares are calculated by operating capacity in barrels per calendar day, as of January 1, 2005, adjusting for Valero's purchase of Premcor and Shell's sale of its Bakersfield, California refinery to Flying J, both of which occurred during 2005. The largest share in each geographic area is in bold. Capacity in joint ventures is assigned as in the 2004 FTC Merger Report, p. 185, footnote 35.

Table 1-5
Refinery Closures, 1995-2004

Year	Owner	Location	PADD	Crude Oil Distil. Capacity (bbl/cd)	Downstream Charge Cap. (bbld/sd)
1995	Indian Refining	Lawrenceville, IL	II	80,750	103,000
	Cyril Petrochemical Corp.	Cyril, OK	II	7,500	0
	Powerine Oil Co.	Santa Fe Springs, CA	V	46,500	100,300
	Sunland Refining Corp.	Bakersfield, CA	V	12,000	2,650
1996♦	Barrett Refg. Corp.	Custer, OK	II	10,500	0
	Laketon Refg.	Laketon, IN	II	11,100	0
	Total Petroleum	Arkansas City, KS	II	56,000	74,840
	Arcadia Refg. & Mktg.	Lisbon, LA	III	7,350	6,700
	Barrett Refg. Corp.	Vicksburg, MS	III	8,000	0
	Intermountain Refg. Co.	Fredonia, AZ	V	3,800	2,000
1997	Gold Line Refg. Ltd.	Lake Charles, LA	III	27,600	18,000
	Canal Refg. Co.	Church Point, LA	III	9,500	2,100
	Pacific Refg. Co.	Hercules, CA	V	50,000	62,400
1998	Gold Line Refining Ltd.	Jennings, LA	III	12,000	0
	Petrolite Corp.	Kilgore, TX	III	600	750
	Shell Oil Co.	Odessa, TX	III	28,300	33,500
	Pride Refg. Inc.	Abilene, TX	III	42,750	40,500
	Sound Refg. Inc.	Tacoma, WA	V	40,000	45,200
1999	TPI Petro, Inc.	Alma, MI	II	51,000	63,300
2000	Calumet Lubricants Co.	Rouseville, PA	I	12,800	26,820
	Berry Petroleum Co.	Stephens, AR	III	6,700	3,700
	Chevron U.S.A. Inc.	Richmond Beach, WA	V	0	6,200
2001	Premcor Refining Group	Blue Island, IL	II	80,515	124,500
2002	Premcor Refining Group	Hartford, IL♦♦	II	64,000	116,700
	American International	Lake Charles, LA	III	30,000	15,000
	Foreland Refining Corp.	Tonapah, NV	V	0	3,000
	Tricor Refining LLC	Bakersfield, CA	V	0	14,400
2003	*none*				
2004	Young Refining Corp	Douglasville, GA	I	5,400	0

Source: Energy Information Administration (EIA), *Petroleum Supply Annual*, various years, Table 48, at http://www.eia.doe.gov/oil_gas/petroleum/data_publications/petroleum_supply_annual/psa_volume1/psa_volume1_historical.html.

♦In 1996, EIA reported that Tosco closed its 175,000 barrel/day Marcus Hook/Trainer, Pennsylvania refinery. We do not include this refinery in the table because Tosco reopened the refinery the following year, following extensive maintenance. As of 2006, it remains open.
♦♦ConocoPhillips purchased some of the assets of the refinery in July 2003 to allow its Wood River, Illinois refinery to process heavier, lower cost crude oil.
http://www.conocophillips.com/newsroom/news_releases/2003releases/073103_woodriver.htm.

Table 1-6
Major Refinery Sales, 1995-2004

Year	Seller	Location	PADD	Crude Oil Distillation Capacity (bbl/cd)	Buyer
1995	Kerr-McGee	Corpus Christi, TX	III	104,000	Koch
1996	BP	Marcus Hook, PA	I	172,000	Tosco
	LL&E Petroleum	Mobile, AL	III	75,000	Shell Chemical
1997	The Uno-Ven Co.	Lemont, IL	II	153,700	PDV America
1998	BHP Hawaii	Ewa Beach, HI	V	93,500	Tesoro
	BP	Lima, OH	II	161,500	Premcor
	Mapco	Memphis, TN	II	140,000	Williams
	Mapco	North Pole, AK	V	196,700	Williams
	Mobil	Chalmette, LA	III	181,600	Chalmette Refining
	Mobil	Paulsboro, NJ	I	152,000	Valero
	Shell	Anacortes, WA	V	142,000	Tesoro♦
	Transamerican Natural Gas	Good Hope, LA	III	110,000	Orion Refining
1999	Equilon	El Dorado, KS	II	105,000	Frontier Oil
	Farmland Industries	Coffeyville, KS	II	112,000	Cenex
2000	BP Amoco	Alliance, LA	III	250,000	Tosco
	Cenex	Coffeyville, KS	II	112,000	Farmland Industries
	Equilon	Wood River, IL	II	288,300	Tosco
	ExxonMobil	Benecia, CA	V	129,500	Valero♦
	Fina	Big Spring, TX	III	58,500	Alon
	Tosco	Martinez, CA	V	156,000	Ultramar Diamond Shamrock
2001	BP	Mandan, ND	II	58,000	Tesoro
	BP	Salt Lake City, UT	IV	58,000	Tesoro
	El Paso	Corpus Christi, TX	III	98,000	Valero
2002	BP	Yorktown, VA	I	58,600	Giant Industries
	Valero	Martinez, CA	V	166,000	Tesoro♦
2003	ChevronTexaco	El Paso, TX	III	99,000	Western Refining
	ConocoPhillips	Commerce City, CO	IV	60,000	Suncor Energy♦
	Orion Refining	Norco, LA	III	155,000	Valero
	Williams	Memphis, TN	II	180,000	Premcor
2004	El Paso	Westville, NJ	I	145,000	Sunoco
	Farmland Industries	Coffeyville, KS	II	112,000	Pegasus Partners
	Motiva	Delaware City, DE	I	175,000	Premcor
	Williams	North Pole, AK	V	210,000	Koch

Source: Energy Information Administration (EIA), *Petroleum Supply Annual*, various years, Table 49, at http://www.eia.doe.gov/oil_gas/petroleum/data_publications/petroleum_supply_annual/psa_volume1/psa_volume1_historical.html.

♦ Divested per FTC consent.

Note: Includes refineries with capacity of 50,000 barrels/calendar day or above. Sales of refineries associated with entire company purchases or mergers are excluded from the table. ConocoPhillips divested the Woods Cross, Utah refinery in a settlement with the FTC during the merger of Conoco and Phillips; this refinery falls below the 50,000 barrel/day criterion for the table.

Table1-6 notes

Mergers/acquisitions:

1997 Ultramar/Diamond Shamrock
Valero/Basis Petroleum
Premcor/Clark Refining & Marketing
Tosco/Unocal

1998 BP/Amoco
Marathon (USX)/Ashland
Pennzoil/Quaker State
Shell/Texaco (Equilon/Motiva joint ventures)
Ultramar Diamond Shamrock/Total Petroleum North America
Amarada Hess/PDV (Hovensa)

1999 Exxon/Mobil

2000 BP Amoco/ARCO
Total/Fina

2001 El Paso/Coastal
Phillips/Tosco
Chevon/Phillips
Valero/Ultramar Diamond Shamrock

2002 Conoco/Phillips

2005 Valero/Premcor

Chapter 2

Bulk Distribution Infrastructure

Staff also considered whether firms have manipulated gasoline prices through control over bulk distribution infrastructure – the system of pipelines and marine vessels used to transport bulk quantities of gasoline and other light petroleum products to product storage terminals, where wholesalers dispense gasoline to trucks that deliver it to individual retail gasoline outlets.[1] In conducting its analysis, staff reviewed public and non-public company documents, conducted voluntary interviews with pipeline and shipping companies and with customers, and reviewed industry reports and studies. In forming its conclusions, staff also drew on information and analysis obtained in prior Commission investigations involving infrastructure assets.

This chapter focuses on the degree to which constraints in each segment of bulk distribution infrastructure could contribute to firms' ability to manipulate gasoline prices. First, the chapter discusses firms' ability to affect product prices by raising transportation rates, curtailing tariff discounts, or forgoing capacity expansion on refined product pipelines. Second, we address how federal regulation has reduced the availability of marine vessels for use in transport of gasoline and other light petroleum products, and whether such regulation may affect product prices. Finally, this chapter discusses the role of product terminals in the distribution chain and identifies factors in certain markets that may enhance a terminal owner's ability to affect product prices.

Direct infrastructure costs (such as pipeline tariffs, marine vessel shipping rates, and terminaling fees) constitute a relatively small portion of the total delivered cost of gasoline. Even a relatively large percentage price increase in the costs of transportation and storage services likely would have only a small percentage effect on the quantity of product delivered to a market and on delivered product prices. More significant concerns stem from constraints on infrastructure that may significantly limit the ability of marketers to supply product to a market, particularly when demand increases or disruptions in other sources of supply cause prices to increase. We examine some of those constraints in this chapter.

Each market has its own infrastructure configuration and competitive environment – including the ownership structure of infrastructure assets, the importance of pipeline transportation relative to marine transportation, and the available capacity of pipelines, ships, and terminals – and thus it is beyond the scope of this chapter to seek to address the infrastructure issues particular to each market in the nation. The Commission often has addressed market-specific infrastructure issues in reviewing mergers[2] and in its prior investigations into gasoline

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[1] Trucking is generally too expensive for long-haul transport of petroleum products. *See* TEPPCO PARTNERS, L.P., 2005 SEC FORM 10-K at 11 (2006).

[2] For example, with respect to pipelines, in the 1984 *Chevron Corp./Gulf Corp.* merger, the Commission required the divestiture of pipeline interests to prevent ownership overlaps between the Colonial and Plantation pipelines. Similarly, the Commission required Mobil to divest its interest in the Colonial pipeline as part of the *Exxon Corp./Mobil Corp.* consent order; and in *Shell Oil Co./Texaco Inc.*, the Commission also required divestiture to prevent the joint venture from owning interests in both the Colonial and Plantation pipelines. In *BP Amoco p.l.c./Atlantic Richfield Co.*, the Commission found that the major producers of Alaska North Slope ("ANS") crude oil owned, or had long-term contracts for, the capacity of specialized tankers that were the only legal source of

price spikes.[3] Part II of this Report discusses the effect of infrastructure specifically with regard to the market response to Hurricanes Katrina and Rita. Specifically, Chapter 5 analyzes the market effects from hurricane-related refinery and pipeline interruptions and the price reaction as infrastructure repairs were completed.

I. Refined Product Pipelines

Staff identified factors that could influence the ability of pipeline owners to manipulate gasoline prices. The analysis showed that regulation and competition provide important constraints on pipeline owners' ability to raise tariffs or otherwise engage in anticompetitive conduct.

A. Background

Pipelines are generally the lowest-cost method of transporting large quantities of refined petroleum products.[4] For example, on average it costs approximately three cents per gallon to move a barrel of gasoline from Houston to New York by pipeline,[5] substantially less than the cost of marine transportation.[6] Not surprisingly, pipeline transportation is the most common method of moving bulk transportation fuels within the United States.[7]

The primary pipeline movements of gasoline and other light petroleum products are from the large concentration of refineries in the Gulf Coast to consuming markets in other areas.[8] In particular, as illustrated in Figure 5-5, the Gulf Coast is the primary supplier of gasoline to the

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marine transport from Alaska to the West Coast. The Commission required that the merged firm divest ARCO's assets related to marine transport of ANS crude oil. Most recently, in *Valero L.P./Kaneb Services LLC*, the Commission required the merging parties to divest terminal and pipeline assets to prevent the merged company from controlling critical infrastructure in the Northeast and Western United States. *See, e.g.*, Federal Trade Comm'n, List of Cases, *available at* http://www.ftc.gov/os/caselist/index.htm.

[3] *See* GASOLINE PRICE CHANGES REPORT at 1-12 (analysis of Phoenix gasoline price spike in August 2003); FEDERAL TRADE COMM'N, FINAL REPORT: MIDWEST GASOLINE PRICE INVESTIGATION (2001) (analysis of Midwest gasoline price spike in spring and summer 2000), *available at* http://www.ftc.gov/os/2001/03/mwgasrpt.htm.

[4] *See* MAGELLAN MIDSTREAM PARTNERS, L.P., 2003 SEC FORM 10-K at 7 (2004), *available at* http://www.magellanlp.com/docs/mmp10k2003.pdf.

[5] *See* RICHARD A. RABINOW, THE LIQUID PIPELINE INDUSTRY IN THE UNITED STATES: WHERE IT'S BEEN, WHERE IT'S GOING 1 (2004) (report prepared for Ass'n of Oil Pipe Lines) ("AOPL REPORT"), *at* http://www.aopl.org/posted/888/Rabinow_report.112734.pdf.

[6] [Confidential material redacted.]

[7] There are approximately 95,000 miles of refined petroleum product pipelines in the United States. In 2002, there were more than 70 refined product pipelines in the United States. In 2001, pipelines accounted for 61% of ton miles of petroleum fuel transportation, up from 44% in 1979. Pipelines accounted for 82% of inter-PADD shipments in 2002. *See* American Petroleum Inst. & Ass'n of Oil Pipe Lines, *Overview: Refined Product Pipelines*, *at* http://www.pipeline101.com/overview/products-pl.html (last visited Apr. 25, 2006); BUREAU OF ECONOMICS, FEDERAL TRADE COMM'N, THE PETROLEUM INDUSTRY: MERGERS, STRUCTURAL CHANGE, AND ANTITRUST ENFORCEMENT 210 (2004) ("PETROLEUM MERGER REPORT").

[8] *See* ALLEGRO ENERGY GROUP, HOW PIPELINES MAKE THE OIL MARKET WORK: THEIR NETWORKS, OPERATION AND REGULATION 4 (2001) ("HOW PIPELINES MAKE THE OIL MARKET WORK"), *at* http://www.pipeline101.com/reports/Notes.pdf; *see also* Chapter 5 of this report for additional detail on interregional flows of gasoline in the United States.

Southeast via the Colonial and Plantation pipelines and the primary source of distillate to the Northeast via the Colonial pipeline. Gulf Coast refineries also are important suppliers of gasoline to the Midwest through the Explorer, Magellan, and TEPPCO pipelines. Midwest refineries also use these pipelines to deliver product to Midwest markets.[9] In the western United States, Kinder Morgan owns a key pipeline system that serves Arizona, California, Nevada, and Oregon. Kinder Morgan is the primary pipeline for transporting transportation fuels to Arizona from both the Gulf Coast and the West Coast.

Pipeline operators ship different products or grades of the same product in sequence, with each "batch" distinct from the preceding or following batch.[10] The sequence of batched products is known as a cycle. Pipelines normally have several cycles per month. Each different product or grade has a "slot" within the cycle; if it misses the slot for a particular product, the shipper must wait until the following cycle. Shippers "nominate" the volume of each product that they want to ship on a pipeline during each cycle. Proration occurs when the aggregate volume nominated for shipment exceeds the pipeline's capacity. During periods of excess demand, the pipeline allocates space to each shipper on a pro-rata basis, typically in accordance with each shipper's historical shipment volumes.[11]

Pipelines compete on the basis of both price (tariff rates and discounts below tariff rates) and non-price factors.[12] Non-price considerations include proximity to end users and customer service (*e.g.*, minimum batch size requirements, delivery frequency, capacity availability, and connections to additional markets).[13]

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[9] Colonial is the largest pipeline system in the United States, with over 5,500 miles of pipe stretching from the Gulf Coast to New York Harbor. It supplies gasoline primarily to the Southeast and Mid-Atlantic areas and heating oil primarily to the Northeast. Plantation is a 3,100-mile system that serves the Southeast and Mid-Atlantic through Washington, D.C. The Plantation and Colonial systems substantially overlap. *See* Colonial Pipeline Co., *About Us, at* http://www.colpipe.com/ab_main.asp (last visited May 2, 2006); *see* KINDER MORGAN ENERGY PARTNERS, L.P., 2004 SEC FORM 10-K at 13-14 (2005), *available at* http://www.kindermorgan.com/investor/kmp_sec_filings.cfm. Explorer is a 1,400-mile pipeline that delivers transportation fuels from the Gulf Coast to more than 70 major population centers in 16 states, including Dallas, Fort Worth, St. Louis, and Chicago. *See* Explorer Pipeline Co., *About Us*, *at* http://www.expl.com/company/default.htm (last visited Apr. 25, 2006). Magellan is a 6,700-mile system that serves 11 states in the Midwest, extending from Oklahoma to North Dakota, Minnesota, and Illinois. *See* MAGELLAN MIDSTREAM PARTNERS, L.P., 2003 SEC FORM 10-K at 3 (2004), *available at* http://www.magellanlp.com/docs/mmp10k2003.pdf. TEPPCO owns and operates a 4,700-mile pipeline system extending from southeast Texas through the central and midwestern United States to the northeastern United States. TEPPCO delivers transportation fuels from the upper Texas Gulf Coast, eastern Texas, and southern Arkansas to Texas, Louisiana, Arkansas, Missouri, Illinois, Kentucky, Indiana, and Ohio. *See* TEPPCO PARTNERS, L.P., 2005 SEC FORM 10-K at 7-9 (2006).

[10] This batching creates "transmix," a hybrid product that is formed when two different products meet. Transmix is essentially waste product that must be re-refined into separate finished products or sold as degraded product. *See* HOW PIPELINES MAKE THE OIL MARKET WORK at 13.

[11] *See* AOPL REPORT at 37.

[12] *See* PETROLEUM MERGER REPORT at 165. This section of the Petroleum Merger Report relates specifically to crude oil pipelines, but the same considerations apply to product pipelines.

[13] *See* MAGELLAN MIDSTREAM PARTNERS, L.P., 2003 SEC FORM 10-K at 7 (2004), *available at* http://www.magellanlp.com/docs/mmp10k2003.pdf; TEPPCO PARTNERS, L.P., 2005 SEC FORM 10-K at 11 (2006).

B. Factors Influencing the Likelihood of Price Manipulation

1. Regulation. Federal (and, to a lesser extent, state) regulation plays a key role in determining a pipeline owner's ability to manipulate pipeline tariffs or other competitive attributes (*e.g.*, withholding capacity). With few exceptions, interstate pipeline tariffs are subject to regulation by the Federal Energy Regulatory Commission ("FERC").[14] Pipelines must obtain FERC approval for tariff rates in all but the relatively few markets in which FERC permits "market-based" rates.[15] Although there is more than one methodology to set rates, most pipelines choose the price index system, which provides for annual tariff adjustments based on changes in the Producer Price Index.[16] Pipelines subject to FERC rate regulation cannot increase rates over the published tariff except under limited circumstances.[17] Pipelines can offer discounts on the tariffs (usually based on volume), but FERC rules prohibit common-carrier pipelines from discriminating among customers. Accordingly, pipelines must offer the same rate to all customers that meet stipulated requirements (*e.g.*, a minimum volume requirement).

Pipeline regulation limits the ability of pipelines to exercise market power by charging higher tariffs or by withholding existing capacity from nominating shippers. Nevertheless, pipeline regulation is imperfect and does not extend to all dimensions of pipeline competition. For example, pipeline regulations do not require a pipeline owner to expand capacity upon shipper request. In addition, pipelines may charge unregulated fees for certain services, such as "pumpover" fees (which accrue when shippers transfer product between different pipelines) or terminaling and storage fees.

2. Curtailing Discounts on Tariffs. Staff investigated whether a regulated pipeline could pursue a strategy of curtailing its discounts off the tariff rate in order to manipulate prices. According to FERC regulations, pipelines can give discounts based on volume commitments and, in certain cases, based on competition. Although they cannot discriminate among shippers, pipelines are under no obligation to provide volume discounts to any shipper. Pipelines could effectively increase prices by eliminating discounts. Although the effect of eliminating pipeline discounts on the price of delivered gasoline would be relatively small – because transportation rates are a small portion of the price of delivered products – the Commission would investigate and take action against a price increase achieved through reduced discounts if it resulted from illegal anticompetitive behavior.

3. Expansion Decisions. In some circumstances, a pipeline owner could attempt to manipulate prices through decisions on whether to expand the pipeline's capacity.[18] Staff did not

[14] *See* AOPL REPORT at 2.

[15] A pipeline can charge market-based rates if it shows that it lacks market power based on criteria established by FERC. *See* PETROLEUM MERGER REPORT at 164; [Confidential material redacted.]

[16] *See* PETROLEUM MERGER REPORT at 164; [Confidential material redacted.]

[17] To increase rates above the level prescribed by the tariff, the pipeline would have to either (1) request a cost-based rate from FERC based on "uncontrollable circumstances" that would make it impossible for the pipeline to recoup its costs under the maximum index rate, or (2) obtain agreement to the higher rate from all shippers. *See* PETROLEUM MERGER REPORT at 160; MAGELLAN MIDSTREAM PARTNERS, L.P., 2003 SEC FORM 10-K at 14 (2004), *available at* http://www.magellanlp.com/docs/mmp10k2003.pdf.

[18] A pipeline can expand the capacity of its system by adding more or larger pumps to the pipeline system, which would increase the product flow rate. A pipeline also can add additional pipe or replace existing pipe with new pipes of larger diameter.

find evidence of such conduct plausibly linked to an incentive to raise product prices. Indeed, even capacity-constrained pipelines may have legitimate reasons for not expanding capacity.

A pipeline's decision to expand capacity is driven by its business judgment regarding the profitability of such expansion. A pipeline may decide independently not to expand the capacity of a constrained portion of its system. Typically, a pipeline does not undertake major expansions until its existing capacity is fully utilized and excess demand causes proration on the pipeline for significant portions of the year. On the other hand, a pipeline may not find it profit-maximizing to remain permanently capacity-constrained, because persistent allocation may encourage customers to seek alternative shippers.[19] Increases in imports or other changes in local supply conditions in a pipeline destination market may make a pipeline reluctant to expand.[20] Uncertainty about the future impact of imports reportedly makes pipelines less inclined to assume the risk of a significant capacity expansion.[21]

For the vast majority of pipelines, the effects of new capacity on the prices at which a pipeline could sell its existing capacity would not reduce incentives to expand a capacity-constrained pipeline.[22] Most pipelines have sold their capacity under long-term contracts; thus, they sell their services at maximum regulated rates and would continue to do so even after the expansion.

In some situations, however, pipeline rate regulation may distort a pipeline's decision whether to expand. For example, Kinder Morgan's regulated tariffs are higher on its West Line (which services Arizona from Los Angeles) than on its East Line (which services Arizona from El Paso).[23] Absent a credible threat that a new entrant would provide pipeline transportation into Arizona, or an increase in the regulated rate on the East Line, Kinder Morgan may have a disincentive to expand capacity on the East Line because such an expansion would shift traffic from the West to the expanded East Line (and thus reduce Kinder Morgan's tariff revenue).[24]

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[19] [Confidential material redacted.]

[20] [Confidential material redacted.]; *see also* NATIONAL PETROLEUM COUNCIL, OBSERVATIONS ON PETROLEUM PRODUCT SUPPLY at I-9 (2004) ("NPC REPORT").

[21] [Confidential material redacted.]

[22] Higher downstream product prices could benefit pipelines to the extent that the higher prices triggered additional volumes into that market and increased the traffic on the pipeline. Without increasing tariffs, however, pipeline owners would not benefit from limiting or restricting volumes shipped on the pipeline, assuming the pipeline's cost of providing the transportation service did not exceed the tariff it charged.

[23] *Compare* SFPP, L.P. Local Pipeline Tariff, F.E.R.C. No. 119 (effective May 1, 2006), *at* http://www.kindermorgan.com/business/products_pipelines/FERC119_E.pdf (East Line) *with* SFPP, L.P. Local Pipeline Tariff, F.E.R.C. No. 120 (effective May 1, 2006), *at* http://www.kindermorgan.com/business/products_pipelines/FERC120_W.pdf (West Line).

[24] Nonetheless, Kinder Morgan has announced plans to expand capacity on the East Line, which suggests that factors other than the tariff differential between the East and West Lines affect Kinder Morgan's strategic decisions. *See* KINDER MORGAN ENERGY PARTNERS, L.P., 2004 SEC FORM 10-K at 12 (2005), *available at* http://www.kindermorgan.com/investor/kmp_sec_filings.cfm; Kinder Morgan Energy Partners, L.P., *2006 Analyst Conference Presentation: Products Pipelines*, Jan. 24, 2006, at 6, *available at* http://www.kindermorgan.com/investor/presentations/2006_Analyst_Conf_03_Products.pdf. Indeed, one firm has publicly announced plans to construct a products pipeline servicing Phoenix from El Paso. *See* Pacific & Tex. Pipeline & Transp. Co., *Contractors Named for El Paso to Phoenix Pipeline*, July 2005, *at* http://www.pacifictexas.com/oildom_0705.asp.

4. Vertical Foreclosure. A pipeline owner that is integrated into downstream bulk supply markets that the pipeline serves could have an incentive to limit pipeline deliveries to the downstream market in order to raise the prices at which it sells gasoline in those downstream markets. If the pipeline is the most cost-effective means of supplying the market, the owner has an incentive to increase wholesale and retail prices by restricting competitors' access to the pipeline and restricting supply to the market.[25] Although FERC regulations might not allow it to exclude a particular shipper, the pipeline could take actions (such as slowing down deliveries) to impede access or increase costs for the shipper. These measures could make it more difficult or costly for shippers to compete in downstream markets.

Staff's investigation uncovered no evidence suggesting that petroleum companies have attempted to manipulate prices in this way. This may be due in part to the fact that the Commission has obtained relief to prevent firms from obtaining control of pipeline assets that they could potentially use to manipulate product prices.[26]

II. Marine Shipment of Refined Products

Staff investigated the role of marine transportation in bulk distribution of refined products by interviewing shipping companies and by reviewing confidential company documents and public sources. The analysis considered factors that affect the likelihood that either a ship owner or an integrated oil company could use access to vessels to manipulate product prices. Although shipping costs add relatively little to total product cost, industry regulation and changes in contracting behavior have created a scarcity of domestic vessels that may enhance opportunities for anticompetitive conduct.

A. Background

After pipelines, waterborne delivery is the most common form of petroleum product transportation within the United States.[27] Marine transportation is a critical component of the bulk distribution system, both to deliver petroleum products imported from overseas and to deliver products within the United States to areas lacking pipeline access.[28] Shippers of gasoline and other light petroleum products hire marine vessels on either a spot or a term basis. As discussed below, charter arrangements involving longer-term contractual commitments have

[25] Whether the pipeline owner is integrated is only a potential problem if tariffs are regulated. Absent tariff regulation, a pipeline monopolist could reap the full benefits of its monopoly directly by charging a price that includes the total value of increased pipeline rates and downstream product prices. Because rate regulation limits the ability to capture all of the monopoly profit, an integrated pipeline owner has a greater incentive to restrict access to the market in order to raise downstream prices.

[26] *See, e.g.*, Valero L.P., FTC Dkt. No. C-4141 (July 22, 2005); Exxon Corp., FTC Dkt. No. C-3907 (Jan. 26, 2001); Shell Oil Co., 125 F.T.C. 769 (1998).

[27] *See* U.S. SHIPPING PARTNERS L.P., SEC FORM S-1 at 85-86 (filed Aug. 12, 2004) ("U.S. SHIPPING S-1").

[28] Marine transport is normally more expensive than pipelines and is possible only for markets located on navigable water. Thus, pipelines are ordinarily the preferred option. *See* U.S. SHIPPING S-1 at 110. The decision to use a given mode of transportation, however, does not depend only on the direct transportation cost (*i.e.*, pipeline tariffs versus vessel shipping rates). Rather, most shippers seek the lowest "landed" cost, which depends in part on the price of the product at each potential source. If the product cost at a source accessible by pipeline is higher than the product cost at a source accessible by water, it might be more economical to choose marine transport even though the direct transportation rates are higher.

become far more common in recent years. The most common form of charter is the time charter, by which the customer obtains the exclusive use of a particular ship for a term of years.[29]

1. Imports and International Shipping. Imports of gasoline and other light petroleum products into the United States have increased substantially in recent years. Between 1999 and 2003, gasoline imports increased from about 6% to about 8% of total domestic product demand. Imports play an especially important role on the East Coast. In 2003, imports accounted for 25% of the gasoline supply in PADD I.[30] According to one industry estimate, imports now account for 60% of New England's total petroleum supply (up from 35% in 1999),[31] with most of this increase coming from Western Europe. European shipments of gasoline to the East Coast more than tripled over recent years, from 139,000 barrels per day in 1999 to 490,000 barrels per day in 2005. Industry analysts expect this trend to continue for the foreseeable future because of Europe's proximity to the East Coast, higher prices in the United States, and excess European gasoline supplies due to increased European use of diesel.[32]

Virtually all imports are transported to the United States on international-flagged vessels. Ownership of international-flagged vessels is relatively unconcentrated,[33] as most tanker companies control a small number of vessels. According to one industry publication, the industry traditionally has been "very fragmented," although a few firms may be "actively consolidating" the industry.[34] Most American oil companies no longer operate their own fleets and thus are rarely vertically integrated into international shipping. Staff has found no evidence that control over international shipping provides an opportunity for gasoline price manipulation.

2. Domestic (Jones Act) Coastwise Trade. Most waterborne movement of gasoline within the United States occurs between or along the coasts by means of oceangoing tankers and barges.[35] Marine shipments among the nation's coastal ports are known as the "coastwise" trade and are governed by the Jones Act, which is discussed in detail below. The primary coastwise trade routes are from Gulf Coast refineries to consumption areas on the East Coast (primarily

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[29] A number of other arrangements are possible, including bareboat charters and voyage charters. A bareboat charter is similar to a time charter, except that the voyage and vessel expenses are included in the fixed rate. In a voyage charter, the customer pays a transportation charge for the movement of a specific cargo between two or more specified points. Under a continuous voyage charter, the customer pays for the ship to make the same runs during the life of the contract. A contract of affreightment provides that the shipper will transport designated cargoes over a specific time period but without designating a specific vessel or voyage schedule. *See* OVERSEAS SHIPHOLDING GROUP, INC., 2003 SEC FORM 10-K at 16 (2004); [Confidential material redacted.]

[30] NPC REPORT at I-9.

[31] [Confidential material redacted.]

[32] *See* NPC REPORT at I-9**;** [Confidential material redacted.]

[33] As of January 2006, Intertanko, the primary trade association for independent tanker owners, had 252 members from 40 nations, with almost 2,500 vessels (crude and product). This represents about 70% of the world's independent tanker fleet. *See* Intertanko, *General Information*, *at* http://www.intertanko.com/about/ (last visited Apr. 25, 2006).

[34] Overseas Shipholding Group, Inc., *International Tanker*, *at* http://www.osg.com/oi_tankermarket.htm (last visited Apr. 25, 2006).

[35] Some river traffic uses barges to deliver gasoline and other transportation fuels to inland locations. The volume of this traffic, however, is much smaller than the coastwise trade, and there has been no suggestion that the availability of river barges presents a bottleneck (except during supply disruptions).

Florida) and, to a lesser extent, the West Coast.[36] Movements to Florida constitute the single largest piece of the coastwise trade, with over half the Jones Act-compliant fleet devoted to this route. Another important segment of the coastwise trade is intra-West Coast, which involves deliveries from Pacific Northwest refineries to Oregon and California, and from Bay Area refineries to Southern California.[37]

B. Factors Influencing the Likelihood of Price Manipulation

1. Regulation and Changing Contractual Environment. Although domestic shipping rates are not directly regulated, two laws significantly affect the availability and cost of domestic shipping: the Merchant Marine Act of 1920 (known as the Jones Act) and the Oil Pollution Act of 1990 (known as OPA-90).[38] The Jones Act requires that all vessels transporting cargo between American ports must (1) operate under the American flag; (2) be built in the United States; (3) be at least 75% owned and operated by United States citizens; and (4) be manned by a United States crew.[39] OPA-90 was passed in response to oil tanker spills and generally requires vessels carrying petroleum products in United States waters to have double hulls.[40] Existing single-hull vessels must be phased out according to a schedule that runs through 2015.[41]

As shipping companies acknowledge, the Jones Act largely insulates them from direct competition by foreign carriers for domestic cargoes.[42] Historically, shipping rates for Jones Act vessels have been substantially higher than for foreign vessels because of higher construction and operating costs.[43] Moreover, OPA-90 has increased prices associated with Jones Act-compliant vessels. Although some vessels have been or are being retrofitted, and although new vessels are slated for the future, retirements of vessels unable to comply with OPA-90 have drastically reduced the size of the current Jones Act fleet. By one measure, Jones Act-compliant

[36] Marine delivery is the primary supply mode for both Florida and New England, neither of which has interstate pipelines or in-state refineries. [Confidential material redacted.]

[37] *See* U.S. SHIPPING S-1 at 86.

[38] *See* Merchant Marine Act, ch. 250, 41 Stat. 988 (1920) (codified at 46 U.S.C. app. § 861 et seq.); Oil Pollution Act, Pub. L. No. 101-380, 104 Stat. 484 (1990) (codified at 33 U.S.C. § 2701 et seq.).

[39] *See* 46 U.S.C. app. § 861 *et seq*.

[40] *See* CROWLEY MARITIME CORP., 2004 SEC FORM 10-K at 12-13 (2005). Typically, the coastwise trade includes both light petroleum products and chemicals. For purposes of this analysis, we consider only shipping used to transport light petroleum products. OPA-90 applies to owners, operators, and charterers of vessels operating in United States waters, which include the navigable waters of the United States out to the 200-mile offshore boundary, and also applies to owners and operators of facilities (*i.e.*, terminals) operating near navigable waters. In addition to the phase-out requirements for vessels, OPA-90 establishes liability for owners and operators for costs arising from oil spills relating to these vessels and facilities.

[41] *See* Seabulk Tankers, *Introducing Our Double Hulls*, *at* http://seabulkinternational.com/ourCompanies/seaBulkTankers/about.htm (last visited Apr. 26, 2006).

[42] *See* CROWLEY MARITIME CORP., 2004 SEC FORM 10-K at 12 (2005). However, to the extent that imports – which are normally delivered by foreign vessels – divert demand away from domestic shipping, the domestic companies compete indirectly with the foreign carriers. One confidential industry study concluded that pressure from imports would limit increases in Jones Act time charter rates. [Confidential material redacted.]

[43] *See* U.S. SHIPPING S-1 at 21.

capacity declined by 63% between 1999 and 2004.[44] A substantial portion of the retired capacity seems likely to not be replaced.[45]

Not surprisingly, shipping rates for Jones Act vessels increased significantly in recent years.[46] The charter rate for a 350,000-barrel vessel has increased from just over $23,000 per day in 2000 to roughly $38,000 per day in 2004.[47] During this period, time charter revenues for ships engaged in the coastwise trade increased by between 40% and 80%, and one industry study predicts that revenues are likely to increase again in 2006.[48]

These regulations have had a corollary effect on how shippers contract for vessels. Until recently, a substantial spot market for Jones Act shipping existed. Largely because of the reduction in the Jones Act fleet caused by OPA-90 requirements, spot business for Jones Act vessels declined substantially in recent years, and the vast majority of Jones Act vessels now are employed under time charter arrangements.[49] A charter arrangement gives the customer exclusive use of the vessel and effectively renders it unavailable for other users. The major oil

[44] In 1999, more than 70 vessels of over 30,000 deadweight tons ("dwt") each were in petroleum service. By June 30, 2004, this number was down to 41, as vessels that did not comply with OPA-90 were removed from service. Of these 41 vessels, 22 must be either removed or retrofitted by January 1, 2015. This represents about 63% of capacity of Jones Act petroleum-carrying ships in excess 30,000 dwt. *See* U.S. SHIPPING S-1 at 90-91. Other environmental regulations also may have contributed to a reduction in the availability of tankers. An EIA analysis notes that tightening pollution controls has decreased the flexibility of the tanker fleet to switch between carrying light products and transporting crude oil. *See* Energy Info. Admin., U.S. Dep't of Energy, *This Week in Petroleum*, Apr. 12, 2006, *at* http://tonto.eia.doe.gov/oog/info/twip/twiparch/060412/twipprint.html.

[45] *See* U.S. SHIPPING S-1 at 91. According to a 2002 analysis, 34% of the total Jones Act barge fleet (83 vessels) and 50% of the tanker fleet are scheduled to be taken out of service by 2015. Between 2002 and 2005, two tankers per year were scheduled for construction, while twelve were to be taken out of service. [Confidential material redacted.] A 2005 analysis from the same source states that eight United States-flagged vessels are scheduled to leave service by 2010, with two scheduled to be built. [Confidential material redacted.] Another 2005 analysis projects that the Jones Act fleet will decline by nearly one million deadweight tons by 2010. *See* DAVID ST. AMAND, THE ECONOMICS OF JONES ACT PRODUCT DISTRIBUTION – DEMAND AND SUPPLY 14 (2005) (presentation to Soc'y of Naval Architects and Marine Eng'rs workshop), *at* http://www.sname.org/committees/tech_ops/O36/02_Workshops/WS20051021/stamand.pdf.

[46] *See* U.S. SHIPPING S-1 at 21; [Confidential material redacted.]; MARITRANS INC. 2004 ANNUAL REPORT 7 (2005), *available at* http://library.corporate-ir.net/library/93/935/93546/items/143019/ar2004.pdf. Prior to 2000, rates fluctuated for a variety of reasons. During the 1980s, both charter rates and spot rates fell as federal price and export controls ended. During the early 1990s, rates increased due to increased military sealift demand resulting from the first Gulf War. After that war, rates declined as the financial liability provisions of OPA-90 caused oil companies to reduce waterborne cargoes in favor of exchanges and increased imports. In addition, as government programs for maritime assistance ended, many ships were displaced from foreign service and moved into the coastwise fleet. [Confidential material redacted.]

[47] *See* U.S. SHIPPING S-1 at 87; [Confidential material redacted.]

[48] [Confidential material redacted.]

[49] According to one analysis, in 1999, 40% of Jones Act vessels with capacities above 16,000 dwt engaged in the coastwise trade (for either petroleum products or chemicals) were in spot service; by 2005, this figure had fallen to 7%. [Confidential material redacted.] In another study, Wilson Gillette estimated that, as of 2004, approximately 89% of the capacity of domestic tank vessels in excess of 30,000 dwt was operating under term contracts of one year or longer. *See* U.S. SHIPPING S-1 at 94 (citing Wilson Gillette study). One domestic shipping company now hires out 80% of its fleet on term charters of two to three years. [Confidential material redacted.]

companies – the largest consumers of Jones Act shipping services – prefer the reliability of charter arrangements that guarantee access to shipping.[50]

The lack of available Jones Act shipping appears to affect product supply. One refiner stated that periodically it must move additional product by water due to refinery turnarounds, seasonal demand changes, and pipeline outages. Although it has charter arrangements for several vessels, this refiner noted that "there really is no spot market for Jones Act ships on the West Coast" and that the number of available Jones Act vessels has "dramatically declined."[51] As a result, the refiner has been unable at times to obtain the additional shipping it needs during supply disruptions. In some cases, the company has been forced to curtail production at a refinery.[52]

Another refiner is concerned that the existing Jones Act fleet is aging and that availability is increasingly tight.[53] Immediately prior to the extension of the Jones Act waiver during the last hurricane season, the refiner tried to move product from the East Coast to the Gulf Coast by water to help relieve supply shortages. Company officials looked for Jones Act vessels to supplement existing charters but found little available capacity.[54] The lack of vessel availability also limited this refiner's ability to supply some affected areas from New York Harbor by barge.[55]

Because oil companies in effect have tied up a large portion of the Jones Act fleet through charters, independent traders that ship on a periodic basis may have trouble finding available shipping vessels. Spot market rates increase as more Jones Act-compliant capacity exits the spot market, making it harder to move a cargo of transportation fuel profitably.[56] This could make it more difficult for traders to respond to price spikes or supply disruptions with domestic waterborne light petroleum product movements (for example, from the Gulf Coast to the West Coast). One trader stated that the cost and unavailability of Jones Act shipping prevented it from shipping petroleum products into Southern California to meet perceived supply needs.[57]

The competitive implications of traders' lessened ability to contract for vessels on a spot basis are unclear, however. Charter contracts may enable the chartering company to respond more effectively to changed market conditions.[58] Nevertheless, staff's investigation did not find

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[50] *See, e.g.*, U.S SHIPPING S-1 at 94.

[51] [Confidential material redacted.]

[52] [Confidential material redacted.]

[53] [Confidential material redacted.]

[54] [Confidential material redacted.]

[55] [Confidential material redacted.]

[56] [Confidential material redacted.]

[57] [Confidential material redacted.]

[58] [Confidential material redacted.] In addition, if opportunistic shipping routinely became more profitable, spot shipping could become available because tanker owners presumably would attempt to capture some of the gains in responding to short-run market opportunities. Some lessees, including oil companies, might make chartered vessels available on a spot basis if it were profitable, although they would take into account the degree to which their market positions might be affected by shipments by independent traders.

evidence to suggest that oil companies used vessel chartering to withhold shipping capacity from independent product traders.[59]

2. Likelihood of Anticompetitive Conduct. Fifteen domestic shipping companies, thirteen of which are unaffiliated with oil companies, operate Jones Act vessels of various types. Most of these companies are on the East Coast, where demand for Jones Act shipping is greatest.[60]

The scarcity of Jones Act shipping and the legal barriers that prevent foreign vessels from transporting product domestically might be thought to increase the probability of anticompetitive conduct by Jones Act vessel owners. Nevertheless, several factors make this less likely. Numerous companies compete for the business of a relatively small number of customers (mostly major oil companies), and the shipping companies compete on the basis of price, service, experience and quality of equipment.[61] Moreover, coordinated action among ship owners would be difficult because most domestic shipping is tied up in term contracts that expire at different times. Although rates likely will continue to increase and availability likely will decrease due to the factors outlined above, this investigation found no indication of conduct by Jones Act ship owners that raises competitive problems.

III. Terminals

Staff considered possible anticompetitive conduct or price manipulation associated with the control of refined products terminals. As described below, control over product terminals (and the storage they provide) seems unlikely to contribute significantly either to anticompetitive conduct or to price manipulation in most geographic areas. Some special concerns, however, warrant closer examination of control over marine terminals on the West Coast.[62]

A. Background

Product terminals – the last link in the distribution chain of bulk supplies of gasoline and other light petroleum products – serve several functions. They receive and store bulk quantities of products delivered to them by pipeline or by marine vessels. They also dispense gasoline (and other light petroleum products) in smaller lots that are delivered by truck to retail outlets. Terminals vary in size and configuration, but most can receive bulk volumes from pipelines, tankers, barges, or adjacent refineries (and some also may receive volumes by rail). At the terminal, products are segregated by grade into separate storage tanks. Terminals also may be equipped to load products for transportation by pipeline or waterborne transit.

Some terminals belong to firms that also have upstream interests in refining or downstream interests in marketing. Firms use these "proprietary" terminals primarily to meet their own marketing needs and service their own customers. A proprietary terminal operator also may sell product to third parties at the terminal's truck rack through various contractual

[59] The Commission often receives complaints when market prices appear abnormally high or when individuals cannot access the infrastructure necessary to resupply an impacted market. The Commission will continue to investigate any complaints of suspicious pricing or other behavior for violations of the antitrust laws.

[60] [Confidential material redacted.]

[61] *See* CROWLEY MARITIME CORP., 2004 SEC FORM 10-K at 9 (2005).

[62] We discuss the role of New York Harbor bulk storage in gasoline futures prices separately in Chapter 4.

arrangements, such as product exchanges or throughput agreements. Often, however, the owner of a proprietary terminal will not store bulk volumes for third parties, or will make such storage available only on an intermittent or short-term basis.

Other product terminals are owned and operated by firms that have no upstream or downstream interests. These "public" terminals provide storage and dispensing services to local marketers, including refiners and jobbers. Customers at public terminals may lease a fixed volume of storage from the operator for a specific period. The terminal operator also will charge its customers various fees for dispensing (or "throughputting") products from storage tanks into outgoing trucks.

Storage costs, throughputting, and other fees contribute relatively little to the final delivered price of gasoline. Although fees vary (particularly by geographic area), the cost of storage typically is on the order of one-half cent per gallon per month, and throughputting fees typically range between one-half to one cent per gallon. Inventory turnover depends on location but typically ranges from about once every 10 days to once every 90 days.[63]

The number of product terminals has declined in recent decades. According to Census Bureau data, the number of petroleum product terminals in the U.S. declined from 2,293 in 1982 to 1,225 in 1997.[64] The most recent available census data confirm this trend, with 1,082 product terminals in the U.S. in 2002.[65] The overall decline in terminals over this period was similar between terminals owned by refiner-marketers and terminals owned by others, although there were some regional differences.[66]

Several factors appear chiefly responsible for consolidation in product terminals. Improvements in supply management techniques, such as just-in-time inventory methods, resulted in declining inventories and reduced the demand for terminal storage.[67] The development of new blending techniques allowed for certain transportation fuels, such as mid-grade gasoline, to be blended from stocks of regular and premium grade gasolines.[68] These changes reduced the demand for terminal storage and encouraged terminal owners to close marginal terminals and increase joint use of underutilized facilities through product exchanges and joint ventures.[69] Nevertheless, terminal usage in specific geographic areas may run contrary to this trend. For example, boutique gasoline mandates that require suppliers to use multiple blending components may increase the demand for terminal storage. Seasonal variations in product specifications or product demand also may affect terminal storage demand.

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[63] *See* PETROLEUM MERGER REPORT at 222. FTC merger investigations have shown that these prices tend to be higher in areas in which terminal capacity and availability are constrained.

[64] *See* PETROLEUM MERGER REPORT at 241; GASOLINE PRICE CHANGES REPORT at 115-16.

[65] *See* UNITED STATES CENSUS BUREAU, 2002 ECONOMIC CENSUS OF WHOLESALE TRADE, SUBJECT SERIES – MISCELLANEOUS SUBJECTS 345 tbl. 12 (2005), *available at* http://www.census.gov/prod/ec02/eco242sxsb.pdf; *see also* UNITED STATES CENSUS BUREAU, 2002 ECONOMIC CENSUS OF WHOLESALE TRADE, SUBJECT SERIES – PRODUCT LINES 735 tbl. 3 & 965 tbl. 5 (2005), *available at* http://www.census.gov/prod/ec02/ec0242slls.pdf.

[66] *See* PETROLEUM MERGER REPORT at 223-24.

[67] *See* PETROLEUM MERGER REPORT at 224. We discuss changes in inventory holdings and practices in Chapter 3.

[68] *See* PETROLEUM MERGER REPORT at 224.

[69] *See* PETROLEUM MERGER REPORT at 224.

Many terminals are owned by firms that do not refine or market product and therefore would not directly benefit from higher gasoline prices. Indeed, some refiners and marketers have exited from terminal ownership in certain locations by selling their terminals to public terminal operators. Examples of such sales include Conoco's and Murphy Oil's sale of six terminal facilities to Colonial Pipeline in 1998; BP Amoco's sale of a Michigan terminal to Buckeye Partners in 2000; Shell's sale of five product terminals to Kinder Morgan in 2003; and Shell's sale of six product terminals to Magellan Midstream partners in 2004.[70] All else equal, these sales tend to reduce the likelihood that refiners or marketers use terminal ownership to manipulate prices. In addition, tax benefits may lead refiners or marketers to transfer ownership and operation of terminals and other assets to affiliated master limited partnerships ("MLPs").[71] These MLPs may have incentives to behave as public terminal operators – rather than to serve the interests of upstream or downstream parties – depending on the corporate relationship with, and control by, the associated refiner-marketer.[72]

B. Factors Influencing the Likelihood of Price Manipulation

The Commission has often taken enforcement measures to prevent competitively problematic acquisitions of product terminals.[73] In these cases, the Commission acted on evidence that the proposed acquisition likely would lessen competition either by eliminating direct competition in terminaling or by increasing the likelihood of coordination among the remaining terminal operators in the market.

Based on staff's extensive familiarity with terminal markets, product terminal competition and available capacity in most areas appear sufficient to limit the potential for anticompetitive conduct. Staff found no evidence to suggest that, in areas with sufficient terminal competition and capacity, terminal operators are likely to engage in price manipulation of terminal services. Of course, when proposed acquisitions involve overlapping nearby terminals, the Commission will continue to evaluate competitive effects on a case-by-case basis.

Nevertheless, in some circumstances, product terminals may be strategically positioned to enhance the likelihood that a terminal owner could profitably affect gasoline prices. California's marine terminals raise these issues in particular. That state's relative geographic isolation and unique gasoline specifications contribute to tight supply conditions that create a tendency toward higher prices and greater price volatility.[74] Tightness in supply leads California refiners to

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[70] *See* GASOLINE PRICE CHANGES REPORT at 116.

[71] For example, in 2001, Valero Energy Corporation transferred pipeline and terminal assets into a limited partnership now known as Valero L.P. *See* Valero L.P., *History of Valero L.P.*, *at* http://www.valerolp.com/AboutValeroLP/History/ (last visited Apr. 25, 2006).

[72] *See* Valero L.P., FTC Dkt. No. C-4141 (June 15, 2005) (Analysis of Proposed Consent Order to Aid Public Comment) ("Given the trend toward master limited partnerships holding midstream petroleum transportation and terminaling assets, Commission staff will continue to scrutinize the ownership and control of limited partnerships in its evaluation of midstream asset transactions.").

[73] *See* PETROLEUM MERGER REPORT at 38. The Petroleum Merger Report identified seven instances since 1981 in which the Commission alleged that an acquisition threatened to reduce competition in a terminaling market. Since the publication of the Petroleum Merger Report in 2004, the Commission has addressed terminaling issues in three other cases: Magellan Midstream Partners, L.P., FTC Dkt. No. C-4122 (Nov. 23, 2004); Buckeye Partners, L.P., FTC Dkt. No. C-4127 (Dec. 17, 2004); and Valero L.P., FTC Dkt. No. C-4141 (July 22, 2005).

[74] *See, e.g.*, Valero Energy Corp., FTC Dkt. No. C-4031 (Dec. 18, 2001) (Analysis of Proposed Order to

depend on waterborne cargoes of foreign and domestic gasoline and blending components to supplement the production by in-state refineries. These imports typically represent about 10% to 15% of California's total gasoline supply.[75] The lack of pipelines to transport bulk supply into the state adds to California's relative isolation from external sources of supply.[76] Moreover, because Nevada and Arizona receive significant bulk supplies from California (via the Kinder Morgan pipeline network), increases in demand in neighboring states further strain California's marine terminal infrastructure. As a result, California's marine terminal hubs in the greater San Francisco and Los Angeles areas are particularly significant gateways for importing gasoline and blending components into the region.

As in other areas, California's terminals enable refiners and other suppliers to build stocks in advance of seasonal changes in demand. In the months that lead up to California's mandated product specification change to summer-grade gasoline, bulk suppliers build inventories of summer-grade gasoline so they have sufficient supply on hand to meet demand when the specifications change. Product traders and other suppliers also may buy summer-grade product cheaply in the off-season and hold it in storage until they can sell it profitably.[77]

California's regulatory environment makes it difficult for terminal operators to secure timely approval for terminal expansion or improvements. Local, state, and federal permitting requirements have proven a significant obstacle to adding California terminal capacity, as the California Energy Commission has acknowledged.[78] At the Los Angeles/Long Beach ports, the problem is exacerbated by land scarcity and by pressure to replace portions of existing product terminal infrastructure with container cargo facilities or open space.

All of these factors contribute to a marine terminal services environment in California that warrants special attention. Because environmental permitting and local land-use regulation make it more difficult for market participants to respond to competitive issues that might arise in a merger transaction, the Commission, accordingly, has taken substantial enforcement measures to prevent acquisitions in markets with these attributes. In obtaining divestitures of key California terminals in connection with the 2005 acquisition of Kaneb by Valero L.P., the Commission alleged that the acquisition likely would substantially reduce competition in terminaling services for bulk suppliers of refining components, blending components, and finished transportation fuels in Northern California. Kaneb owned three marine-accessible Northern California terminals that were used, in part, to store and to distribute light petroleum products via pipeline to other Northern California terminals. The Commission alleged that the

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Aid Public Comment); GASOLINE PRICE CHANGES REPORT at 90-91, 93-94.

[75] *See* CALIFORNIA ENERGY COMM'N STAFF REPORT, 2005 GASOLINE PRICE MOVEMENTS IN CALIFORNIA 32 (2005), *available at* http://www.energy.ca.gov/2005publications/CEC-600-2005-035/CEC-600-2005-035.PDF.

[76] Nonetheless, the isolation of California (and the West Coast in general) from the rest of the country is not absolute, and sufficiently significant market events that occur elsewhere in the U.S. will affect California prices. *See* discussion of the effects of Hurricanes Katrina and Rita on national and regional gasoline prices in Chapter 5 of this Report.

[77] Similar "time arbitrage" or "storage plays" can occur in the Northeast, as traders buy and store gasoline volumes in advance of heightened summer demand, or buy and store distillate volumes in advance of heightened winter demand for home heating oil. [Confidential material redacted.]

[78] *See* CALIFORNIA ENERGY COMM'N, 2005 INTEGRATED POLICY REPORT 15-16 (2005), *available at* http://www.energy.ca.gov/2005publications/CEC-100-2005-035/CEC-100-2005-007-ES.PDF.

acquisition would likely give Valero L.P. an incentive to increase transportation fuel prices by restricting the movement of products into and through the Kaneb terminals.[79] The Commission's consent order required Valero L.P. to divest two California marine terminals to a Commission-approved buyer.

IV. Conclusions

Staff investigated constraints on access to transportation (pipelines and ships) and to terminal storage in order to identify factors that could facilitate price manipulation. Staff found no evidence of such manipulation. Further, staff found, in general, very limited potential for firms to manipulate gasoline prices by exploiting systemic infrastructure constraints in pipelines, marine vessels, or product terminals. Ultimately, the cost of these transportation and storage services adds little to the final product cost. Nevertheless, individual markets may exhibit specific infrastructure concerns, and future mergers or industry practices may give rise to competitive concerns. As the circumstances warrant, the Commission will continue to investigate and demand necessary relief to maintain competition and protect consumers.

[79] *See* Valero L.P., FTC Dkt. No. C-4141 (June 15, 2005) (Analysis of Proposed Consent Order to Aid Public Comment).

Chapter 3

Product Inventory Practices

In 1993, when the average price of gasoline was slightly above $1 per gallon, inventories of gasoline held in the United States were approximately equal to one full month's consumption. Now, with prices approximately three times as high, inventories are generally less than 80% of a month's consumption.[1] The decline in inventories has given rise to concerns that markets for gasoline and other petroleum products are more susceptible to supply and demand shocks than they once were. Moreover, the public release of data indicating that gasoline inventories are below "market expectations" causes the price of gasoline to rise on financial exchanges. These developments give rise to theories that oil companies benefit from low inventory levels and that the decline in inventories over time reflects a strategy to manipulate markets. This chapter assesses those concerns.

The chapter is organized as follows. Section I documents trends in inventorying behavior in the petroleum industry. Section II discusses the factors that, according to the management and economics literature, affect the decisions that firms make about inventories. Section III describes the results of staff's document review and of the hearings and interviews that staff conducted with oil company officials who make inventory decisions. Section IV then draws conclusions about whether any empirical evidence supports concerns that the companies have used inventory levels to increase gasoline prices.

The main conclusion presented in Section IV is that there is no evidence that oil companies have adjusted inventories to manipulate markets. Rather, the decline in inventory levels represents a decades-long trend that includes periods when prices fell as well as the more recent periods when prices increased. The reasons for the decline in inventory levels are well-documented. It is expensive to maintain inventories, and an important aspect of modern manufacturing strategy is to reduce such costs. Evidence from staff's investigative hearings about how large petroleum companies manage their inventories is consistent with the factors emphasized in the management and economics literature. Although the literature on collusion contains some discussion of the role that inventories might play, inventory strategy has not played a prominent role in the analysis of market power, and the literature that addresses this issue in fact focuses more on holding excess inventories rather than on limiting inventories.

I. Gasoline Inventory Trends

The EIA publishes industry-wide inventory data on weekly and monthly bases. These data track product inventory levels since 1945. The EIA measures "primary inventories," which are inventories held at refineries, in pipelines, and at bulk terminals throughout the United States.[2] EIA data show that the total level of motor gasoline inventories relative to the total level

[1] This decline may appear all the more dramatic when one recognizes that a substantial fraction of inventories are needed to keep the system running. For example, gasoline in pipelines counts as part of inventory, and the pipelines must be kept full.

[2] The EIA also defines "secondary" and "tertiary" inventories. Secondary inventories are those at terminals with less than 50,000 barrels of storage capacity and at retail outlets. Tertiary inventories are inventories held by consumers (for example, in automobile tanks). The amount of secondary and tertiary inventories is significant. The

of consumption has been declining for some time. Figure 3-1 shows the ratio of inventories to sales since 1945. As the figure makes clear, this ratio has been in decline since the late 1950s. It fell most rapidly between 1960 and 1970 – roughly 3.2% per year. After holding steady during the 1970s and the early 1980s, the ratio has continued to decline at roughly 2.2% per year from 1984 to the present.

This trend is not related to recent increases in gasoline prices. The real price of gasoline fell sharply between 1981 and 1986 and remained below $1.20 per gallon (in 2004 dollars), excluding taxes, most of the time until 2003.[3] Although much of the decline in the real price of gasoline was attributable to a reduction in the real price of crude oil, increased efficiency in the refining, distribution, and selling of gasoline also contributed to the decline.

Nor is the petroleum sector unusual in exhibiting a decline in the inventory-to-sales ratio. Manufacturing in general experienced a similar decline. Figure 3-2 shows the recent decline in this ratio for all U.S. manufacturing – a pattern that resembles the decline in the ratio for motor gasoline shown in Figure 3-1.[4] Computerization and advances in inventory management may have had an effect on the decline of these ratios in the 1990s.[5]

II. Inventory Overview

Staff's investigation found that firms have at least four reasons for holding terminal inventories. First, they seek to carry enough inventory so as both to provide continuous supply to customers until the next delivery of product[6] and to obtain economies of scale by transporting bulk quantities of product to terminals.[7] Second, firms hold inventories because of anticipated changes in demand or supply.[8] Third, they hold inventories as a precaution against unanticipated market disruptions. Although the specific timing and magnitude of unanticipated future events are unpredictable, firms often plan for these events by looking at historic data.[9] Finally, firms

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National Petroleum Council ("NPC") estimated that in 1988, primary inventories of motor gasoline (231 million barrels) amounted to 68% of total inventories. Secondary and tertiary inventories – 48 million and 63 million barrels, respectively – accounted for the remaining 32%. *See* 4 NATIONAL PETROLEUM COUNCIL, PETROLEUM STORAGE AND TRANSPORTATION: PETROLEUM INVENTORIES AND STORAGE 17 tbl.11 (1989).

[3] GASOLINE PRICE CHANGES REPORT at 43-44.

[4] The data series for non-petroleum industries is not seasonally adjusted.

[5] [Confidential material redacted.]

[6] [Confidential material redacted.]

[7] Although they are the most economical means for transporting product, pipelines generally transport multiple products on the same pipeline. To avoid contamination of the product, a pipeline sends batches of product to the terminal one product at a time.

[8] Demand for refined products is seasonal, increasing for gasoline during the summer driving months and for heating oil during peak winter months. Accordingly, firms begin building stocks of summer-grade gasoline toward the end of winter, which alleviates production constraints in the summer. [Confidential material redacted.] In addition, refineries and pipelines require regular maintenance, which affects supply capabilities. Because firms generally know in advance approximately how much each facility's capacity will be affected, they can plan inventory builds accordingly. Firms therefore increase inventory holdings in advance of planned refinery and pipeline shutdowns in order to maintain uninterrupted service to customers.

[9] For example, it is not uncommon for product deliveries to be late during certain times of the year on pipelines that operate near capacity.

may carry additional inventories to take advantage of future market opportunities that arise when the expected future price is greater than the sum of the current price and storage costs.[10]

The economic literature on strategic inventory holdings suggests that the shrinkage in petroleum product inventories observed over decades is inconsistent with anticompetitive motives. In fact, that literature indicates that anticompetitive motives would give rise to higher, not lower, levels of inventory. For instance, higher inventories can act to deter new entry, in much the same way that excess production capacity acts as such a deterrent.[11] Another economic theory suggests that firms might use higher inventories to deter deviations from a tacit collusion that may occur when prices spike and the members of the collusive group have the greatest incentive to cheat on the agreement.[12]

III. Inventory Management

To understand how petroleum firms decide on the level of inventories to hold, staff obtained testimony from petroleum company employees and reviewed company documents and responses to interrogatory questions. The investigation found that the major petroleum companies maintain sufficient inventory to meet their customers' needs the vast majority of the time.[13] Firms perform detailed analyses of historical data to forecast demand at each of their terminals, updating for changes in their customer mix.[14] Given this estimate of daily demand at a terminal, firms then calculate the requisite amount of cycle and safety stock to hold, incorporating such factors as the average delivery cycle, historical reliability of re-supply, and historical variability in demand.

Petroleum companies believe that they have achieved a consistent service level over time, particularly for contractual customers.[15] Because refiners have many repeated interactions with their customers, they have a strong incentive to provide customers with product reliably, both to maintain existing business and to win future business. Refiners' frequent ownership of the brand names used by retail stations furnishes them with a further incentive to maintain a reliable supply.

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[10] Some petroleum firms stated that they may carry additional inventory for this purpose. [Confidential material redacted.] Most companies do not hedge light products at all [Confidential material redacted.], or they do so on a very limited basis. [Confidential material redacted.] Even for firms that hold inventory for speculative trading, this amount is very small relative to total inventory holdings. [Confidential material redacted.]

[11] *See* Roger Ware, *Inventory Holding as a Strategic Weapon to Deter Entry*, 52 ECONOMICA 93 (1985). Other economic theories suggest an ambiguous relationship between market structure and inventory holdings in an industry. *See, e.g.*, David M. Newbery, *Commodity Price Stabilization in Imperfect or Cartelized Markets*, 52 ECONOMETRICA 563 (1984); Severin Borenstein & Andrea Shepard, *Sticky Prices, Inventories, and Market Power in Wholesale Gasoline Markets*, 33 RAND J. ECON. 116 (2002). While firms in a competitive industry use inventories to minimize fluctuations in price, dominant producers may hold more or less inventory relative to a competitive industry depending upon the responsiveness of demand to price.

[12] *See, e.g.*, Julio J. Rotemberg & Garth Saloner, *The Cyclical Behavior of Strategic Inventories*, 104 Q.J. ECON. 73 (1989).

[13] [Confidential material redacted.]

[14] [Confidential material redacted.]

[15] [Confidential material redacted.]

At the same time, keeping product in inventory represents a substantial cost of doing business for petroleum companies. Two types of costs are particularly important: storage costs and carrying costs. Storage costs – fees paid to terminal owners[16] -- include both a monthly fee based on the number of barrels stored and a throughput fee based on the number of barrels moved into and out of the terminal. Carrying costs represent the opportunity costs of holding product in storage, *i.e.*, the interest that a company forgoes (or pays to creditors) by holding a product in storage rather than selling it in the market immediately. Because holding inventory is not costless, firms have an incentive to reduce the amount of product in inventory.[17] Another limitation on holding additional inventories is related to regulatory constraints: in some markets with limited storage, building additional storage is restricted because of environmental and other regulatory restrictions.

During supply disruptions, firms adopt inventory management practices that seek to keep the market supplied with product for the duration of the outage. If inventory is drawn down to a point at which a product outage is likely, firms may put customers on allocation. This means that suppliers will meet only a percentage of each contractual customer's demand for each day during which new supply is expected to be insufficient. In addition, firms usually will not provide product to customers without contracts because they want to maintain supplies for customers with contracts that specify minimum volumes.[18] Because of such rationing, complete product outages at terminals are rare.[19] In addition to managing the product already at the terminal, firms often seek alternative sources of supply – for instance, by routing product around the disruption or trucking product from nearby terminals that did not experience the disruption.

IV. Theory of Coordinated Product Inventory Reductions

Staff investigated whether firms have coordinated to reduce inventory at the terminal level to elevate prices during market disruptions. A theory that firms are colluding with regard to inventory practices might imply that they engage in consistent inventory holding behavior across time and locations. Although the data have limitations,[20] staff assumed that each firm measures its inventory holdings in a consistent manner across time and then compared patterns

[16] A firm that owns a terminal does not incur a direct storage fee, but instead loses the use of the capital spent to build and maintain the terminal. Because the alternative to owning a terminal is to rent space in a terminal at the market price for storage, the implicit cost to a vertically integrated firm is the same as that for a firm that does not own a terminal.

[17] Several petroleum company representatives testified that refiners are acutely concerned about the substantial amount of capital tied up in inventory holdings. [Confidential material redacted.]

[18] [Confidential material redacted.]

[19] [Confidential material redacted.]

[20] The data, which reflect inventories held in terminals and at refineries, explicitly ignore in-transit inventories (*e.g.*, in pipelines). Moreover, comparisons across firms are difficult. The data include tank heels (the portion of product that must be kept in the tank at all times to avoid the tank collapsing and which is, therefore, not available for sale to customers) because not all companies distinguished tank heels from usable inventory. Indeed, many could not distinguish because (i) even for proprietary tanks, these data are not often kept on a historical basis, and (ii) the concept is murky for commingled storage. In addition, several firms reported negative inventory levels at third-party terminals, which often represents product being borrowed on exchange and explains why some firms report very low average levels of inventory in some years. *See* Figure 3-3.

among firms. Staff analyzed individual firms' inventory holdings in several metropolitan statistical areas and consolidated metropolitan statistical areas ("MSAs" and "CMSAs") as defined by the Census Bureau. Specifically, staff analyzed inventories held by selected firms between 2001 and 2005 in the Atlanta, Baltimore-Washington, Boston, Chicago, Los Angeles, San Francisco, and Seattle areas. The results are presented in Figure 3-3.[21]

The analysis demonstrates that at any point in time there is considerable variation, both within an MSA and across MSAs, among the inventory-to-sales ratios of individual firms. In addition, year-to-year changes in inventory-to-sales ratios tend to vary among the different firms in an MSA; that is, when one firm shows a steadily decreasing ratio over time, there is typically another with a steadily increasing ratio. For example, in Boston, Firm H has a much higher average inventory-to-sales ratio than Firm B, which in turn has a higher average than Firm F.[22] In Atlanta, Firm E and, to a lesser extent, Firm J, have higher ratios than other major petroleum companies operating in the area.[23] In San Francisco, although Firm I reduced its average inventory-to-sales ratio every year between 2001 and 2005, Firm J increased its average ratio substantially over the same period.[24]

Some of this variance arises from the differences among firms' approaches to making "safety" (surplus) inventory calculations.[25] Other differences are related to such things as differences in market shares, in contractual commitments to supply customers with gasoline, and in anticipated and unanticipated downtime across firms. These data do not provide evidence that firms have been coordinating their inventory holdings.

V. Conclusions

Staff examined whether the firms in the petroleum industry have reduced (or otherwise made decisions on) gasoline inventory levels, either unilaterally or collusively, in an attempt to manipulate market prices for gasoline. Our investigation found that petroleum firms recognize and balance the costs and benefits of holding additional inventories, and that these efforts over time to manage inventories more efficiently have led to a steady decline in inventory-to-sales ratios for gasoline. Our investigation found no evidence that firms have been making inventory decisions in order to manipulate prices.

[21] To preserve the confidentiality of the companies' data, we identify the firms only by letters. [Confidential material redacted.]

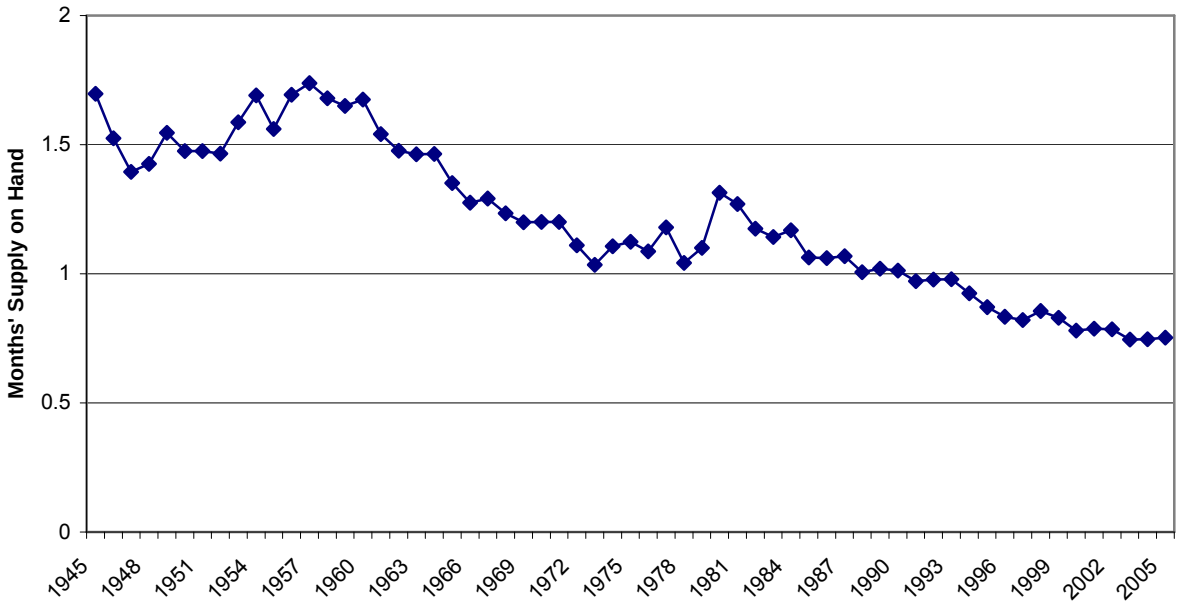
[22] [Confidential material redacted.]

[23] [Confidential material redacted.]

[24] [Confidential material redacted.]

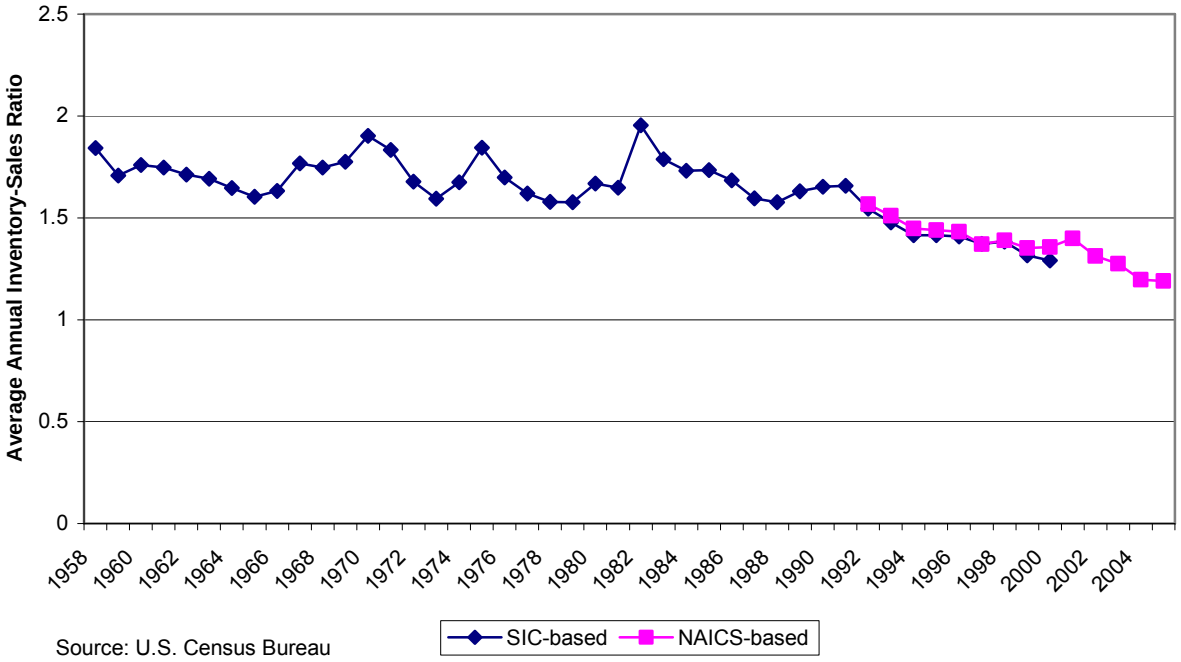
[25] [Confidential material redacted.]

Figure 3-1
Ratio of Average End-of-Month Inventory to Average Monthly Product Supplied (Demand) for Motor Gasoline, 1945-2005



Source: Energy Information Agency (EIA)

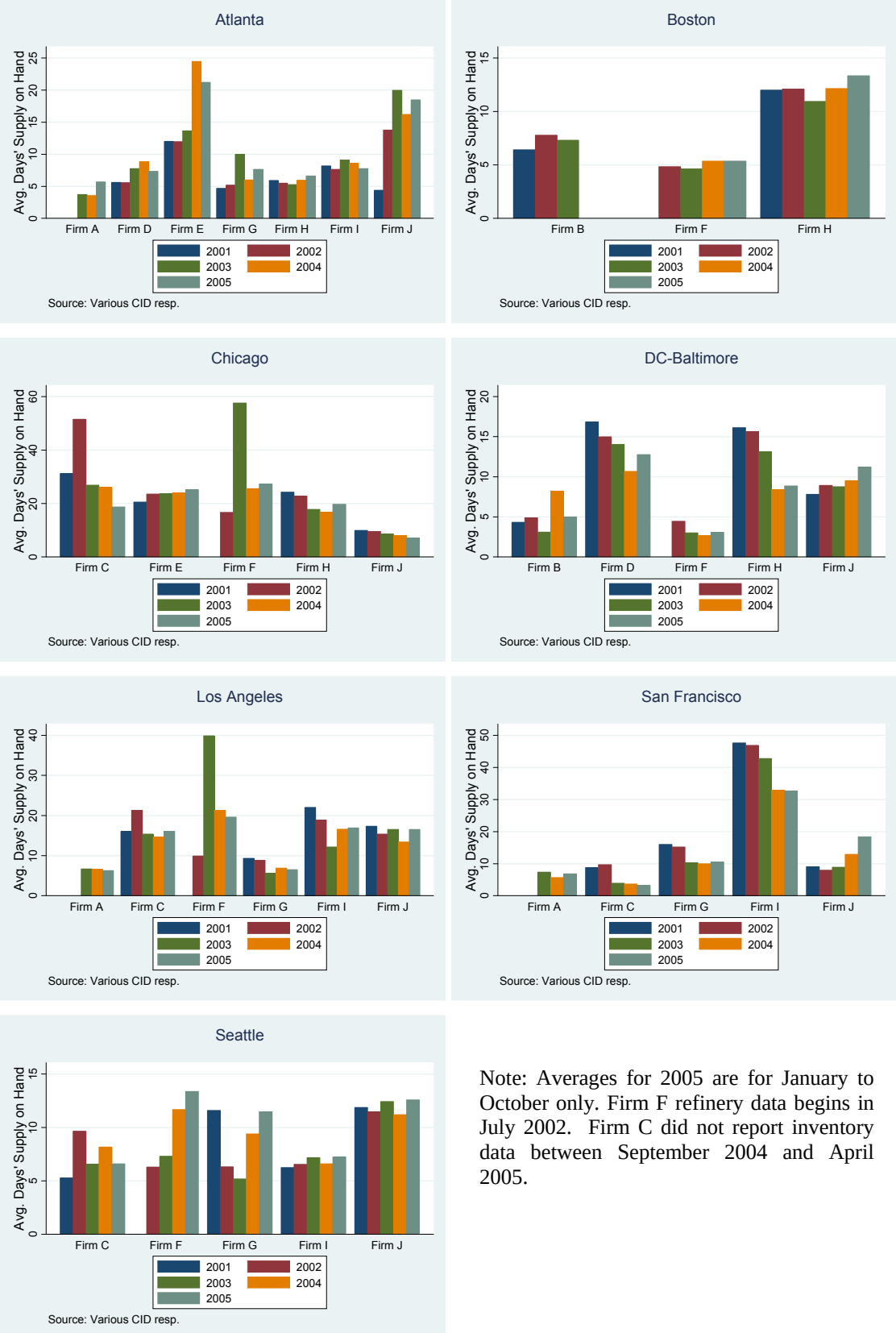
Figure 3-2
Average Annual Inventory-Sales Ratios for Total Manufacturing, 1958-2005 (Not Seasonally Adjusted)



Source: U.S. Census Bureau

Note: Because of the switch of industry classification systems (from SIC to NAICS), data since April 2001 are not directly comparable with historic data. Census has released NAICS-based revisions of data from 1992 to 2001 – for this series, the difference is noticeable but not significant.

Figure 3-3
Selected Firm-level Inventories of Motor Gasoline by Metropolitan Area



Note: Averages for 2005 are for January to October only. Firm F refinery data begins in July 2002. Firm C did not report inventory data between September 2004 and April 2005.

Chapter 4

Other Issues Involving Potential Gasoline Price Manipulation

Staff examined several other possible ways to manipulate gasoline prices. First, staff considered whether firms could manipulate gasoline futures prices profitably through control over storage assets in New York Harbor. Second, staff considered whether firms could manipulate or otherwise exploit publicly reported bulk spot prices. Finally, staff looked for evidence that mergers contributed to potential price manipulation.

I. Manipulation of Gasoline Futures Prices

In response to stories in the media and some industry complaints, staff explored whether gasoline futures prices are susceptible to manipulation through control over certain storage and physical assets.[1] Because the prices of many physical bulk gasoline sales are tied to gasoline futures prices, manipulation of futures prices could affect both physical and futures markets. One type of possible manipulative behavior would be to withhold supply necessary to meet delivery obligations under NYMEX futures contracts from customers with supply obligations. Another type of conduct would be to artificially increase demand for local delivery by buying futures contracts and requiring physical delivery that is not possible because of limited supply from other firms.

NYMEX serves as the major exchange for buying and selling unleaded gasoline futures contracts.[2] The NYMEX unleaded gasoline future contract is a standardized contract for a buyer to accept and a seller to deliver a quantity of reformulated gasoline ("RFG") at a specified price and in a designated location and month in the future.[3] The contract is offered in units of 1,000 barrels (42,000 gallons).[4] At the end of the contract month, the parties may satisfy their obligations to take or make delivery in accordance with the standard delivery terms set forth in the futures contract. In the alternative, parties may offset a futures position by selling or buying

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[1] Given the Commission's lack of expertise in and jurisdiction over futures market manipulation, our investigation concentrated on identifying behavior that violated the antitrust laws. We do not express any view as to whether individual firms may have violated the Commodity Exchange Act ("CEA"), 7 U.S.C. § 1 *et seq.*, which prohibits manipulation of futures markets for commodities, including gasoline. The CEA grants authority to the Commodity Futures Trading Commission ("CFTC") to oversee the functioning of futures markets and bring enforcement measures as appropriate. In addition, as the primary exchange for trading gasoline futures, the New York Mercantile Exchange ("NYMEX") conducts its own market surveillance to identify manipulation of its futures contracts. Congress has requested that the Government Accountability Office begin a study to review the efficacy of this regulatory oversight. *See* Letter from Gloria L. Jarmon, Managing Dir., Congressional Relations, U.S. Gov't Accountability Office, to Rep. John Larson (Aug. 3, 2005), *available at* http://www.house.gov/larson/080305gaocftcinvestigation.pdf.

[2] NYMEX offers futures contracts for other products, including light sweet crude oil, heating oil (known as No. 2 fuel oil), and natural gas.

[3] NYMEX also offers a gasoline futures contract for reformulated gasoline blendstock for oxygenate blending ("RBOB"), which is a gasoline that can be blended with ethanol. The RBOB contract is a newer instrument and currently is less frequently traded than the RFG contract.

[4] NYMEX also offers contracts on 500-barrel lots. *See* NYMEX, *NYMEX miNY Gasoline Futures*, *at* http://www.nymex.com/QU_spec.aspx (last visited Apr. 26, 2006).

an opposite futures position for the same volume and expiration month.[5] Under the NYMEX gasoline futures contract, a seller must make delivery at one of several NYMEX-approved New York Harbor terminals.[6] In practice, however, parties almost always offset their futures positions before the physical delivery or receipt obligation arises.[7]

With this background, staff explored the theory that gasoline prices can be or have been distorted by a "squeeze" in the NYMEX gasoline futures market. A squeeze can occur in a commodity market when the physical commodity's limited availability forces the "shorts" – the selling side of the futures contract that needs product to satisfy its obligation – into offsetting their futures position at higher prices. As a leading case explained:

> There may not be an actual monopoly of the cash commodity itself, but for one reason or another deliverable supplies of the commodity in the delivery month are low, while the open interest in the futures market is considerably in excess of the deliverable supplies. Hence, as a practical matter, most of the shorts cannot satisfy their contracts by delivery of the commodity, and therefore must bid against each other and force the price of the future up in order to offset their contracts.[8]

Because holders of short positions must offset their positions or find product to sell at a NYMEX-designated delivery point, a firm controlling a significant volume of supply at these designated delivery points might be able to charge prices above a competitive level if holders of short positions could not obtain sufficient supply from other sources at these points. As noted above, because NYMEX futures prices serve as a benchmark upon which many other physical bulk sale contracts are based, a squeeze in NYMEX gasoline futures would have repercussions in gasoline markets throughout the nation.

In investigating BP Amoco's acquisition of ARCO, the Commission considered whether the post-merger firm could manipulate futures markets by exploiting its enhanced position in the transportation and storage of crude oil in Cushing, Oklahoma, which is the designated delivery point for NYMEX crude oil futures.[9] As a result of the acquisition, BP would have owned more

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[5] In theory, firms with obligations to deliver gasoline (or crude oil) could potentially avoid such squeezes by agreeing to deliver the product to an alternative delivery point. In practice, this is likely to be difficult and costly. The current set of delivery points specified in futures contracts arose for historical reasons, likely because buyers and sellers frequently traded product at the delivery points and invested in assets (such as terminal storage space) at such locations. Any new delivery point would likely be less accessible to water and pipeline infrastructure and would also likely impose additional costs including land acquisition, terminal storage, permitting, and construction.

[6] NYMEX approves delivery terminals based on the terminal's dock length and water depth at the terminal's dock, to make sure that the terminal can accept marine vessels of a certain size. NYMEX rules govern the process by which parties satisfy their delivery or receipt obligations.

[7] [Confidential material redacted.]

[8] Cargill v. Hardin, 452 F.2d 1154, 1162 (8th Cir. 1971).

[9] *See* BP Amoco p.l.c., FTC Dkt. No. C-3938 (Apr. 13, 2000) (Analysis of the Proposed Consent Order and Draft Complaint to Aid Public Comment), *available at* http://www.ftc.gov/os/2000/04/bpamacoana.htm. The Commission's complaint alleged that the proposed merger would have reduced competition in several markets, including the production and sale of Alaska North Slope crude oil, bidding for Alaskan crude oil drilling rights, pipeline transportation of Alaskan crude oil, the production and sale of natural gas, and crude oil pipeline transportation to and storage in Cushing, Oklahoma. The last is relevant to the current investigation, as the Commission alleged that BP's acquisition of ARCO would have enhanced BP's ability to manipulate crude oil

crude oil pipelines into Cushing and a larger share of crude oil storage capacity in Cushing. Through these assets, BP could have learned when demand for storage of crude oil in Cushing was greatest and could have used that information strategically to reduce other firms' ability to fulfill obligations under NYMEX crude oil futures contracts. BP could have squeezed the crude oil futures market by buying futures contracts for a specific month and requiring delivery of more crude oil in Cushing than could be accommodated by other firms. Holders of short positions – firms that were obligated to provide crude oil in Cushing at the specified month – then would have been obligated to buy crude oil from BP at higher than competitive prices or pay BP an anticompetitive premium to buy back futures contracts. The Commission ultimately obtained relief that required BP to divest ARCO's Cushing pipeline and storage assets.[10]

The current investigation, evaluating issues similar to those raised in *BP/ARCO*, examined whether market conditions relating to gasoline storage at New York Harbor terminals might make gasoline futures amenable to a squeeze. Staff found no evidence of a logistical bottleneck that might enable a firm (or a small collusive group) to restrict gasoline movements into New York Harbor terminals. Indeed, most witnesses contacted in our examination of this question believe that New York Harbor is one of the most liquid markets in the country.[11] New York Harbor terminals receive product by pipeline (including the Colonial Pipeline and the Harbor Pipeline) and by significant waterborne traffic. Although some terminal operators identified occasional constraints at the docks or in available barges, staff did not find evidence to suggest that such constraints were chronic or persistent. Nor could staff conclude that a firm or a collusive group could exploit those constraints in a manner that would result in manipulation of gasoline futures prices.

In furtherance of staff's examination of concentration in storage positions at NYMEX-approved New York Harbor terminals, the Commission issued civil investigative demands to New York Harbor terminal owners and operators. The data identified 28 different firms that lease storage at NYMEX-approved terminals in tanks that are in gasoline service or could be converted to such service without incurring significant capital expense. To measure the concentration of terminal storage control, staff calculated the Herfindahl-Hirschman Index ("HHI")[12] based on storage volumes leased by these firms. Staff determined that the HHI is approximately 700, which indicates that terminal control is an unconcentrated market under the

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futures prices.

[10] *See* BP Amoco p.l.c., FTC Dkt. No. C-3938 (Apr. 13, 2000) (Analysis of the Proposed Consent Order and Draft Complaint to Aid Public Comment), *available at* http://www.ftc.gov/os/2000/04/bpamacoana.htm.

[11] [Confidential material redacted.]

[12] The HHI is a tool that the Commission and the Department of Justice use in reviewing the competitive effects of mergers. The HHI is calculated by summing the squares of the individual market shares of all market participants. The Horizontal Merger Guidelines divide market concentration levels into three categories: markets are "unconcentrated" (HHI below 1000), "moderately concentrated" (HHI between 1000 and 1800), or "highly concentrated" (HHI over 1800). The HHI provides a snapshot of market concentration and, in the context of merger review, the change in the HHI helps the agencies to evaluate the merger's effect on market concentration. It must be emphasized, however, that the Commission does not make enforcement decisions based solely on market share or HHIs. The HHI is only the starting point for competitive analysis. Its analytical significance depends on other market factors, such as ease of entry and likely competitive effects, that require further factual investigation and market analysis.

HHI standards of the Horizontal Merger Guidelines.[13] This evidence suggests that no single firm (or small group of firms) leasing storage at New York Harbor terminals could execute a physical squeeze successfully.[14]

II. Possible Manipulation and Publicly Reported Bulk Spot Prices

Staff also investigated whether firms could use published bulk spot prices to manipulate prices, either by falsely reporting trades to the major price reporting services (OPIS and Platts), or by raising published prices in thinly traded markets by reporting legitimate small-volume trades priced above or below a competitive level.

Bulk spot sales are one-time sales of refined product delivered into pipelines and vessels. Buyers and sellers typically determine the price of a spot sale through a bid-and-ask negotiation process that occurs either directly between buyer and seller or indirectly through brokers. Firms may agree on a fixed price without reference to any price indices. In the alternative, firms may agree on a price that refers to NYMEX futures prices, with the physical trade sometimes hedged by paper positions in the futures markets. Firms also may agree on a price that refers to one or more spot prices as a benchmark. Traders who use reported spot prices as a contract benchmark may negotiate adjustments or differentials to the benchmark that reflect, among other things, the transportation cost differences between the delivery points for the reported trades (*e.g.*, New York Harbor) and the location where the actual delivery takes place.

Spot market traders (including refiners) report prices voluntarily to private reporting services such as OPIS and Platts. The reporting services publish separate spot prices for the leading centers of bulk trading activity: New York City, Chicago, the Gulf Coast, Group 3 (Oklahoma/Kansas), Los Angeles, San Francisco, and Portland. The spot price reporting areas differ significantly by volume of reported transactions. Some bulk markets are "illiquid," meaning that relatively few bulk transactions occur. For example, spot transactions occur on the West Coast much less frequently than in the more liquid Gulf Coast and New York Harbor markets.

One possible theory of manipulation would involve firms that report bulk spot prices falsely or inaccurately. Such behavior might adversely affect competition. For example, a reported price that was actually below the true market price could lead independent traders to import fewer cargoes of gasoline into an area, leading to higher gasoline prices. Such an effect would benefit local refiners, thus conceivably providing them with an incentive to misreport bulk transaction prices for their area. Despite the potential for such conduct, however, staff found no evidence to support this theory. The major price reporting services take steps to ensure that all

[13] This figure does not account for a recently announced capacity expansion by Kinder Morgan. *See Kinder Morgan Energy Partners Invests $57 Million to Expand Terminals Network* (Jan. 12, 2006), *at* http://phx.corporate-ir.net/phoenix.zhtml?c=93621&p=irol-newsArticle&ID=803625&highlight=.

[14] Staff's findings must be read narrowly. We cannot preclude the possibility that isolated instances of gasoline futures manipulation have occurred, or the possibility that future mergers or conduct involving New York Harbor terminals may pose competitive injury to consumers, particularly in light of the highly fact-dependent nature of these inquiries. Instead, we conclude only that staff's investigation did not find evidence of manipulation in gasoline futures markets through the practices identified in this chapter.

reported trades are verifiable and occur on terms similar to those on which other firms would be likely to agree under similar market circumstances.[15]

A different form of price manipulation could occur in thinly traded markets if a firm were to report a sale of a small volume at an artificially high or low price in order to move the published price. A firm would not need to report a false sale price in order to do this. In theory, a firm simply could make a small-volume trade on a slow trading day. If other market activity were insufficient to arrive at a competitive price, that small-volume trade could move the published price. For example, a refiner could agree to buy a small volume on a spot basis at a price above the competitive level. If the transaction moved the published price higher, this would increase the price of any of that refiner's regular contract sales that are based on the reported spot price, and also could increase spot prices for sales the refiner might anticipate making. The refiner's loss on the small-volume trade would be offset by gains on larger-volume contract sales or any spot sales made at the higher price.

Staff did not find evidence of this type of manipulation in witness interviews or high-level company documents. The likelihood that such a trading strategy could be profitable depends on several factors. First, this form of manipulation could occur only in thinly traded markets, where relatively infrequent physical trades enable a single trade (or small number of trades) to move the price. Second, if no single firm controlled a large share of physical supply or a necessary conduit of physical supply, manipulation on a repeated or persistent basis likely would require a tacit or explicit agreement among a suitably small number of firms.[16] Such an agreement would have to enable all participating firms to benefit, while also allowing each participant to monitor the other participants' product supply and prices.[17]

More important, market participants already have taken several key steps to minimize the likelihood of manipulation of reported prices. As mentioned above, the reporting services have

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[15] For example, Platts' policy states that "trading positions and deals that take place in the first hours of the day and are no longer considered repeatable in the afternoon will not be considered for assessment purposes. Platts only takes into consideration arms-length, transparent and verifiable market activity." PLATTS METHODOLOGY AND SPECIFICATIONS GUIDE, PETROLEUM PRODUCTS & GAS LIQUIDS: U.S., CARIBBEAN AND LATIN AMERICA 2 (2005), *available at* http://www.platts.com/Oil/Resources/Methodology%20&%20Specifications/usoilproductspecs.pdf?S=n. Similarly, in publishing spot prices, OPIS relies on input from the trading community and on pricing relationships between products "to help us assess a viable 'get done' level for an illiquid product." OPISnet.com, *Methodology, at* http://opisnet.com/methodology.asp (last visited Apr. 26, 2006).

[16] The success of any anticompetitive agreement depends, in part, on the ability of firms to monitor adherence to the agreement and to punish deviations from it. Accordingly, proposals to require additional information disclosures, such as spot transaction quantities and the identity of transacting firms, could facilitate anticompetitive coordination among firms.

[17] In the absence of such an agreement, if a firm found a buyer willing to pay more than the market price, others in the market with excess inventory would quickly attempt to make sales at the new high price. This would create a more liquid trading market, leading to rapidly falling prices. Thus, in spite of possible occasional opportunities for firms to engage in one-time tactical manipulation of reported prices, some form of agreement among participants would seem necessary for this manipulation scheme to succeed on a prolonged basis.

Evidence of this form of manipulation possibly could exist at the level of individual company traders, in individual trader call logs, or in recordings or transcripts of conversations between traders. The time and resource constraints of this investigation did not afford staff the opportunity to review the massive volume of documentation necessary to rule out this possibility.

adopted protocols to guard against the publication of non-repeatable transaction prices. In addition, buyers and sellers may be able to protect themselves through pricing provisions in their contracts. For example, a firm may agree to a pricing term based on an average spot price over several days (*e.g.*, a three-day OPIS mean price). Alternatively, a contract's price may combine reported spot prices with other price indices (such as NYMEX prices) as an upper or lower pricing limit. These measures could help minimize the impact of potential manipulation of reported prices.

III. Merger Effects

Staff looked for evidence that might have suggested that past consummated transactions contributed to potential price manipulation. In addition to reviewing all of the company documents obtained in this investigation to determine if any irregular pricing behavior could be attributed to past mergers or joint ventures, staff specifically required that firms produce any formal internal report or study analyzing the effects of any past merger or joint venture involving the firm or other firms. This review yielded no evidence that past mergers contributed significantly to the potential for price manipulation. No firm produced any retrospective analysis of the price effects of a past merger, although some firms submitted documents to support claims of cost savings and efficiencies generated from past mergers.[18] These transaction-related cost savings often required years for full realization.

IV. Conclusions

In conclusion, Commission staff found very limited potential for price squeezes in gasoline futures markets. Staff found no evidence of logistical bottlenecks or storage constraints that might allow one firm (or a small collusive group) to restrict access to gasoline movements into New York Harbor, the designated delivery point for the gasoline futures market. Staff also found no evidence that firms were manipulating published bulk spot prices to manipulate prices. A review of the evidence does not suggest that past mergers or acquisitions have enhanced firms' ability to engage in price manipulation. On the other hand, the evidence suggests that cost savings resulting from a merger or an acquisition would not be fully realized until several years after consummation of the transaction.

[18] The cost savings described in company submissions tended to be in four broad groups: reduced overhead, integration of operations, logistics, and adoption of best practices.

PART II

GASOLINE PRICES IN THE AFTERMATH OF HURRICANE KATRINA

In 2005, two major hurricanes devastated the U.S. Gulf Coast, inflicting widespread loss of life and property. Hurricane Katrina made landfall in eastern Louisiana on August 29. One month later, Hurricane Rita came ashore in eastern Texas/western Louisiana on September 24. In addition to the tragic loss of life and the general destruction of property, both hurricanes inflicted significant damage to assets that produce, refine, and distribute petroleum and petroleum products.

This part of the Report examines developments in gasoline markets after Hurricanes Katrina and Rita with a particular focus on gasoline prices. This part explores one of the striking phenomena about prices after the hurricanes, which was an increase in the dispersion of prices at virtually all levels, ranging from averages across very broad regions (*e.g.*, prices on the East Coast went up much more than prices on the West Coast) to across gas stations within a particular city. Chapter 5 reviews market conditions and prices at the national and regional levels and then quantifies the size of the average price increases nationally and regionally, the variation in these average price increases across regions, and the pace at which prices returned to pre-hurricane levels. It also assesses whether the magnitude of the market responses was what would be expected from competitive markets or, alternatively, whether it provided evidence of market manipulation. Chapter 6 focuses on pricing within individual city areas to understand why some wholesalers and retailers increased prices substantially more than others. Chapter 7 provides an economic analysis of possible post-Katrina price gouging by refiners, wholesalers, and retailers. Chapter 8 summarizes 2004 tax expenditures, as defined by the 1974 Congressional Budget and Impoundment Control Act, for companies with sales in 2004 of gasoline and petroleum distillates in excess of $500 million and selected retailers. Chapter 9 presents the estimated effects of the higher gasoline prices after the hurricanes on consumer purchasing power and briefly discusses the possible effects of higher gasoline prices on overall economic activity.

Chapter 5

National and Regional Impact of Hurricanes Katrina and Rita on Gasoline Prices

I. Introduction

There is no question that the hurricanes reduced gasoline supplies and that gasoline prices increased as a result. Figure 5-1 shows the average retail price (without taxes) of regular gasoline in six cities in different parts of the United States after Katrina and Rita.[1] When Katrina hit, prices increased by about 50 cents per gallon on average in these cities virtually immediately. These price increases varied substantially across these cities.[2] Just prior to Rita, however, the post-Katrina price increases largely, but not entirely, dissipated. When Rita hit, prices again increased. The size of the post-Rita price increase was smaller than after Katrina, about twenty cents per gallon on average. As with Katrina, the increases were much larger in some cities than in others. Prices returned to pre-Katrina levels within four weeks after Rita and to pre-summer levels by the end of November.

Without direct evidence that industry participants engaged in collusion or other anticompetitive conduct, staff examined whether the size and duration of the price increases after the hurricanes were consistent with behavior in competitive markets or, alternatively, whether the price increases were evidence of anticompetitive behavior. Staff first looked at the hurricanes' impact on nationwide gasoline supplies. Given that impact, staff asked how much gasoline prices would likely increase on average nationally, assuming competitive behavior. Second, staff considered the regional impacts of the hurricanes on gasoline prices to determine if the differences in regional prices were consistent with the differences in regional supply reductions and the cost of transporting gasoline to the regions. Finally, staff considered the market's supply responses to the higher prices, specifically refinery production outside the affected areas in the Gulf, changes in gasoline inventory levels, and trends in the levels of gasoline imports to the United States, to assess whether the supply responses were consistent with competitive or anticompetitive behavior.

Staff examined two types of evidence. First, staff reviewed company documents, deposition transcripts, and sworn, written answers from refiners and other market participants. From these, staff evaluated individual company behavior after the hurricanes, including each company's explanation for its behavior. Of course, the market includes many suppliers, all of whom make countless decisions about what prices to charge, how much to produce, how much to import, how to allocate supplies, and so on. Staff therefore analyzed industry-wide conditions and pricing data to obtain a broad picture of what happened before and after the hurricanes.

Based on the evidence, staff tested two hypotheses: that the price increases (1) arose out of a competitive market, or (2) resulted from anticompetitive behavior. Under both explanations, prices increased as a result of reduced supply, but the explanations differ as to the reasons for

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[1] Staff examined retail gasoline pricing data for the period from June 1, 2005 to November 30, 2005, from the Oil Price Information Service ("OPIS"). Figure 5-1 also shows gasoline prices pre-Katrina. Throughout the summer leading up to the hurricanes, average prices increased by about 50 cents per gallon in those cities. Section VII, describing gasoline inventories, discusses events influencing summer prices before the hurricanes.

[2] In Baltimore, for example, the average retail price went up 65 cents per gallon on average. In Los Angeles, it went up about 20 cents per gallon.

that reduction. Under the competitive behavior hypothesis, the supply reduction would be due to damage from the hurricanes. The ensuing price increases would have provided an incentive to increase supplies to affected areas, where possible. In this scenario, suppliers might increase capacity utilization in plants not damaged by the hurricane, perhaps by delaying scheduled maintenance. Suppliers could divert supplies from areas with lower prices to areas with higher prices, in addition to increasing imports from outside of the country. Suppliers might also sell gasoline from inventory at a faster pace than they would otherwise, resulting in a reduction of inventories below normal levels.

The second hypothesis — that of price manipulation — predicts that suppliers would reduce gasoline supply below those reductions attributable to hurricane damage. In this scenario, suppliers might accumulate inventories, even when futures prices suggested that storage was not profitable. Suppliers might also choose the post-hurricane period to conduct refinery maintenance that had not been scheduled previously. In contrast to behavior in a competitive market, such behavior would further reduce gasoline supplies and raise concerns about price manipulation.

As set forth below, the evidence is remarkably consistent with the competitive explanation. Based on well-established economic principles, the price increases were roughly in line with increases predicted by the standard supply and demand paradigm of a competitive market. The regions with the largest price increases were those where supply was most greatly affected by the hurricanes, and the regional price differences were consistent with both the reduction of supply to particular regions and the cost of diverting supply from one region to another. Inventory levels dropped as suppliers increased gasoline sales to the market. Capacity utilization went up as refiners deferred refinery maintenance. Imports increased as suppliers brought additional supplies to the United States. Moreover, the effects of the hurricanes on prices largely disappeared within four weeks after Rita. Staff found no evidence suggesting that the recovery should have occurred in a shorter timeframe; indeed, in light of the extent of the destruction, the evidence indicates that suppliers responded quickly to the supply disruptions caused by the hurricanes.[3]

II. The Hurricanes' Nationwide Impact on Gasoline Supply

A. Katrina

Upon landfall, Hurricane Katrina immediately and significantly affected crude oil supply to Gulf refineries. Katrina resulted in the shut-in of over 95% of offshore Gulf crude oil production, or roughly 27% of total U.S. crude production. The Louisiana Offshore Oil Port ("LOOP") was closed on August 28, disrupting crude oil imports and resulting in an estimated 32% reduction of total U.S. crude oil import capacity.[4] LOOP facilities provide tanker

[3] Section VI discusses output responses from refiners unaffected by either Katrina or Rita to determine if refiners reduced output following the hurricanes, contrary to behavior expected in a competitive market. As discussed in that section, major refiners increased output overall in the regions most significantly affected by the hurricanes (*i.e.*, the regions with the highest prices), which suggests that the refiners were not acting in an anticompetitive manner. *See also* Chapter 1-1 (discussing theories of price manipulation or anticompetitive behavior by refiners).

[4] The U.S. Department of Energy's Office of Electricity and Energy Reliability published daily situation reports describing the impact of both Hurricanes Katrina and Rita on the energy infrastructure. These reports

offloading, storage, and staging for crude that is distributed to Louisiana, Texas, and Midwest refineries through connected pipelines, and the LOOP is the key crude oil supply for many refineries in the Gulf Coast region.[5] Complicating matters, pipelines and terminals used to bring crude oil to Louisiana and Mississippi refineries were also damaged. Moreover, refineries in the Midwest were affected by the closure of the Capline, a pipeline that brings crude oil from the Gulf to the Midwest.

Katrina also forced the shutdown of nearly a dozen refineries in eastern Louisiana, Mississippi, and Alabama.[6] At their peak, these refinery closures represented a loss of over 28% of Gulf refining capacity and a loss of approximately 13% of total U.S. refining capacity.[7] In addition to the closure of the Capline crude oil pipeline, Katrina forced the closure of the two significant product pipelines serving the East Coast, Colonial and Plantation, due to the loss of electrical power to multiple pumping stations.[8] Table 5-1 summarizes the refinery and pipeline outages in the aftermath of Katrina and Rita.[9]

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provide much of the basis for the factual description provided in this section. *See, e.g.*, Office of Electricity and Energy Reliability, U.S. Dep't of Energy, *Hurricane Katrina Situation Report #11,* Aug. 30, 2005 (4:00 PM EDT), *available at* http://www.oe.netl.doe.gov/docs/katrina/katrina_083005_1600.pdf (describing disruptions to crude oil supply and refinery and pipeline operations caused by Hurricane Katrina as of August 30, 2005).

[5] [Confidential material redacted.]

[6] Some of these refineries, such as Motiva's refineries in Norco and Convent, Louisiana, were shut down due to a lack of electricity and storm damage but returned to operation fairly quickly. Other refineries, such as Chevron's Mississippi refinery and Murphy's Louisiana facility, were shut down due to damage from the hurricanes and did not return to normal operations for months. Still other refineries, such as Exxon's Baton Rouge and Valero's St. Charles, Louisiana refineries, had to run at reduced rates due to insufficient crude oil. *See* Office of Electricity and Energy Reliability, U.S. Dep't of Energy, *Hurricane Katrina Situation Report #11,* Aug. 30, 2005 (4:00 PM EDT), *available at* http://www.oe.netl.doe.gov/docs/katrina/katrina_083005_1600.pdf.

[7] *See* ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, DOE/EIA-0340(04)/1, PETROLEUM SUPPLY ANNUAL 2004, at 78-79 tbl.36, *available at* http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/petroleum_supply_annual/psa_volume1/current/pdf/volume1_all.pdf. This is further detailed in the U.S. Department of Energy's Office of Electricity and Energy Reliability daily reports from August 28, 2005, through December 23, 2005. *See* Office of Electricity and Energy Reliability, U.S. Dep't of Energy, *Hurricane Katrina, at* http://www.oe.netl.doe.gov/hurricanes_emer/katrina.aspx (last visited May 7, 2006); Office of Electricity and Energy Reliability, U.S. Dep't of Energy, *Gulf Coast Hurricanes, at* http://www.oe.netl.doe.gov/hurricanes_emer/gulf_coast.aspx (last visited May 7, 2006).

[8] *See How Katrina Turned Off the Oil,* BUS. WK., Aug. 31, 2005, *at* http://www.businessweek.com/bwdaily/dnflash/aug2005/nf20050831_0413.htm. Colonial remained operational north of Greensboro, so marketers north of Greensboro could pull products already in this section of the pipeline until service to the southern ends of the line resumed. In addition, logistical constraints on storing or transporting product hampered efforts by refiners to operate at full production capacity. Refineries that do not have dock access must move their product out via pipeline or truck. Therefore, during the major pipeline outages caused by Hurricane Katrina, several refiners had difficulty finding outlets for their product. Once their on-site storage units were full, some refineries were forced to operate at reduced rates until alternative outlets could be found. [Confidential material redacted.]

[9] The refinery and pipeline outages summarized in Table 5-1 can be found in situation reports published by the U.S. Department of Energy's Office of Electricity and Energy Reliability from August 28, 2005, through December 23, 2005. *See* Office of Electricity and Energy Reliability, U.S. Dep't of Energy, *Hurricane Katrina, at* http://www.oe.netl.doe.gov/hurricanes_emer/katrina.aspx (last visited May 7, 2006); Office of Electricity and Energy Reliability, U.S. Dep't of Energy, *Gulf Coast Hurricanes, at* http://www.oe.netl.doe.gov/hurricanes_emer/gulf_coast.aspx (last visited May 7, 2006).

As shown in Figure 5-2, national refinery utilization decreased by 10% in the week after Hurricane Katrina compared to the week before the storm.[10] Figure 5-3 shows that total national production of gasoline fell by 8.4%, a decline entirely attributable to decreased production on the Gulf Coast. Gasoline production in the Gulf Coast region alone fell by over 20% during the week after Hurricane Katrina. Gasoline imports also decreased in the first week after Katrina, as is not unusual in late August and early September. Figure 5-4 illustrates the changes in import levels for this period over a five-year range. Imports are typically scheduled weeks in advance of their arrival, thus the import level immediately following the hurricane reflected pre-hurricane market conditions. Indeed, imports increased in subsequent weeks, in response to post-hurricane supply conditions.[11]

B. Rita

Increases in gasoline imports and the resumption of refineries damaged by Katrina caused gasoline prices to fall significantly from their peak by the time Hurricane Rita came ashore. Crude importing operations and domestic pipeline distribution systems also had returned to normal operation by September 24. Nonetheless, domestic crude production and refining infrastructure were still suffering from Katrina. For example, about 58% of Gulf crude production was still shut-in four days after Rita made landfall.[12]

Rita had a larger direct effect on gasoline production capacity than Katrina. Rita hit the much larger refining centers in the Louisiana area of Lake Charles and the Texas areas of Port Arthur, Houston, and Corpus Christi. The fourth column in Table 5-1 shows the main refineries affected by Hurricane Rita. Rita forced the closure of twenty Texas and Louisiana refineries accounting for more than four million barrels a day, or over 26%, of United States refining capacity.[13] Because of the refineries still affected by Katrina and the new damage from Rita, overall domestic refinery utilization for the week ending September 30 plummeted from 87% to 70%, as shown in Figure 5-2.[14] As Figure 5-3 shows, this decline was entirely due to the decline in Gulf Coast output.[15]

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[10] Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Weekly Inputs, Utilization & Production, at* http://tonto.eia.doe.gov/dnav/pet/pet_pnp_wiup_dcu_nus_w.htm (last modified May 3, 2006) (showing refinery utilization for the U.S. and smaller regions within the U.S., including the Gulf Coast).

[11] Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Weekly Imports & Exports, at* http://tonto.eia.doe.gov/dnav/pet/pet_move_wkly_dc_NUS-Z00_mbblpd_w.htm (last modified May 3, 2006).

[12] Office of Electricity and Energy Reliability, U.S. Dep't of Energy, *Hurricane Katrina Situation Report # 39,* Sept. 30, 2005 (3:00 PM EDT), *available at* http://www.oe.netl.doe.gov/docs/gulf_coast/gulf_093005_1500.pdf.

[13] ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, DOE/EIA-0340(04)/1, PETROLEUM SUPPLY ANNUAL 2004, at 78-79 tbl.36, *available at* http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/petroleum_supply_annual/psa_volume1/current/pdf/volume1_all.pdf; Office of Electricity and Energy Reliability, U.S. Dep't of Energy, *Gulf Coast Hurricanes Situation Report #5,* Sept. 28, 2005, *at* http://www.oe.netl.doe.gov/hurricanes_emer/gulf_coast.aspx.

[14] Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Weekly Inputs, Utilization & Production,* U.S. Production of Finished Motor Gasoline, *at* http://tonto.eia.doe.gov/dnav/pet/pet_pnp_wiup_dcu_nus_w.htm (last modified May 3, 2006).

[15] For the week ending September 30, Gulf Coast gasoline production was less than that in the Midwest. Normally, Gulf Coast production is almost twice the amount produced in the Midwest.

Only four of the twenty refineries that closed as a result of Rita returned to normal operations within ten days after the hurricane.[16] By contrast, roughly half of the refineries that closed as a result of Katrina resumed operations within days, and many of the remaining refineries returned to normal operations within two weeks.[17] For the week ending October 7 (two weeks after Rita), refinery outages associated with Rita accounted for as much as 1.6 million barrels per day of lost refining capacity. This was in addition to the nearly three-quarters of a million barrels of lost production capacity associated with refineries still closed after Katrina.[18] In total, these outages represented a capacity loss of 2.36 million barrels per day, which was over 14% of total U.S. production capacity.[19] Although some refineries resumed operations during the week ending October 7, Gulf Coast gasoline production did not recover substantially until the following week, as shown in Figure 5-3.

Thus, Rita (compounded by the continuing effects of Katrina) significantly affected gasoline production, not only because of the magnitude of the disruption, but also because of the time that damaged refineries operated below full capacity. Further, Rita interrupted service on several major product lines to both the East Coast and the Midwest. While Katrina's effects on product pipelines were limited to those serving the Eastern Seaboard (Colonial and Plantation), Rita affected the Colonial pipeline, as well as the TEPPCO, Centennial, and Explorer pipeline systems serving the Midwest from the Gulf.[20]

The price effects of Rita, however, were not nearly as large as those of Katrina. The ongoing industry response to Katrina mitigated the price effects from Rita. As described below, primarily an increase in imports and, to a lesser degree, gasoline output from unaffected refineries helped to alleviate the supply shortages caused by Rita.

III. Post-Hurricane Increases in National Average Prices

To assess the magnitude of any potential price manipulation, staff first measured how much national gasoline prices, on average, would likely increase if the industry was behaving competitively.[21] In a competitive market, of course, the price of any product reflects the

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[16] *See* Table 5-1; Office of Electricity and Energy Reliability, U.S. Dep't of Energy, *Gulf Coast Hurricanes*, *at* http://www.oe.netl.doe.gov/hurricanes_emer/gulf_coast.aspx (last visited May 7, 2006); [Confidential material redacted.]

[17] U.S. Department of Energy's Office of Electricity and Energy Reliability from August 28, 2005, through December 23, 2005. *See* Office of Electricity and Energy Reliability, U.S. Dep't of Energy, *Hurricane Katrina*, *at* http://www.oe.netl.doe.gov/hurricanes_emer/katrina.aspx (last visited May 7, 2006); Office of Electricity and Energy Reliability, U.S. Dep't of Energy, *Gulf Coast Hurricanes*, *at* http://www.oe.netl.doe.gov/hurricanes_emer/gulf_coast.aspx (last visited May 7, 2006).

[18] Office of Electricity and Energy Reliability, U.S. Dep't of Energy, *Hurricane Katrina Situation Report #39*, Sept. 20, 2005 (3:00 PM EDT), *at* http://www.oe.netl.doe.gov/docs/katrina/katrina_092005_1500.pdf.

[19] Office of Electricity and Energy Reliability, U.S. Dep't of Energy, *Gulf Coast Hurricanes Situation Report #12*, Oct. 7, 2005 (5:00 PM EDT), *at* http://www.oe.netl.doe.gov/docs/gulf_coast/gulf_100705_1700.pdf.

[20] Office of Electricity and Energy Reliability, U.S. Dep't of Energy, *Gulf Coast Hurricanes Situation Report #8*, Oct. 3, 2005 (3:00 PM EDT), *at* http://www.oe.netl.doe.gov/docs/gulf_coast/gulf_100305_1500.pdf.

[21] Demand refers to consumers' willingness to buy a product, which is determined by that product's price in addition to other factors, including the prices of substitutes, consumer income, and individual desires (which might vary seasonally) and tastes. The extent to which consumers will change the quantity of product they will purchase

interaction of demand and supply. Consumer demand for gasoline is largely unresponsive to changes in price, or "inelastic."[22] This means that consumers do not reduce purchases of gasoline, even when the price goes up dramatically. Staff's examination showed that national average price increases were in the range of what would be expected given the magnitude of the hurricane-related supply reductions and the limited sensitivity of consumer demand to changes in gasoline prices in the short-run.[23]

Consumer demand for gasoline is unresponsive to changes in price, particularly in the short-run. While consumers might consider purchasing more fuel-efficient cars or changing residences (or jobs) to reduce commuting distances in the longer term, most consumers have very limited short-run options in responding to higher gasoline prices. At best, consumers might economize by combining errands in one car trip, reducing discretionary driving (such as that related to vacations), or in some instances switching to public transportation.[24] Because consumers as a group cannot easily reduce their gasoline demand when prices increase, any reduction in supply leads to a much higher proportional increase in the price of gasoline.

As one might expect, at the national level, the increase in gasoline prices after the hurricanes was predominantly a result of the dramatic reduction in supply, not an increase in demand.[25] Given the sizeable decrease in refinery gasoline production, gasoline prices in a

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in response to a price change is measured by the elasticity of demand, which is the percentage change in quantity demanded by consumers that is associated with a percentage change in the price they must pay. Demand is elastic when consumers are relatively responsive to price changes in altering their purchasing; demand is inelastic when consumers change the quantities they purchase by relatively small amounts in response to a given price change. Supply refers to firms' willingness to offer product for sale at alternative prices and is determined by costs. Under the standard supply and demand paradigm, the market price is that for which demand equals supply. The market outcome under the supply and demand paradigm is considered to be competitive because prices just reflect the cost of supplying the last or marginal unit which clears the market. In contrast, if a market was not behaving competitively, price would exceed this cost of supply.

[22] Various studies have statistically estimated the short-run elasticity of gasoline demand to be in the range of -0.1 to -0.4, with a mean estimate of around -0.2. *See* Robert Archibald & Robert Gillingham, *An Analysis of the Short-Run Consumer Demand for Gasoline Using Household Survey Data*, 62 REV. ECON. & STAT. 622, 625 (1980); Molly Espey, *Explaining the Variation in Elasticity Estimates of Gasoline Demand in the United States: A Meta-Analysis*, 17 ENERGY J. 49 (1996); Steven L. Puller & Lorna A. Greening, *Household Adjustment to Gasoline Price Change: An Analysis Using 9 Years of U.S. Survey Data*, 21 ENERGY ECON. 37 (1999); Hilke A. Kayser, *Gasoline Demand and Car Choice: Estimating Gasoline Demand Using Household Information*, 22 ENERGY ECON. 331 (2000). An elasticity of -0.2 implies that a 1% reduction in the quantity of gasoline supplied will lead to a 5% increase in the price of gasoline. One industry expert recently suggested that the demand elasticity has fallen as low as -0.05. *See* Steven Mufson, *Gas Prices Up Sharply Ahead of Peak Season*, WASH. POST, Apr. 4, 2006, at A1. Differences in estimated elasticities arise from a variety of factors, including the time horizon considered, the specific control variables used, and the specification of demand.

[23] Staff focused its analysis of gasoline prices over the three-month period following Katrina.

[24] Indeed, newspaper articles from across the country reported on increased use of mass transit and steps taken by some consumers to economize on gasoline purchases in response to the price increases after the hurricanes. *See, e.g.*, Justin Blum, *Local Gas Demand Appears to Drop*, WASH. POST, Sept. 6, 2005, at D1; Jeff DeLong, *Gas Prices Fuel Bus Rider Ship*, RENO GAZETTE-JOURNAL, Sept. 29, 2005; *Editorial: Transit on a Roll/American Motorists are Rethinking Old (Bad) Habits*, PITTSBURGH POST-GAZETTE, Oct. 1, 2005, *at* http://www.post-gazette.com/pg/pp/05274/580725.stm.

[25] Demand increased by a small amount in the Gulf Coast relative to pre-Katrina levels. While there may be some differences in the elasticity of demand for gasoline in different parts of the country, the increase in price differences across regions after the hurricanes primarily reflected differences in regional supply reductions, rather

competitive market would increase significantly until the market had an opportunity to respond with additional supplies. Nationally, gasoline supply (including domestic refining production and imports) decreased by 3.9% for the four weeks ending September 30 relative to refinery production and imports for the four weeks ending August 26, 2005.[26] Using well-established estimates of consumer sensitivity to price, staff calculated the likely price effect of such a reduction in supply. This analysis suggests that, in the short-run and assuming no anticompetitive behavior or price manipulation, prices would have risen on average by about 19.7% in September.[27] The actual average price of a gallon of regular grade gasoline in the month of September 2005 was $2.95, a 16.7% increase over the August average price. In the short-run, given the size of the supply disruption, prices should have risen on average more than they actually did. The likely reasons for the somewhat lower than expected price increase were increased imports, the seasonal decline in gasoline demand, and the drawing down of gasoline inventories. Thus, standing alone, the price increases post-Katrina do not suggest that suppliers manipulated gasoline prices after the hurricane.

Similarly, Rita caused domestic gasoline refinery output to decrease by 2.9% for the four weeks ending October 28 relative to refinery output and imports for the four weeks ending August 26, 2005. The 2.9% reduction in gasoline output (which also reflects the lingering effects of Katrina's impact on Gulf refineries), combined with a short-run estimate of consumer sensitivity to price, suggests that prices would have risen on average by about 14.6% in October. The actual average price of gasoline in the month of October 2005 was $2.76, a 9.1% increase over the August average price.[28] The likely reasons for the somewhat lower than expected price increase were the same as those that led to lower prices than expected post-Katrina. Thus, as with Katrina, the price increases after Rita are not suggestive of price manipulation.

IV. Regional Supply Impacts of the Hurricanes

Katrina and Rita had very different impacts on gasoline supply regionally. Both storms, of course, had a direct physical impact upon refineries and pipeline infrastructure along the Gulf. The supply implications for other regions of the country, however, differed. The effect of the hurricanes on different regions was commensurate with the importance of Gulf Coast supply to

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than differences in changes in regional demand, as will be discussed in more detail below.

[26] Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Weekly Inputs, Utilization & Production, at* http://tonto.eia.doe.gov/dnav/pet/pet_pnp_wiup_dcu_nus_w.htm (last modified May 3, 2006) (shows petroleum products produced at a refinery, natural gas processing plant, or blending plant); Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Weekly Imports & Exports, at* http://tonto.eia.doe.gov/dnav/pet/pet_move_wkly_dc_NUS-Z00_mbblpd_w.htm (last updated May 3, 2006) (shows receipts of crude oil and petroleum products into the 50 States and the District of Columbia from foreign countries, Puerto Rico, the Virgin Islands, and other U.S. possessions and territories). Published production equals production minus input. Total gasoline includes finished motor gasoline and motor gasoline blending components.

[27] The 19.7% expected price increase is a function of a 3.9% reduction in gasoline output combined with a short-run price elasticity of gasoline of -0.2 (3.9% divided by -0.2). *See* Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Weekly Retail Gasoline and Diesel Prices, at* http://tonto.eia.doe.gov/dnav/pet/pet_pri_gnd_dcus_nus_w.htm (last modified May 1, 2006) (shows weekly retail prices of regular gasoline).

[28] The 14.6% expected price increase is calculated from a 2.9% reduction in gasoline output and a short-run price elasticity of gasoline of -0.2 (2.9% divided by -0.2).

the region. Those regions relying to a lesser extent on supply from the Gulf Coast experienced a smaller supply reduction in total supply than other regions more heavily dependent on Gulf Coast supply.

To appreciate the regional impact of the hurricanes, some basic understanding of regional supply conditions is helpful.[29] Important supply relationships between and among regions in the United States are illustrated in Figures 5-5 and 5-6. Figure 5-5 illustrates the major pipeline and waterborne connections between major refining and consuming regions in the U.S.[30] Figure 5-6 shows gasoline supply (regional production plus imports of finished gasoline and blending components) and gasoline demand by Petroleum Administration for Defense Districts ("PADDs") for August 2005.[31] For long distance movement of large quantities of gasoline and other refined petroleum products, the nation depends on a complex system of pipelines and water transport. The critical importance of the Gulf Coast (PADD III) in the supply of gasoline to the rest of the United States is immediately apparent from Figures 5-5 and 5-6.[32]

The Gulf Coast is by far the most important refining area in the United States. The area's refineries produce much more gasoline and other refined products than are consumed in the area. Approximately 65% of Gulf Coast gasoline production is shipped to other parts of the country, while the remaining 35% is consumed there. The Gulf Coast is centrally located and is the only

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[29] *See, e.g.*, Energy Info. Admin, U.S. Dep't of Energy, *A Primer on Gasoline Prices, at* http://www.eia.doe.gov/pub/oil_gas/petroleum/analysis_publications/primer_on_gasoline_prices/html/petbro.html. This primer contains a section describing why gasoline prices differ among regions of the U.S. *See also* PETROLEUM MERGER REPORT at 175-204.

[30] For simplicity, not all water shipment routes and pipelines are included in Figure 5-5. However, each region's primary means for receiving (or sending) refined product are shown. *See* American Petroleum Institute, United States Refining Centers and Selected Clean Products Pipelines, *at* http://api-ec.api.org/filelibrary/Pipelines,%20refining%20centers.ppt; Energy Info. Admin, U.S. Dep't of Energy, *State Petroleum Profiles, at* http://tonto.eia.doe.gov/oog/info/state/al.html**.**

[31] PADD regions were defined during World War II and are still used by the Energy Information Administration ("EIA") as a basis for data collection. PADD I is the East Coast, defined as Connecticut, Delaware, District of Columbia, Florida, Georgia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, North Carolina, Pennsylvania, Rhode Island, South Carolina, Vermont, Virginia, and West Virginia. PADD II is the Midwest, defined as Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, Oklahoma, South Dakota, Tennessee, and Wisconsin. PADD III is the Gulf Coast, defined as Alabama, Arkansas, Louisiana, Mississippi, New Mexico, and Texas. PADD IV is the Rocky Mountains, defined as Colorado, Idaho, Montana, Utah, and Wyoming. PADD V is the West Coast, defined as Alaska, Arizona, California, Hawaii, Nevada, Oregon, and Washington.

[32] "Production" on Figure 5-6 equals "Finished Motor Gasoline" minus "Motor Gasoline Blending Components" (net). *See* Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Refinery & Blender Net Production* (historical finished motor gasoline production, PADDs I-V) *at* http://tonto.eia.doe.gov/dnav/pet/pet_pnp_refp_dc_r10_mbbl_m.htm; Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Refinery & Blender Net Inputs* (historical net motor gasoline blending components, PADDs I-V), *at* http://tonto.eia.doe.gov/dnav/pet/pet_pnp_inpt_dc_r10_mbbl_m.htm; Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Products Supplied* (historical finished motor gasoline, PADDs I-V), *at* http://tonto.eia.doe.gov/dnav/pet/pet_cons_psup_dc_r10_mbbl_m.htm; Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Imports by Area of Entry* (historical finished motor gasoline and net motor gasoline blending components, PADDs I-V), *at* http://tonto.eia.doe.gov/dnav/pet/pet_move_imp_dc_R10-Z00_mbbl_m.htm; Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Movements by Tanker, Pipeline, and Barge Between PAD Districts* (historical finished motor gasoline and motor gasoline blending components, all PADD pairs), *at* http://tonto.eia.doe.gov/dnav/pet/pet_move_ptb_dc_R20-R10_mbbl_m.htm.

PADD that sends significant quantities of gasoline to every other PADD. The area receives a small amount of refined product from the Midwest (primarily from PADD II refineries in nearby Oklahoma) and occasional imports (mostly of blendstocks).[33]

The East Coast (PADD I) is the nation's largest consuming area and a major importer of both domestic and foreign gasoline. In 2004, East Coast refineries, concentrated in the Philadelphia area, produced approximately 27% of the gasoline consumed in the region. About half of the East Coast's gasoline demand is satisfied by shipments from the Gulf. The remainder is imported from abroad. Most foreign imports are consumed in New York and New England. The southern part of the East Coast is almost totally dependent on pipeline shipments. The main exception on the East Coast is Florida and the coastal areas in Georgia, South Carolina, and North Carolina, which are largely supplied by water from the Gulf Coast and imports. The East Coast also ships a small net amount of gasoline to the Midwest.

The Midwest (PADD II) is the nation's second largest consuming area. The major Midwest refining centers are in Chicago, Oklahoma, and Kansas. While its refining production ranks second after the Gulf Coast, the Midwest imports significant shipments of transportation fuels and heating oil from other areas of the U.S. to supplement local refinery production. Midwest refineries produced 73% of the gasoline consumed in the area in 2004. Of the remaining 27%, approximately 20% originated from the Gulf Coast, and 7% was from the East Coast.[34] Several important pipelines connect Gulf Coast production to the Midwest, including the Explorer, TEPPCO, and Centennial systems. Additional Gulf Coast product is delivered to the Midwest by barge on the Mississippi river.

Compared to the Midwest and East Coast, the Gulf Coast's links to the West Coast (PADD V) and the Rocky Mountain region (PADD IV) are smaller when measured by volumes shipped. In 2004, West Coast refineries supplied approximately 88% of West Coast gasoline demand. Nonetheless, Gulf Coast shipments into Arizona represent an important supply component in PADD V. The Gulf Coast also sends blending components and occasional finished gasoline to the West Coast by tanker. Refineries in the Rocky Mountain region also send petroleum product shipments to Washington State. Imported finished gasoline and blending components round out West Coast supply.

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[33] Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Movements by Tanker, Pipeline, and Barge between PAD Districts*, *at* http://tonto.eia.doe.gov/dnav/pet/pet_move_ptb_dc_R20-R10_mbbl_m.htm (last modified Apr. 25, 2006).

[34] *See* Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Refinery & Blender Net Production* (historical finished motor gasoline production, PADDs I-V) *at* http://tonto.eia.doe.gov/dnav/pet/pet_pnp_refp_dc_r10_mbbl_m.htm; Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Refinery & Blender Net Inputs* (historical net motor gasoline blending components, PADDs I-V), *at* http://tonto.eia.doe.gov/dnav/pet/pet_pnp_inpt_dc_r10_mbbl_m.htm; Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Products Supplied* (historical finished motor gasoline, PADDs I-V), *at* http://tonto.eia.doe.gov/dnav/pet/pet_cons_psup_dc_r10_mbbl_m.htm; Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Imports by Area of Entry* (historical finished motor gasoline and net motor gasoline blending components, PADDs I-V), *at* http://tonto.eia.doe.gov/dnav/pet/pet_move_imp_dc_R10-Z00_mbbl_m.htm; Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Movements by Tanker, Pipeline, and Barge Between PAD Districts* (historical finished motor gasoline and motor gasoline blending components, all PADD pairs), *at* http://tonto.eia.doe.gov/dnav/pet/pet_move_ptb_dc_R20-R10_mbbl_m.htm.

As on the West Coast, gasoline production and consumption in the Rocky Mountain region are relatively balanced, although both production and consumption in the Rocky Mountains are small compared to the other regions. Supply in some parts of the Rocky Mountains is supplemented from other regions. In particular, the Front Range portion of Colorado, which includes Denver (the region's largest metropolitan area), receives significant pipeline shipments from the Midwest (primarily from refineries in Kansas and Oklahoma) and the Gulf Coast region (either directly from refineries in Texas or indirectly from other Gulf Coast producers whose product has passed through the Midwest region via pipeline). Some Rocky Mountain refinery production is sent by pipeline to adjacent regions.[35]

In sum, Gulf Coast refinery production is an important supply component for all major regions of the lower 48 states. The other PADDs rely on the Gulf and in some cases on foreign imports to supplement regional refinery production to satisfy demand. As a result, price increases resulting from the loss of Gulf refinery production were felt throughout the nation, based on the degree to which regions rely on Gulf supply.

The refinery and pipeline outages associated with the hurricanes dramatically reduced the flow of Gulf product to the East Coast. Gulf Coast refinery volumes to the East Coast fell by 18% in September 2005 relative to August. Taking into account the increased imports into the East Coast, the hurricane effect in September resulted in a 9.1% reduction in East Coast supply during September.[36] The hurricanes had lesser effects on gasoline shipments from the Gulf to other areas, at least in terms of absolute volumes supplied. Gulf shipments to the Midwest also fell significantly on a percentage basis, although with less impact because Midwest refineries make up a larger percentage of Midwest consumption.[37] Gulf shipments to the Rocky Mountain area, even smaller in absolute volume, also fell significantly on a percentage basis.[38] Gulf Coast shipments to the West Coast, large in absolute volume but small relative to West Coast demand,

[35] Montana refiners send some gasoline into North Dakota and Washington, and refiners in the Salt Lake City area send some product into eastern Washington and Oregon.

[36] In August 2005, Gulf refineries shipped about 55 million barrels of gasoline to the East Coast, mostly by pipeline. About 45 million barrels were shipped to the East Coast from the Gulf in both September and October 2005. This 10-million-barrel per month decline represented about an 18% reduction in shipments compared to August. Holding supply from East Coast refiners and imports into the East Coast constant, this decline in shipments represented a 9.1% reduction in supply into the East Coast for the month of September compared to August. *See* Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Movements by Tanker, Pipeline, and Barge, at* http://tonto.eia.doe.gov/dnav/pet/pet_move_ptb_dc_R20-R10_mbbl_m.htm (last modified Apr. 25, 2006).

[37] The Midwest received 12 million barrels of gasoline from the Gulf in August 2005, but obtained 10 million and 8 million barrels in September and October respectively. For September and October respectively, Gulf-to-Midwest gasoline shipments were 17% and 33% below August levels. Holding supply from Midwest refiners and other inter-PADD transfers constant, this decline in Gulf shipments represented a reduction in supply into the Midwest of about 2.6% for September compared to August and 5.2% for October compared to August. *See* Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Movements by Tanker, Pipeline, and Barge, at* http://tonto.eia.doe.gov/dnav/pet/pet_move_ptb_dc_R20-R10_mbbl_m.htm (last modified Apr. 25, 2006).

[38] Gulf shipments to the Rockies in August 2005 were about 700,000 barrels. Gulf shipments fell by about 100,000 barrels in September compared to August (about a 14% reduction) and then recovered to August levels in October. West Coast receipts of Gulf gasoline remained at August levels at about 3 million barrels in September, but fell by approximately 1 million barrels in October. *See* Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Movements by Tanker, Pipeline, and Barge, at* http://tonto.eia.doe.gov/dnav/pet/pet_move_ptb_dc_R20-R10_mbbl_m.htm (last modified Apr. 25, 2006).

showed their greatest impact post-Rita.[39] It should be noted that these monthly shipment averages underestimate the immediate and dramatic market impacts of Katrina and Rita, because most of the monthly average reduction in supply actually occurred over the week immediately following each hurricane.

V. Post-Hurricane Effects on Regional Prices

Staff next assessed the extent to which the changes in regional gasoline prices were consistent with what one might expect, absent price manipulation, given the supply impacts just described. Staff focused on the three regions that were significantly above the national average percentage increase immediately after the hurricanes: the East Coast in the case of Katrina, and the Midwest and Gulf Coast in the case of Rita.[40] Under competitive conditions, the price in an area will be determined by the total volume of available product relative to demand.

The last barrel made available for sale in a given area should be the highest cost source of supply to the area, or its "marginal supply." Marginal supply is considered the "swing supply" that enters a market at current prices because the price just covers the incremental cost of that additional supply. If prices fell so that incremental costs would not be covered, this supply would exit the market. Changes in the costs of refining or transporting refined product (including the added costs implicit in disruptions of refinery or pipeline operations), for example, may result in changes in the cost of marginal supply. Moreover, to the extent that refiners can ship gasoline to alternative locations, the marginal supply into any one area will reflect the "opportunity cost" of not selling the gasoline to the alternative locations. For example, a supplier, in deciding where to ship gasoline, gives up the profit in the local market when it exports product, but it gains the profit in the export market. For an exporting area like the Gulf Coast, a reduction in exports would mean that those barrels that remain in the Gulf Coast constitute the marginal supply and, as such, those barrels would constrain prices in the Gulf Coast relative to other geographic regions.

Under competitive conditions, circumstances that reduce the costs of marginal supply into an area would lead to commensurately lower prices, while other circumstances that increase the costs of the marginal supply would lead to commensurately higher prices.[41] On the other hand, if prices in an area rose substantially more than the increase in the marginal cost of supply, anticompetitive behavior might be suspected.[42] Changes in the cost to supply different regions

[39] West Coast receipts of Gulf gasoline remained at August levels of about 3 million barrels in September, but fell by approximately 1 million barrels in October. *See* Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Movements by Tanker, Pipeline, and Barge, at* http://tonto.eia.doe.gov/dnav/pet/pet_move_ptb_dc_R20-R10_mbbl_m.htm (last modified Apr. 25, 2006).

[40] The Mountain States had a sizeable price increase after Katrina but had been below the predicted price in the weeks leading up to Katrina, according to the FTC Gasoline and Diesel Price Monitoring Project.

[41] It must be emphasized, however, that observing and precisely estimating changes in the marginal cost of supply can be very difficult, particularly in relatively short-run periods of market disruptions, such as those associated with hurricanes, because of rapidly changing prices at alternative supply points (such as spot prices in potential export sources such as Europe) and uncertainties involving the cost of product transportation alternatives (such as the cost of trucking or rail as substitutes for pipeline transport).

[42] For example, if prices in the Midwest increased by an amount more than it would cost to transport

as a result of the hurricanes, however, appear to explain much, if not all, of the gasoline price increases in the three regions.

The first and second columns of Table 5-2 present the changes in average, PADD-level retail prices (including taxes) from just before the hurricanes hit to a week later, a time when the prices were at or close to their post-hurricane peaks. Disruptions in Gulf refinery and pipeline operations significantly reduced September shipments to the East Coast compared to August. As one would expect given the importance of Gulf supply, Katrina's greatest price impact was felt on the East Coast, where retail prices increased by about 23% between August 29 and September 5, compared to a national average increase of 18% over this period. Assuming no other supply responses or changes in the level of demand, staff predicted that the average price might have increased by as much as 45% on the East Coast.[43] Actual price increases, however, were less than one-half of this amount, indicating that offsetting factors were at work. As discussed below, offsetting factors included inventory adjustments, increased East Coast refinery production, and increased imports of foreign gasoline. Also mitigating the price impact of reduced shipments from the Gulf was a small decline in net shipments of East Coast gasoline to the Midwest (approximately 900 thousand fewer barrels in September compared to August) and the seasonal decline in gasoline demand at summer's end.

Although suppliers responded quickly to Katrina through increased imports and supply reallocations, especially on the East Coast, these actions were not cost-free. In fact, the cost of using trucks or barges instead of pipelines was significant.[44] And imports, both in the price of foreign gasoline and the cost of transportation, rose in September.[45] Increased refinery production by East Coast refiners also entailed higher costs at the margin, as refiners pushed capacity utilization rates to very high, unsustainable levels and altered product slates to increase gasoline output at the expense of other refined products.

Thus, price increases on the East Coast were consistent with the increased cost of marginal supply to the area post-Katrina. For example, during late August and the first part of September, many product terminals, particularly those south of the greater Philadelphia area, were receiving no, or significantly reduced, supply as a result of operational problems on the major pipelines from the Gulf.[46] In the very short-run, demand could only be met by drawing

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additional product from its highest cost source, *e.g.*, the Gulf Coast, then absent a showing that product was unavailable in the Gulf (a pipeline constraint or other product unavailability), one might suspect unilateral or collusive manipulation of supply to the Midwest.

[43] Consistent with its analysis of national price increases, staff used a short-run price elasticity of -0.2 to predict the likely regional price increases given the relevant supply disruption to a given region.

[44] Pipelines are the low cost method of distributing petroleum products. According to one public estimate, the cost of transporting gasoline 1,000 miles is 1.5 to 2.5 cents per gallon for pipeline, 4 to 5 cents per gallon by barge, and 30 to 40 cents per gallon by truck. *See* Steve Jacobs, *Pipeline Factors Affecting Gasoline Prices*, May 8, 2002 (Colonial Pipeline presentation to FTC Conference on Factors Affecting Prices of Refined Petroleum Products), *available at* http://www.ftc.gov/bc/gasconf/comments2/jacobsstevee.pdf.

[45] *See* Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Daily Spot Prices Conventional Gasoline, U.S. and International*, *at* http://tonto.eia.doe.gov/dnav/pet/pet_pri_spt_s1_d.htm (data shown indicates price of imported gasoline bought in the spot market for delivery into affected regions during domestic supply disruption).

[46] *See* Office of Electricity and Energy Reliability, U.S. Dep't of Energy, *Hurricane Katrina Situation Report #7 & #22*, Aug. 29, 2005 & Sept. 5, 2005, *available at*

down existing bulk product inventories (at terminals or refineries).[47] Post-Katrina, firms arranged for alternative supply sources and means of transportation to areas most keenly affected by the pipeline disruptions at significantly higher transportation costs than pipeline transportation.[48] These supply alternatives were insufficient to fully address the supply shortages because of the lack of available transportation, *e.g.*, there were not enough trucks or drivers to fully replace pipeline quantities.[49] In the longer term, imports replaced the lost Gulf production and inventory draw-downs. However, import costs increased during September due to acquisition costs in foreign markets. For example, spot prices for gasoline in Rotterdam increased significantly over pre-Katrina levels for most of September.[50] Moreover, tanker rates increased significantly in response to higher U.S. demand for foreign gasoline, further increasing the cost of supplying the East Coast.[51]

Turning to price changes in the Midwest, prices in the week immediately after Rita rose about 7%, compared to the national average increase of about 4%. Monthly data show that gasoline shipments from the Gulf fell by about 2 million barrels in October compared to September (and by 4 million barrels compared to August). Assuming no other supply responses or changes in the level of demand relative to September levels, staff calculated that the average price might increase by as much as 13% in the Midwest in October 2005.[52] Midwest prices increased much less than this amount, indicating that, as with the East Coast after Katrina, mitigating factors were present. The most important factor appears to have been relatively high Midwest refinery production in September and October (compared to August) despite seasonally weakened demand. A reduction in net shipments from the Midwest region to adjacent areas of about 300 thousand barrels (relative to September levels) also may have had a mitigating effect on Midwest prices. Price increases in the Midwest post-Rita were relatively short-lived, with prices there falling sharply relative to the Gulf by the second week of October.

Many of the changed cost conditions affecting the East Cost post-Katrina also were relevant to the price increases in the Midwest. As noted above, several important product pipelines serving the Midwest from the Gulf were entirely shut down or operated at reduced

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http://www.oe.netl.doe.gov/hurricanes_emer/katrina.aspx.

[47] In a competitive market, a firm would decide whether to sell the product from inventory, taking into account any forgone future sales that would result. The opportunity costs from forgoing future sales would depend on the firm's expectations of future prices.

[48] [Confidential material redacted.]

[49] In addition to being more costly, moving product from north to south along the East Coast tended to increase acquisition costs at supply points such as the New York Harbor area. North-to-south movements would tend to reduce price differences along the East Coast, by reducing prices in the south but increasing them in the north. Such arbitrage would be consistent with competitive behavior. [Confidential material redacted.]

[50] *See* Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Daily Spot Prices, Conventional Gasoline* (Rotterdam (ARA) data series), *at* http://tonto.eia.doe.gov/dnav/pet/pet_pri_spt_s1_d.htm.

[51] *See U.S. Demand for European Gasoline Triples after Hurricane Katrina*, FORBES.COM, Sept. 2, 2005 ("[M]aritime freight costs for tankers . . . jumped more than 60 pct in a week for a trip from Rotterdam to New York."), *at* http://www.forbes.com/afxnewslimited/feeds/afx/2005/09/02/afx2204523.html.

[52] The 13% expected price increase is calculated from a 2.6% reduction in gasoline output and a short-run price elasticity of gasoline of -0.2 (2.6% divided by -0.2).

capacity rates after Rita.[53] Some firms resorted to using barges on the Mississippi River to move product from the Gulf in lieu of pipeline shipments, despite the increased cost.[54] Similar to the East Coast, increased refinery production by Midwest refiners also entailed higher marginal costs for each additional barrel produced, and refiners pushed capacity utilization rates to very high levels that were unsustainable on a long-term basis. Refiners also altered product slates to increase gasoline output, at the expense of other refined products. Finally, the higher Midwest prices suggest that suppliers sold Gulf Coast production in the Gulf or other regions.

Gulf Coast prices increased nearly as much as Midwest prices immediately after Rita, but, unlike the Midwest, Gulf prices remained relatively high compared to national average levels well into November. The Gulf's post-Rita experience is distinguished from that of other regions in two major ways. First, as Figure 5-3 shows, the Gulf's refining output was directly affected by Katrina and Rita, resulting in very sharp declines in output, particularly in the immediate aftermath of Rita. Second, unlike in other regions where seasonal changes reduced demand levels, demand in the Gulf increased in September and October.[55] The evacuations and other activities directly related to the hurricanes may have been partly responsible for the increase in demand.

Higher prices in the Gulf compared to other regions reduced exports from the area. Indeed, for October 2005, monthly gasoline shipments of Gulf product to other U.S. regions fell by about 15 million barrels (or 17.5 million barrels including exports) from August levels, although some of this decline was attributable to pipeline operational problems and not just changes in relative regional prices.[56] Gulf production over the period fell by about 18 million barrels, while overall demand in the Gulf increased by 4 million barrels.[57] Imports into the Gulf made up the shortfall, increasing from 3 million barrels in August 2005 to 13 million barrels in October.[58] Relative to pre-hurricane Gulf production, however, these imports represented more

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[53] *See* Office of Electricity and Energy Reliability, U.S. Dep't of Energy, *Gulf Coast Hurricanes Situation Report # 1*, Sept. 24, 2005 (5:00 PM EDT), *at* http://www.oe.netl.doe.gov/hurricanes_emer/gulf_coast.aspx; [Confidential material redacted.]

[54] [Confidential material redacted.]

[55] Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Product Supplied*, *at* http://tonto.eia.doe.gov/dnav/pet/pet_cons_psup_dc_nus_mbbl_m.htm (last modified Apr. 25, 2006).

[56] In addition, Gulf Coast foreign exports of finished gasoline (mostly to Mexico and the Caribbean) fell from 4.6 million barrels in August 2005 to about 2.7 and 2.1 million barrels in September and October. Exports of blendstocks, which were about 420,000 barrels in August, fell to about half that level during the next two months. *See* Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Imports/ Exports & Movements* (Gulf Coast PADD 3 monthly exports of finished motor gasoline), *at* http://tonto.eia.doe.gov/dnav/pet/hist/mgfexp31m.htm; Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Imports/ Exports & Movements* (Gulf Coast PADD 3 monthly exports of motor gasoline blending components), *at* http://tonto.eia.doe.gov/dnav/pet/pet_move_exp_dc_R30-Z00_mbbl_m.htm.

[57] *See* Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Refinery & Blender Net Production* (historical finished motor gasoline, PADDs I-V), *at* http://tonto.eia.doe.gov/dnav/pet/pet_pnp_refp_dc_r10_mbbl_m.htm; Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Refinery & Blender Net Inputs* (historical net motor gasoline blending components, PADDs I-V), *at* http://tonto.eia.doe.gov/dnav/pet/pet_pnp_inpt_dc_r10_mbbl_m.htm; Energy Info. Admin, U.S. Dep't of Energy, *Petroleum Navigator: Products Supplied* (historical motor gasoline, PADDs I-V), *at* http://tonto.eia.doe.gov/dnav/pet/pet_cons_psup_dc_r10_mbbl_m.htm.

[58] *See* Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Imports/ Exports & Movements*,

costly barrels of gasoline. Like refiners elsewhere that increased gasoline output after the hurricanes, Gulf refiners also took steps to produce additional barrels of gasoline from refineries that returned to operation after Rita (and Katrina), which increased marginal costs. Pipeline disruptions from Rita (and Katrina) also forced Gulf producers to use alternative, but more costly, means of transporting product within the region (*i.e.*, by barge and truck).

VI. Output Responses from Unaffected Refineries

In a competitive market, suppliers should respond to increasing prices by increasing output if possible, through increased refinery production (including deferred maintenance), inventory draws, or increased imports. An increase in output would only occur if the higher prices made it economical for the supplier to increase production in, or bring additional product into, the market. This section discusses the production responses from unaffected refiners. A review of industry data shows that refiners unaffected by the hurricanes increased both production and utilization rates in response to Katrina and Rita, consistent with behavior in a competitive market. Unaffected refineries took steps such as deferring refinery maintenance,[59] increasing refinery utilization,[60] changing the output mix to produce more gasoline, or making other adjustments to increase gasoline supply. Some refineries that experienced outages during the summer (unrelated to the hurricanes) resumed operations, which further increased the availability of gasoline supply post-Katrina and Rita.

To determine whether firms behaved competitively, staff first examined behavior at refineries unaffected by Katrina. Although refinery production on the West Coast and in the Rocky Mountains remained at relatively high levels compared to the same period in previous years, refinery gasoline production on the East Coast and in the Midwest increased post-Katrina. As a result, overall gasoline production at unaffected refineries increased in response to higher prices.[61] In addition to production, refinery utilization increased for these refineries well above the range in recent years for this time of year, as shown in Figure 5-2.[62]

Similarly, refineries unaffected by Rita continued to run at historically high production and utilization rates. From the week ending September 23 though the third week in October, these refineries were above the five-year utilization rate range.

The varied steps taken to increase gasoline production and utilization reflect the different constraints facing refiners seeking to increase output in a market with little excess capacity. For example, some refiners that had previously scheduled maintenance for September or October

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Imports by Area of Entry (Gulf Coast PADD 3 monthly imports of finished motor gasoline), *at* http://tonto.eia.doe.gov/dnav/pet/pet_move_imp_dc_R30-Z00_mbbl_m.htm.

[59] [Confidential material redacted.]

[60] [Confidential material redacted.]

[61] [Confidential material redacted.]; Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Prices* (daily spot prices, New York Harbor and U.S. Gulf Coast, kerosene-type jet fuel), *at* http://tonto.eia.doe.gov/dnav/pet/pet_pri_spt_s1_d.htm.

[62] However, such increases in production rates--in many instances bringing the utilization rate of the facilities above 100%--would not be sustainable in the mid to long-term, as such rates would shorten the life of equipment at the facilities.

were able to safely defer the maintenance and stay in production.[63] Refineries were able to increase gasoline production due to waivers from the Environmental Protection Agency enabling refiners to produce incremental barrels of gasoline that otherwise would not have been feasible.[64] Refineries that suffered outages in the summer leading up to Katrina also contributed to supply when they resumed operations.[65] Many unaffected refiners also were able to increase gasoline production at the expense of distillate production,[66] and one was able to divert capacity normally used for the production of chemicals to the production of gasoline.[67]

In sum, there is no evidence that the unaffected refineries withheld available capacity to keep prices high. After both Katrina and Rita, refineries unaffected by the hurricanes increased gasoline production and capacity utilization, consistent with behavior in a competitive market. The increase in gasoline output was most noticeable in the Midwest and on the East Coast, two regions of the country that experienced sizeable price increases after the hurricanes.

VII. Gasoline Inventories

When short-run gasoline prices increase in a competitive market, the most immediate supply response would be to draw down existing gasoline inventories.[68] Inventories are the difference between supply (*i.e.*, production and imports) and consumption. Accordingly, staff examined the level of inventories in the period before Katrina and then evaluated the changes in gasoline inventories after Katrina and Rita. Based on the evidence, staff concluded that the changes in industry-wide inventory levels post-hurricanes were consistent with behavior in a competitive market. After the hurricanes, suppliers drew down inventory levels to increase sales

[63] *See* Javier Blas, et al., *U.S. Drive to Boost Fuel Output*, FIN. TIMES, Sept. 8, 2005; Valero Energy Corporation, *Updates 2005 Turnaround Schedule 3rd Quarter and 4th Quarter 2005*, Oct. 11, 2005 (delays work at Corpus Christi, Delaware City, and McKee refineries), *available at* http://www.valero.com/NewsRoom/News+Releases/NR_20051011.htm. On the other hand, ConocoPhillips could not delay maintenance at its Wood River refinery in Illinois longer than two weeks for safety reasons and because of the unavailability of contract labor. *See* Jeffery Tomich, *Wood River Refinery Trims Flow*, ST. LOUIS POST-DISPATCH, Sept. 27, 2005, *available at* http://obama.senate.gov/news/050927-wood_river_refinery_trims_flow/index.html.

[64] [Confidential material redacted.]

[65] [Confidential material redacted.]

[66] *See, e.g.*, *After the Storms*, ENERGY COMPASS, Sept. 30, 2005 (stating that refiners are adding to distillate supply problems by maximizing gasoline output); [Confidential material redacted.]

[67] [Confidential material redacted.]

[68] Two factors could complicate the use of inventory holdings as evidence of competitive behavior. First, damage to the transportation infrastructure could make delivery of output impossible. If this occurred, a firm with local storage capacity might produce in anticipation of selling the additional output once it could be transported. The other explanation why a firm without market power might withhold supply is that the firm expects prices to be even higher in the future. Particularly in the event of short-term supply disruptions, a firm's price expectations are not necessarily or entirely reflected in publicly-traded futures prices, which were below New York Harbor spot prices in the weeks after Hurricane Katrina, but were a few cents above spot prices after Rita. *Compare* Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Spot Prices, at* http://tonto.eia.doe.gov/dnav/pet/pet_pri_spt_s1_d.htm; *with* Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: NYMEX Futures Prices, at* http://tonto.eia.doe.gov/dnav/pet/pet_pri_fut_s1_d.htm.

to the market. Once prices began to decline in the weeks after Katrina and Rita, suppliers increased inventory levels to more normal levels.

During the summer (before Katrina), gasoline prices rose about 50 cents per gallon,[69] largely as a result of increases in crude oil costs and, to a lesser extent, disruptions to refinery operations. For most of the summer driving season (May, June, and July), the average U.S. margin for refining, distribution, and marketing combined was below its 2004 level, and the increases in crude costs exceeded the increases in retail gasoline prices.[70] Thus, the higher crude oil costs explain the retail price increase during this period.[71] In August 2005, however, higher crude prices explained only 70% of the increase in gasoline prices.[72] Disruptions to refining operations throughout the summer appear to explain the August increase in price over the costs of buying crude oil.

Despite high and rising prices during the summer of 2005, national demand for gasoline remained strong. National gasoline consumption (demand), shown in Figure 5-7, was at or above the upper bound of the five-year range for most of the summer driving season prior to Hurricane Katrina. Between June and the end of August 2005, national demand for gasoline was about 2% greater than for the same period in 2004.

Responding to the higher summer prices, U.S. refinery production reached record levels for much of June 2005, with refinery utilization close to or above its five-year range, as shown in Figure 5-2. However, after averaging 9.2 million barrels a day of refinery production with a refinery utilization rate of 98% for the week of July 1 — the highest production level and utilization rate on record — production declined throughout July. During the week ending August 26, the U.S. refinery utilization rate was 97%, just under the record high of 98% in the prior month.

The decline in gasoline production in July and the level of production in August were the results of a series of refinery interruptions affecting Gulf Coast and Midwest refineries. During the second week of July, Hurricane Dennis entered the Gulf, and shut in Gulf oil production ranging from 14% to over 96% over several days. During the second week of July (July 6-10), Hurricane Dennis entered the Gulf, shutting in over 96% of Gulf oil production for a number of days. The lost crude production forced several Gulf Coast and Midwest refineries to reduce crude runs.[73] Similarly, several Gulf Coast refineries reported reduced crude runs following

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[69] *See* Figure 5-1.

[70] *See* Energy Info. Admin., U.S. Dep't of Energy, *Gasoline and Diesel Fuel Update, Previous Months' Gasoline Pump Data, at* http://tonto.eia.doe.gov/oog/info/gdu/gasdiesel.asp.

[71] *See* Energy Info. Admin., U.S. Dep't of Energy, *Gasoline and Diesel Fuel Update, Previous Months' Gasoline Pump Data, at* http://tonto.eia.doe.gov/oog/info/gdu/gasdiesel.asp.

[72] Energy Info. Admin., U.S. Dep't of Energy, *Gasoline and Diesel Fuel Update, Previous Months' Gasoline Pump Data, at* http://tonto.eia.doe.gov/oog/info/gdu/gasdiesel.asp. Over the long run, changes in crude oil prices explain 85% of the changes in the price of gasoline. *See* PETROLEUM MERGER REPORT at 1 n.1.

[73] *See, e.g.*, Minerals Mgmt. Serv., U.S. Dep't of the Interior, *Hurricane Dennis Evacuation and Production Shut-in Statistics as of Friday, July 8, 2005, at* www.mms.gov; Minerals Mgmt. Serv., U.S. Dep't of the Interior, *Hurricane Dennis Evacuation and Production Shut-in Statistics as of Monday, July 11, 2005, at* www.mms.gov; Minerals Mgmt. Serv., U.S. Dep't of the Interior, *Hurricane Dennis Evacuation and Production Shut-in Statistics as of Tuesday, July 12, 2005, at* www.mms.gov; *Gulf Storm Takes Toll on Crude Imports, Refinery Runs*, PLATTS OILGRAM NEWS, July 14, 2005.

Hurricane Emily (July 17-20), which shut down wells and shipping facilities.[74] These disruptions contributed to a decline in gasoline inventories pre-Katrina and Rita.

For example, in late July, BP's Texas City refinery reduced output following a fire.[75] In late July, Sunoco's Toledo refinery was down for two weeks due to a lightning strike.[76] In early August, there were reports of a crude oil processing unit outage lasting ten to twelve days at Shell's Norco refinery in Louisiana, and an alkalization unit problem at Shell's Deer Park refinery in Texas.[77] Exxon's Joliet, Illinois refinery was down for approximately one week in early August due to a water cooling system failure.[78] The ConocoPhillips Wood River, Illinois refinery was down for approximately one week in mid-August due to a power outage.[79] BP's Whiting, Indiana refinery was reported to be running at less than full capacity because high summer temperatures put too much pressure on the cooling system.[80]

Gasoline suppliers largely overcame the production problems that limited U.S. refinery production from mid-July through the first few weeks of August. As a result, refinery problems in July did not appear to significantly affect national average prices, nor did these problems appear to change regional gasoline price differentials. The market's ability to absorb the July refinery disruptions with minimal price effects was aided by relatively abundant inventories produced in response to higher summer prices. Nationally, gasoline stocks (including both finished gasoline and blending components) began the summer at the upper end of the five-year range but began to fall during late June and July.

Due to inventory draw downs needed to supplement reduced refinery operations, finished gasoline stocks were at the lower end of the five-year range for the end of July. Inventories had not recovered by the time Katrina came ashore. The reduction in output caused by refinery outages, in combination with robust demand, left total monthly U.S. gasoline stocks 7% below August 2004 inventory levels and 2% below the average August inventory level from 2000 to 2004.[81] Stocks at the end of August were especially low: stocks in the East Coast were at 90%; stocks in the Midwest were at 94%; stocks in Rocky Mountain region were at 81%; and stocks on the West Coast were at 89% of August 2004 levels.[82] Figures 5-8 and 5-9 show PADD-level gasoline inventory relative to the reported five-year range.

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[74] *See* OPIS *Daily Spot Report*, July 22, 2005.

[75] *See* OPIS *Daily Spot Report*, July 29, 2005.

[76] *See* Linda Rafield, *Another Day for Crude Bulls*, PLATTS OILGRAM PRICE REPORT, Aug. 5, 2005.

[77] *See* OPIS *Daily Spot Report*, Aug. 2, 2005.

[78] *See* Energy Intelligence Group, *Talking $70 (Petroleum Crude Futures)*, PETROLEUM INTELLIGENCE WKLY., Aug. 8, 2005; Energy Intelligence Group, *Exxon Plans Joliet Restart*, OIL DAILY, Aug. 5, 2005.

[79] *See Refinery Updates*, PLATTS OILGRAM PRICE REPORT, Aug. 24, 2005.

[80] *See Refinery Updates*, PLATTS OILGRAM PRICE REPORT, Aug. 8, 2005.

[81] Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Total Stocks, Total Motor Gasoline Data Series, at* http://tonto.eia.doe.gov/dnav/pet/pet_stoc_wstk_dcu_nus_w.htm.

[82] Energy Info. Admin., U.S. Dep't of Energy, *Weekly Total Motor Gasoline Ending Stocks, at* http://tonto.eia.doe.gov/dnav/pet/pet_stoc_wstk_dcu_r10_w.htm (last modified May 3, 2006) (shows inventories of fuel stored for future use). Stocks are reported as of the last day of the period (*e.g.*, week or month). Total motor gasoline includes finished motor gasoline and motor gasoline blending components**.**

Thus, by the time Katrina made landfall, the market was already experiencing a seasonal decline in imports (during early September) and decreased industry inventories at gasoline terminals and refineries. In the first two weeks after Katrina, gasoline stocks further decreased in most regions. The decrease on the East Coast was most dramatic, as one might expect in light of the fact that the Colonial and Plantation pipelines were either closed or operating at reduced capacity during this time.[83] Gasoline stocks in the Gulf Coast and West Coast regions decreased from the middle of the five-year range toward the bottom of the range during this period. Stocks in the Rocky Mountain region remained somewhat below the five-year range but were relatively flat during this two-week period.

The one exception to the inventory declines was the Midwest, which experienced increasing gasoline stocks during the first several weeks after Katrina as prices declined in this region relative to other areas affected by the hurricane. In the weeks leading up to the hurricane, Midwest gasoline stocks were well below the five-year range due to a number of refinery problems in the Midwest in August. Refinery output in the Midwest (shown on Figure 5-3) increased every week beginning in mid-August through the end of September, and gasoline stocks recovered as production increased. As gasoline prices declined in the Midwest (and declined more rapidly than in other regions), inventory levels increased. Indeed, by the middle of September, Midwest prices had fallen to their usual relative position below prices on the West Coast, as data for Chicago in Figure 5-1 show.

Although Rita's price effects were not as dramatic as Katrina's, reductions in refinery output and pipeline deliveries triggered significant inventory draw downs. The largest reduction in gasoline inventory was in the weeks after Rita on the Gulf Coast, shown in Figure 5-9, where inventories dropped well below their five-year range and did not recover to within the five-year range until the end of October. There were smaller inventory declines in the Midwest and on the East Coast (Figures 5-8 and 5-9). Gasoline stocks in the Rocky Mountain and West Coast regions were largely unaffected, consistent with the observation that Rita's price effects in those regions were limited.

VIII. Import Responses

In addition to inventory draws and increases in refinery production and utilization, suppliers acting in a competitive market would increase imports in response to increasing prices. Unlike inventory draws, arranging for imported product can take time and, as discussed earlier, come into a market at a higher cost. Nonetheless, suppliers in a competitive marketplace would seek to increase imports as quickly as possible to be able to sell the product at the elevated price. Although most imports of motor gasoline and gasoline blending components come from Europe, Canada, Venezuela, and the Caribbean,[84] due to the distance and time necessary to charter ships, increased European imports cannot occur instantaneously.

As mentioned in the previous section discussing inventory, substantial imports of gasoline and gasoline blending components in August helped to offset domestic refinery

[83] [Confidential material redacted.]

[84] *See* Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: U.S. Imports by Country of Origin*, *at* http://tonto.eia.doe.gov/dnav/pet/pet_move_impcus_a2_nus_epm0f_im0_mbbl_a.htm.

disruptions in summer 2005. Imports of finished gasoline and blending components were close to or exceeded the upper end of the five-year range throughout the summer and were particularly strong in August 2005, as Figure 5-4 shows.

Consistent with seasonal patterns, finished gasoline and gasoline blend components import levels began to decline the last week of August. A decrease in imports in late August and early September is not unusual, as illustrated by the decreases in the five-year range for the period.[85] Because imports are typically scheduled weeks in advance of their arrival, the imports that come into the market reflect perceptions of market conditions that existed at the time the imports were scheduled. The devastation arising from Katrina, and subsequently Rita, far exceeded expectations of potential supply disruptions in the Gulf.

Despite the initial decline in imports immediately following Katrina, imports of finished gasoline and blending components strengthened by mid-September and exceeded the seasonal levels seen over the last several years. As with production at domestic refiners unaffected by Katrina, additional imports entered the market in response to higher gasoline prices.[86] Imports were particularly significant for price recovery in the Northeast where the vast majority of United States gasoline imports are delivered.

In the aftermath of Rita, strong gasoline imports helped mitigate and eventually reverse the price effects of the hurricane. Gasoline imports were at record levels during the first two weeks of October (Figure 5-4). Imports totaled 1.4 million barrels a day and were about 400 thousand barrels per day above the highest level of the five year range for those weeks. Gasoline imports were 700 thousand barrels per day greater than the average level over the last five years for this time of year.[87] Imports remained well above the five-year range until the end of November, when they returned to more normal levels.

An increase in imports, primarily from western Europe, Canada, and Venezuela, was an important factor in explaining why Rita did not cause a significant increase in gasoline prices in the Northeast. Imports into PADD I were 25% higher than in October 2004.[88] While gasoline prices in Boston increased by over sixty cents a gallon after Katrina, Boston prices did not increase after Rita and, in fact, continued the decline that had begun in early September. While other parts of the East Coast (even as far south as Florida) benefited from increased imports, the Northeast effectively isolated itself from Rita's effects by attracting significant amounts of marginal supply due to the higher prices resulting from Katrina-related refinery and infrastructure disruptions.

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[85] *See* Figure 5-4.

[86] [Confidential material redacted.]

[87] Firm-level data clearly shows increased imports. The ability of a firm to increase its imports depends on its access to large amounts of product not already scheduled for shipment to the United States and vessel availability. The increase in imports from August through October 2005 for the largest importers is summarized in Table 5-3. Energy Info. Admin., U.S. Dep't of Energy, *Company Level Imports*, *at* http://www.eia.doe.gov/oil_gas/petroleum/data_publications/company_level_imports/cli.html (company level import raw data) (last modified Apr. 28, 2006).

[88] *See* Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Imports/Exports & Movements,Imports by Area of Entry* (East Coast PADD 1, monthly imports of finished motor gasoline), *at* http://tonto.eia.doe.gov/dnav/pet/hist/mgfimp11m.htm.

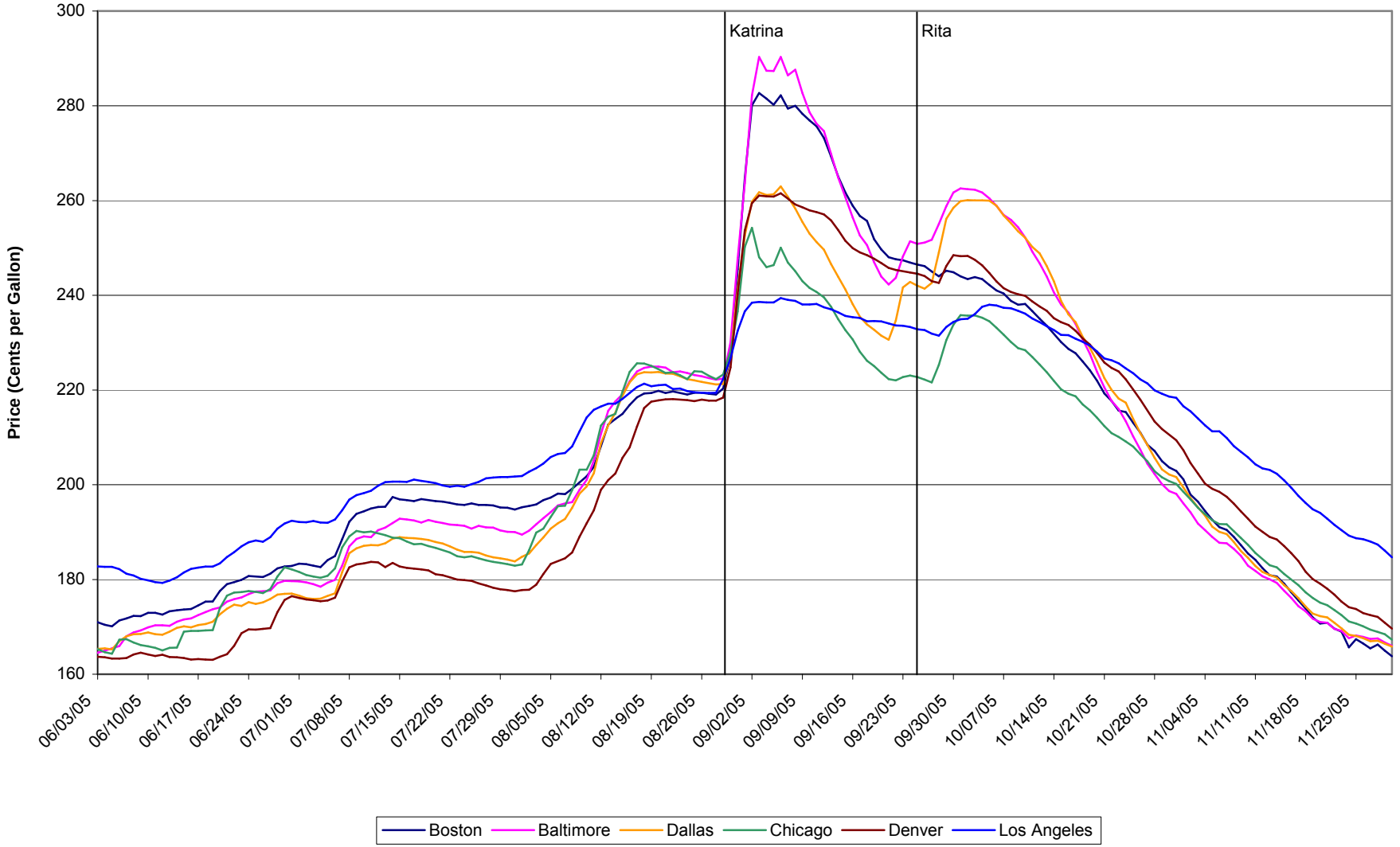
In addition to increased gasoline imports to the Northeast, imports of gasoline and blending components to the Gulf Coast increased substantially. From the normal, relatively low level of imports in August into PADD III (three million barrels), imports increased to 5 and then 13 million barrels in September and October 2005. The 13 million barrel imports coincided with the time when Gulf prices were the highest.

Increased imports therefore constituted a competitive market response to high gasoline prices in the United States. Imports to the United States increased quickly in the aftermath of the hurricanes. As shown in the firm-specific import data, many of the firms that increased their imports were the same firms that own refineries in the United States and benefited from higher prices.

IX. Conclusions

Staff found no evidence of anticompetitive behavior in its review of national and regional gasoline pricing after the hurricanes. Because of the Gulf Coast's critical role in U.S. gasoline supplies, the disruptions of refinery and pipeline operations by Hurricanes Katrina and Rita caused prices to increase significantly throughout the nation. Although prices in some regions went up more than in other areas, the price spikes that resulted in the immediate aftermath of both storms were short-lived. At the national and regional levels, the extent and location of these price increases are more consistent with a competitive outcome, rather than with anticompetitive behavior or inappropriate price manipulation. The relative importance of the Gulf Coast to different regions explains why prices went up in some regions more than in others. To the extent that prices did rise, the increases appear consistent with significantly increased marginal costs of supply. In addition, many of the refineries that were not damaged by the hurricanes were able to increase output in response to the higher prices. Inventories also fell after the hurricanes as suppliers responded to the higher prices with increased sales, and imports by suppliers, including by firms with substantial domestic refining operations, increased significantly. Such behavior is consistent with competitive behavior, rather than anticompetitive or price manipulative behavior.

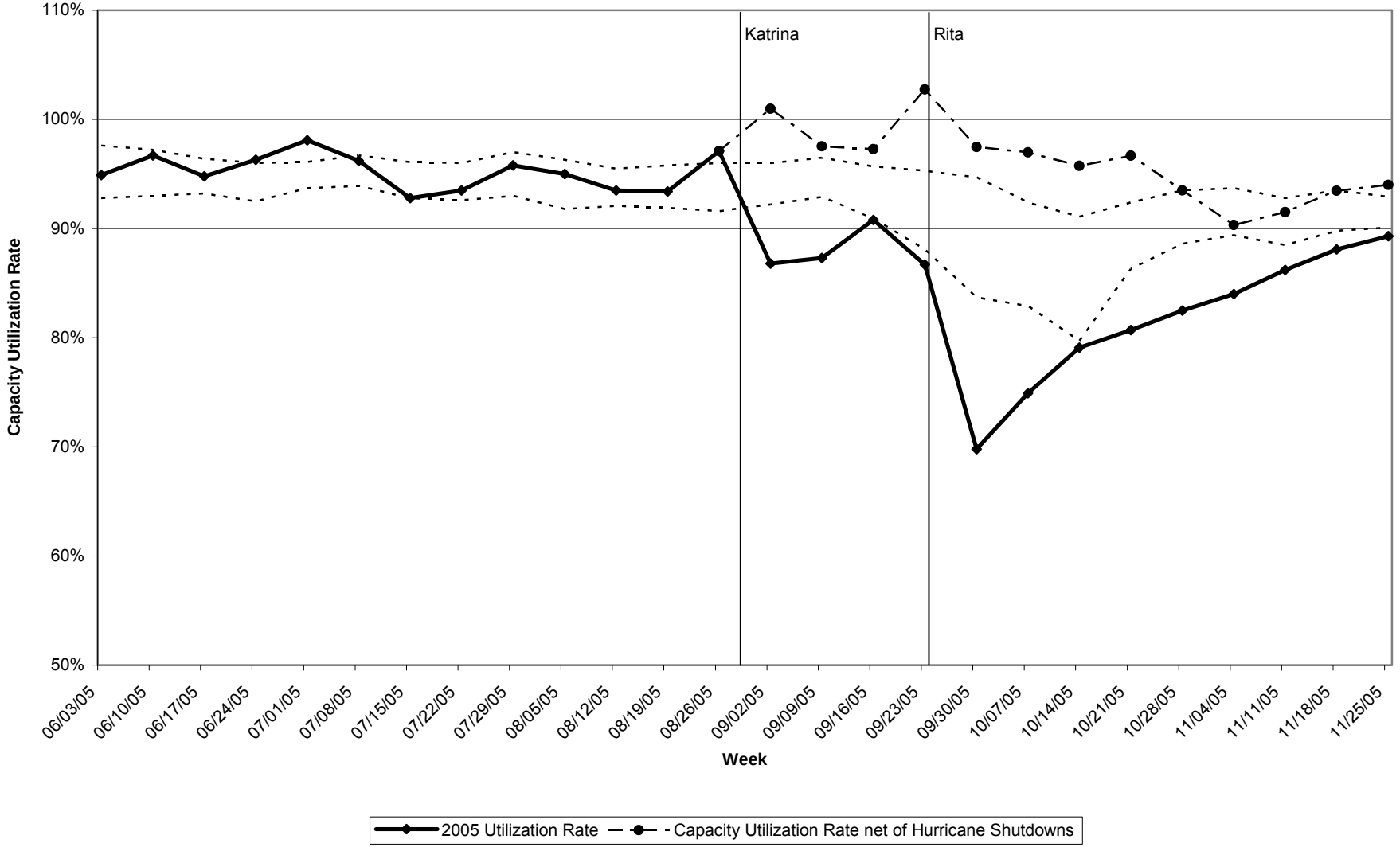
Figure 5-1
Daily Retail Gasoline Prices - Without Taxes
6/3/2005 -11/ 30/2005



Source: Oil Price Information Service (OPIS)

Taxes have been removed

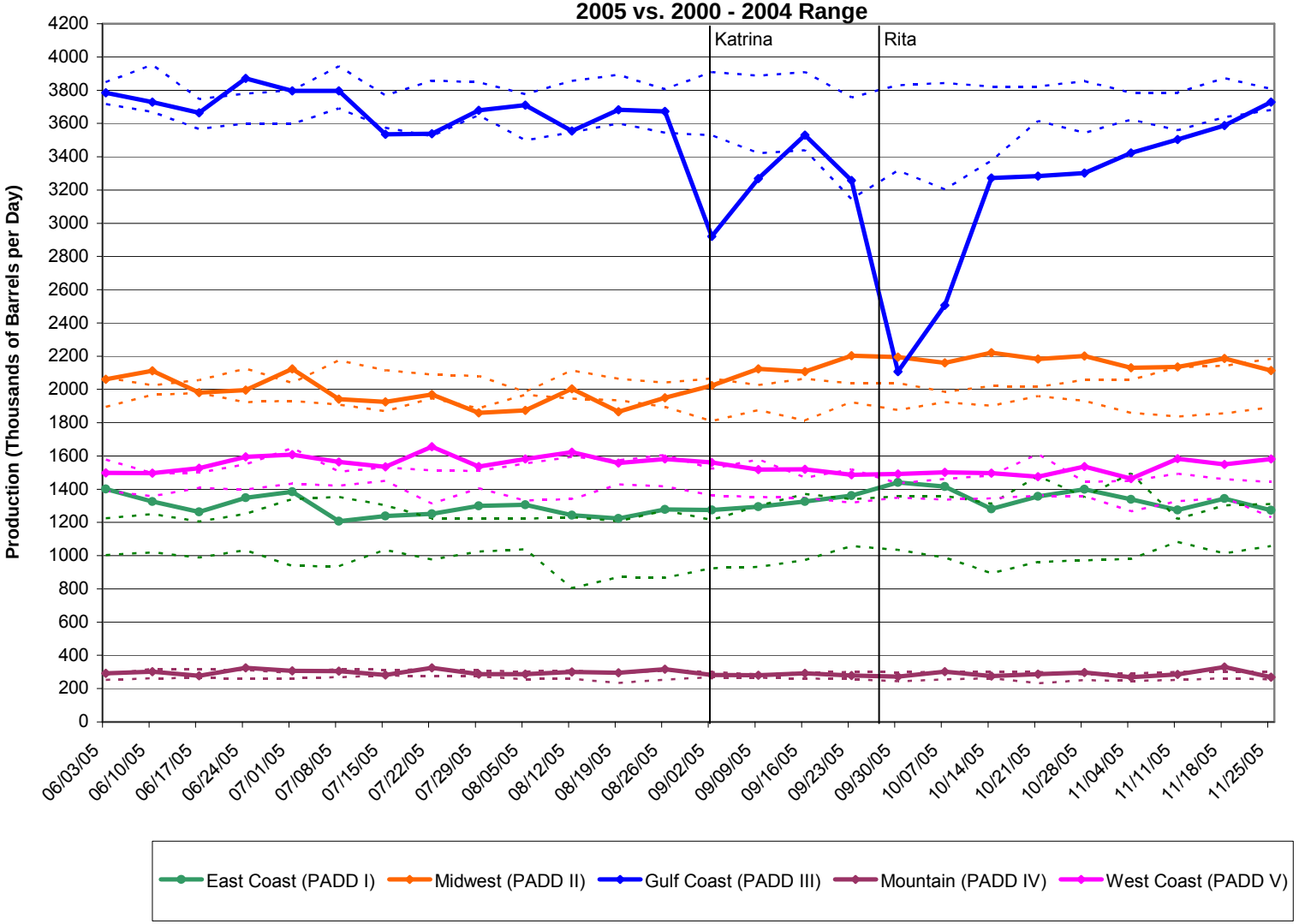
Figure 5-2
U.S. Refinery Capacity Utilization Rate
(Gross Input to Atmospheric Crude Distillation Units/Operable Capacity)
2005 vs. 2000 - 2004 Range



Source: Energy Information Administration (EIA)

Note: Dashed Lines represent 2000 - 2004 Range

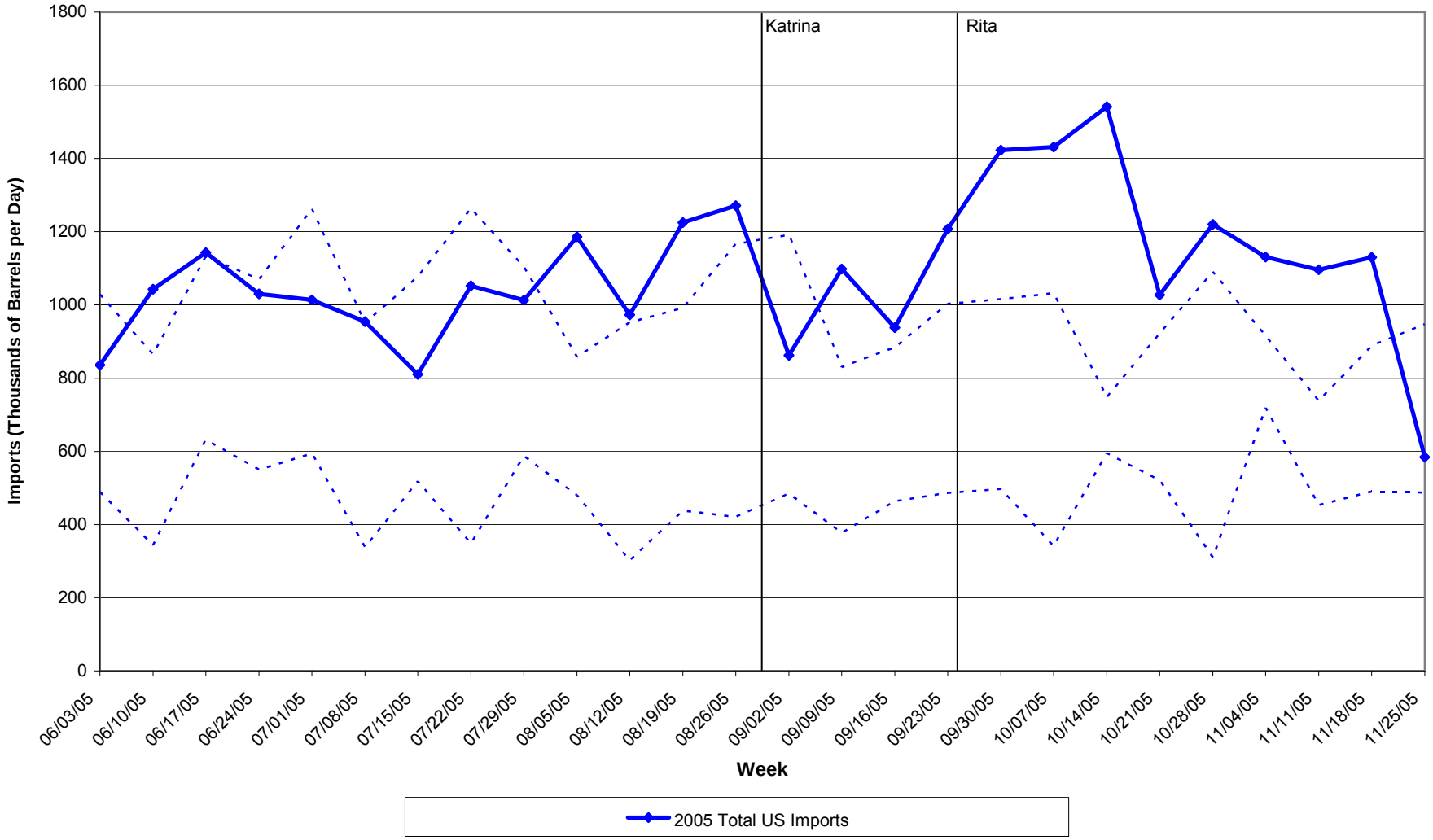
Figure 5-3
Weekly Production
(Finished Motor Gasoline)
2005 vs. 2000 - 2004 Range



Source: Energy Information Administration (EIA)

Note: Dashed Lines represent 2000 - 2004 Range

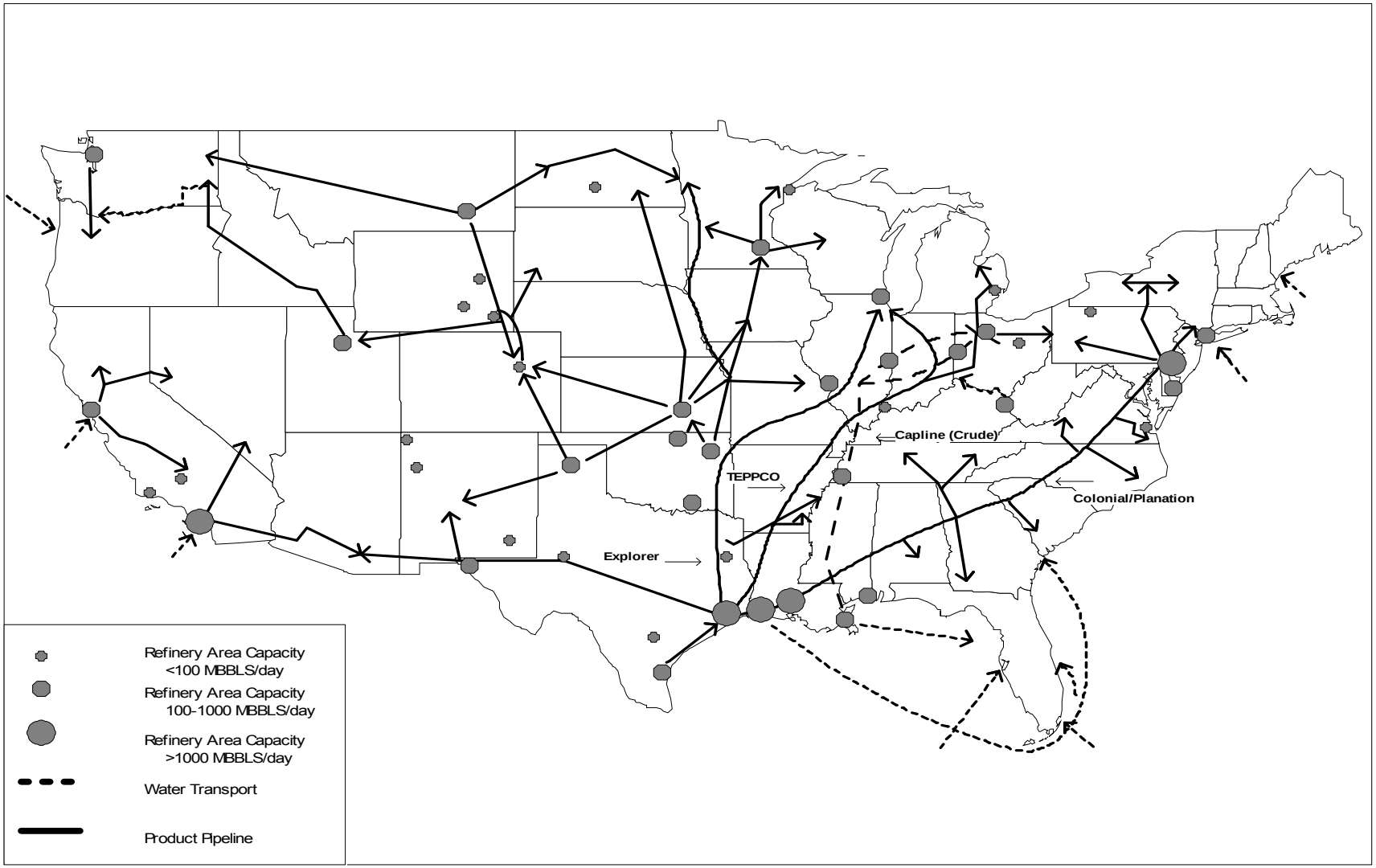
Figure 5-4
US Weekly Total Gasoline Imports
(Reformulated + Conventional + Blending Components)
2005 vs. 2000 - 2004 Range



Source: Energy Information Administration (EIA)

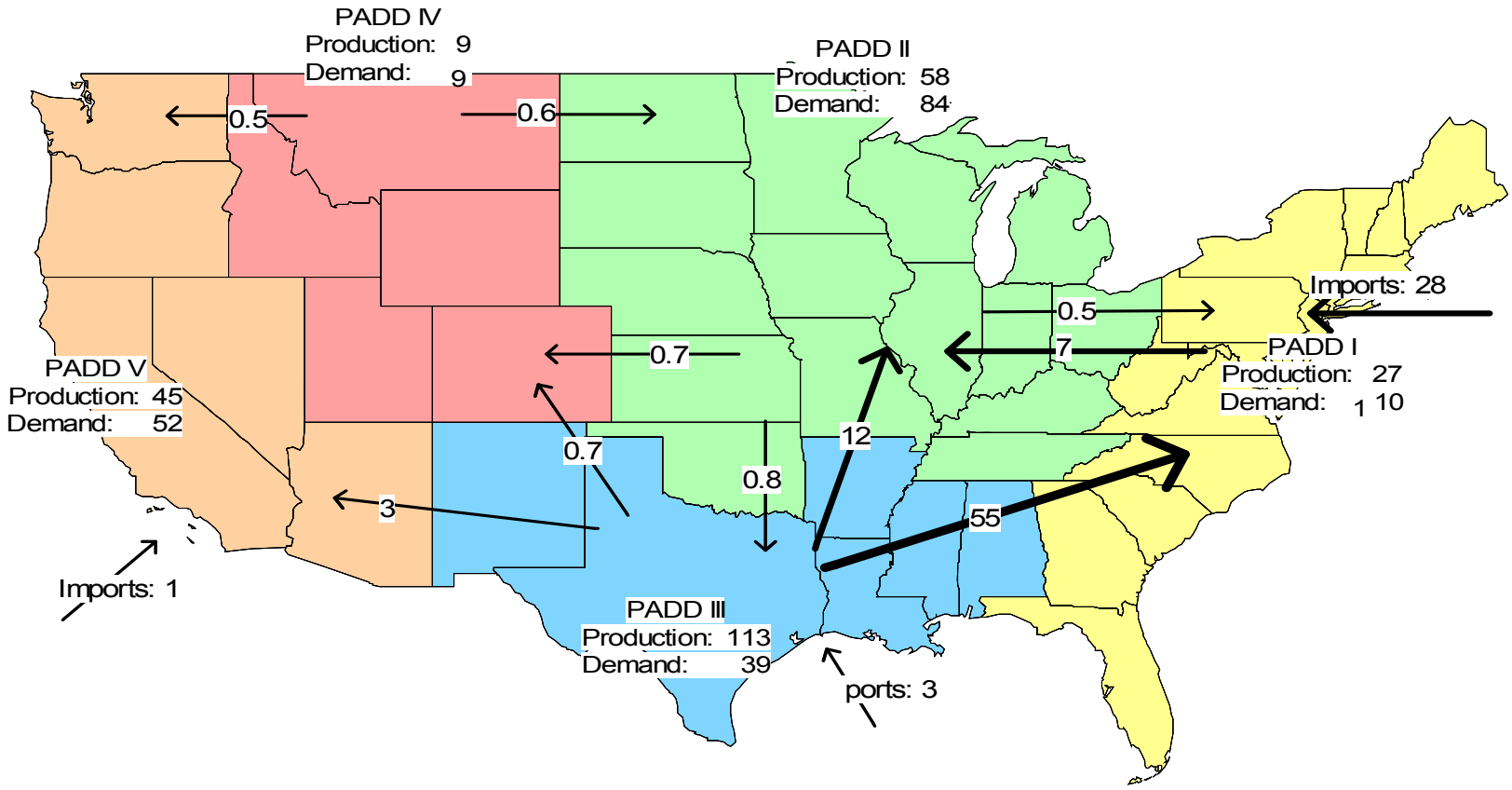
Note: Dashed Lines represent 2000 - 2004 Range

Figure 5-5
US Gasoline Infrastructure
2005



Source: Energy Information Administration (EIA); American Petroleum Institute (API); Pennwell

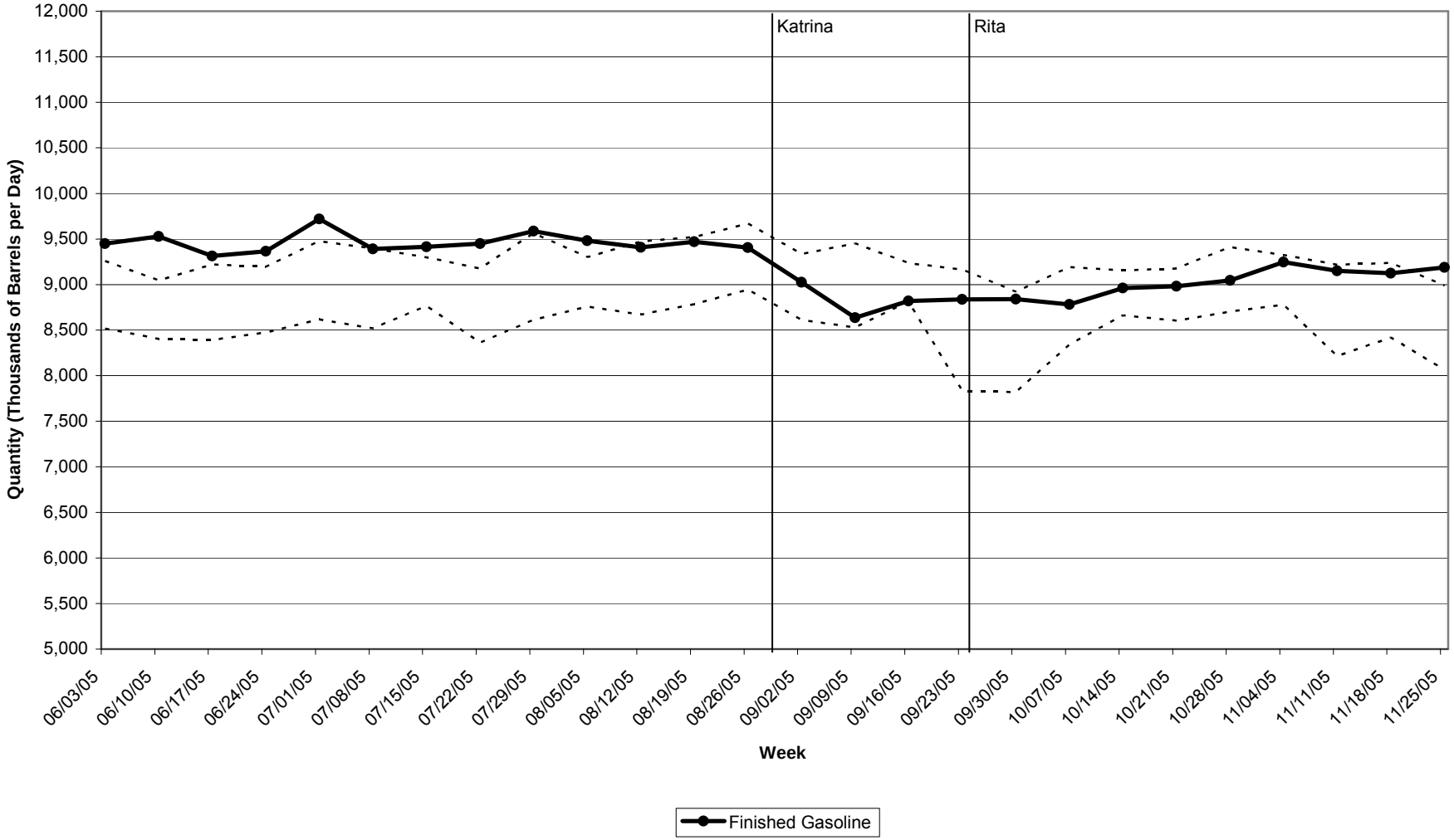
Figure 5-6
Gasoline Supply and Demand, By PADD
August 2005



All figures in Millions of Barrels.
Arrows indicate inter-PADD shipments or foreign imports.
Production, inter-PADD shipments, and foreign imports include blending components.
Due to changes in inventories, rounding, and other factors, demand does not equal the sum of production, imports, and inter-PADD shipments.

Source: Energy Information Administration (EIA)

Figure 5-7
Finished Motor Gasoline Weekly Demand (Consumption)
2005 vs. 2000 - 2004 Range
6/3/2005 -11/ 25/2005



Source: Energy Information Administration (EIA)

Note: Dashed Lines represent 2000 - 2004 Range

Figure 5-8
PADDs I, IV, V Weekly Motor Gasoline Inventories
(Reformulated + Conventional + Blending Components)
2005 vs. 2000 - 2004 Range
8/19/2005 - 11/25/2005

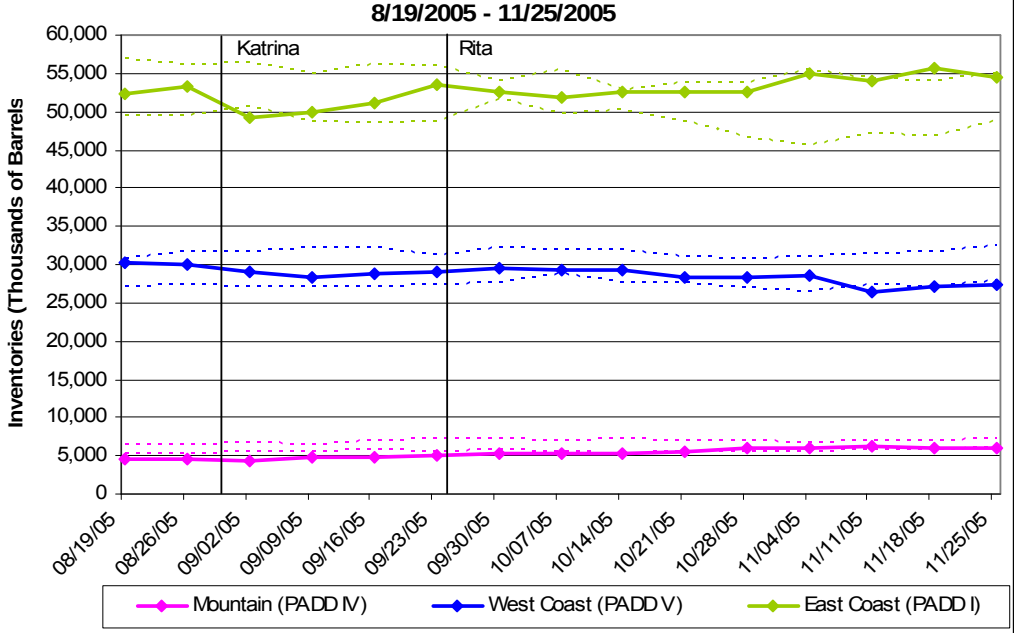
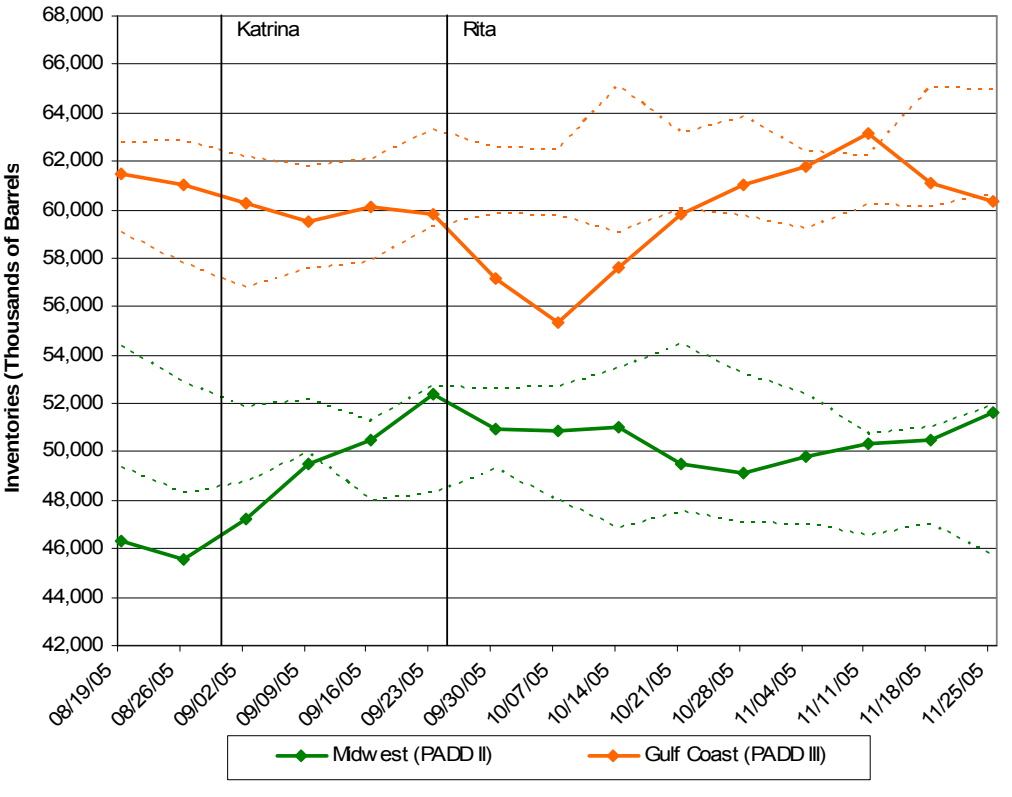


Figure 5-9
PADDs II & III Weekly Motor Gasoline Inventories
(Reformulated + Conventional + Blending Components)
2005 vs. 2000 - 2004 Range
8/19/2005 - 11/25/2005



Source: Energy Information Administration (EIA) Note: Dashed Lines represent 2000 - 2004 Range

Table 5-1
Refinery and Pipeline Status August 27 - November 30, 2005
Part I of II

Refinery / Pipeline (Capacity in b/d)	Location	Aug 27 - Sep 21	Sep 22 - Oct 19	Oct 20 - Nov 30
ConocoPhillips (247,000)	Belle Chase, LA	Shut down	Shut Down	Shut Down
Exxon (187,200)	Chalmette, LA	Shut down	Shut Down	100% by 11/21
Murphy Oil (120,000)	Meraux, LA	Shut down	Shut Down	Shut Down
Chevron (325,000)	Pascagoula, MS	Shut down	Restart on 10/16	Reduced; Normal by 11/1
Motiva Shell (235,000)	Convent, LA	Shut down; Restart on 9/5; Normal by 9/14	Normal	Normal
Motiva Shell (226,500)	Norco, LA	Shut down; Restart on 9/9; Normal by 9/15	Normal	Normal
Marathon Ashland (245,000)	Garyville, LA	Shut down; Restart on 9/3; Normal by 9/10	Normal	Normal
Valero (185,000)	St. Charles, LA	Shut down; Restart on 9/2; Normal by 9/10	Normal	Normal
Exxon (493,500)	Baton Rouge, LA	Reduced; Normal by 9/5	Normal	Normal
Placid Oil (48,500)	Port Allen, LA	Reduced; Normal by 9/5	Normal	Normal
Citgo (324,300)	Lake Charles, LA	Normal	Shut down 9/22; Reduced on 10/8	Reduced, Normal by 11/1
ConocoPhillips (239,400)	West Lake, LA	Normal	Shut down 9/22; Reduced on 10/8	Reduced, Normal by 11/1
Calcasieu (30,000)	Lake Charles, LA	Normal	Shut down 9/22; Normal by 10/8	Normal
Exxon (348,500)	Beaumont, TX	Normal	Shut down 9/22; Restart on 10/19	Normal by 11/1
Total (233,500)	Port Arthur, TX	Reduced from 8/29 - 9/2; Normal by 9/3	Shut down 9/22; Reduced by 10/8	Normal by 11/1
Valero (255,000)	Port Arthur, TX	Normal	Shut down 9/22; Reduced by 10/8	Normal by 10/24
Motiva Shell (285,000)	Port Arthur, TX	Normal	Shut down 9/22	Restart on 10/24; Normal by 11/1
Shell (333,700)	Deer Park, TX	Normal	Shut down 9/22; Restart on 9/27	Reduced; Normal by 11/1
Lydonell Citgo (270,200)	Houston, TX	Normal	Shut down 9/22; Restart on 9/27	Reduced; Normal by 11/1
Astra Oil (100,000)	Pasadena, TX	Normal	Shut down 9/22; Restart on 9/27; Normal by 10/8	Normal
Valero (83,000)	Houston, TX	Normal	Shut down 9/22; Restart on 9/27	Normal by 10/25
Exxon (557,000)	Baytown, TX	Normal	Shut down 9/22; Restart on 9/27; Normal by 10/8	Normal
BP (427,000)	Texas City, TX	Normal	Shut down 9/22	Shut down
Valero (209,950)	Texas City, TX	Normal	Shut down 9/22; Restart on 9/29; Normal by 10/8	Normal
Marathon (72,000)	Texas City, TX	Normal	Shut down 9/22; Restart on 9/27; Normal by 10/8	Normal
ConocoPhillips (229,000)	Sweeney, TX	Normal	Shut down 9/22; Restart on 9/27; Normal by 10/8	Normal
Flint Hills (288,126)	Corpus Christi, TX	Normal	Reduced 9/22; Normal by 9/24	Normal
Citgo (156,000)	Corpus Christi, TX	Normal	Reduced 9/22; Normal by 9/24	Normal
Valero (142,000)	Corpus Christi, TX	Normal	Reduced 9/22; Normal by 9/24	Normal

Table 5-1
Refinery and Pipeline Status August 27 - November 30, 2005
Part II of II

Refinery / Pipeline (Capacity in b/d)	Location	Aug 27 - Sep 21	Sep 22 - Oct 19	Oct 20 - Nov 30
Colonial Pipeline - Product (2,400,000)	Gulf - NJ	Shut down 8/28 - 8/31; 66% - 73% through 9/6; Normal by 9/10	42% - 90%	Normal
Plantation Pipeline - Product (475,000)	Gulf - VA	Shut down 8/28 - 8/31; restart on 9/1	Normal	Normal
TEPPCO Pipeline - Product (340,000)	TX - Midwest - Northeast	Normal	Shut down on 9/22; 45% - 75%	75% through 10/31; 11/1 Operational with reduced rates
Centennial Pipeline - Product (210,000)	Gulf - IL	Normal	Normal until shut on 10/4. Normal by 10/8	Normal
Explorer Pipeline - Product	Gulf - IL	Normal	Shut down on 9/22; 67% by 9/24	67% through 10/31; 11/1 Operational with reduced rates
Capline Pipeline - Crude (1,200,000)	Gulf - Midwest	Shut down 8/27; Restart on 9/1; OK by 9/8; 9/10 rates cut to 75%	80% - 82%	Operational with reduced rates

Source: Office of Electricity Delivery and Energy Reliability (OE). U.S. Department of Energy. Hurricane Katrina Situation Reports, Gulf Coast Hurricanes Situation Reports. August 28, 2005 through December 23, 2005.

Table 5-2
Percentage Increase in Retail Prices by Region
Regular Gasoline

Region	Aug 29 to Sept 5	Sept 26 to Oct 3
East Coast - PADD I	22.9	4.0
Midwest - PADD II	16.5	6.6
Gulf Coast - PADD III	14.8	6.3
Mountain - PADD IV	15.0	1.1
West Coast - PADD V	10.2	0.6
United States	18.0	4.4

Source: Energy Information Administration (EIA)

Table 5-3
Gasoline Imports by Firm
August through October 2005

Company	August Imports (Thousands of Barrels)	September Imports (Thousands of Barrels)	October Imports (Thousands of Barrels)
Amerada Hess	2,634	2,785	2,862
Atlantic Trading and Marketing	365	466	1,655
British Petroleum	3,420	5,175	4,649
Chevron	783	1,303	1,624
Citgo	3,134	2,805	3,216
Colonial Oil	1,189	1,707	2,636
ConocoPhillips	916	696	1,218
ExxonMobil	515	1,138	2,508
George E. Warren	3,142	2,673	4,301
Glencore	1,621	2,468	2,581
Irving Oil	3,442	3,328	4,151
Morgan Stanley	2,194	3,117	2,084
Shell Trading	1,602	2,193	1,243
Trafigura	1,008	1,564	1,271
Valero	152	51	619
Vitol	1,876	2,098	2,842
Other Firms	4,196	3,977	5,402
Total U.S. Imports	32,189	37,544	44,862

Source: Energy Information Administration (EIA)

Chapter 6

Impact of the Hurricanes on Wholesale and Retail Prices in Selected Urban Areas

The previous chapter analyzed changes in average prices across broad regions. However, consumers are less concerned about regional averages than about the price retailers charge within a particular market or, indeed, at a particular station.[1] To address those concerns, this chapter examines changes in average wholesale and retail prices in selected urban areas. In addition, to assess complaints about pricing by individual retailers, this chapter analyzes the variation in prices charged by individual gas stations within these urban areas.

Wholesale prices provide a useful starting point for understanding changes in average retail prices. Section I documents wholesale price changes in selected areas and assesses their causes. Section II does the same for retail prices. Section III then uses statistical tools to analyze pricing behavior of retail stations that raised their prices the most.

To perform these analyses, the Commission purchased wholesale (rack) and retail gasoline pricing data for 31 city areas across the United States from the Oil Price Information Service ("OPIS").[2] Staff selected these city areas based partly on consumer complaints received by the Commission directly or through the U.S. Department of Energy ("DOE") Gasoline Price Hotline. The prices in these cities illustrate market conditions in different regions of the United States. The wholesale data give daily, firm-specific branded and unbranded rack prices. The retail data give daily prices for regular gasoline at individual gasoline stations. The data cover the six-month period from June 1 through November 30, 2005.[3] The data for the 31 cities provide pricing information for nearly 24,000 retail stations, or about fifteen percent of all stations in the United States.

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[1] For example, a consumer in Flint Michigan asked the DOE Hotline "How can the gas station in my city (Flint suburb) charge $0.21 more per gallon at $2.76 than a Speedway in the city of Flint which was at $2.55 at the same time?"

[2] These city areas roughly correspond to MSAs. This chapter refers to them as cities but they are larger than the core urban area. The Commission purchased OPIS data for (PADD 1) Boston, Harrisburg, Nassau, Newark, the greater Washington DC area, Atlanta, Chapel Hill, Charleston, Pensacola, and Raleigh/Chapel Hill; (PADD 2) Chicago, Cleveland, Grand Rapids, Indianapolis, Knoxville, Louisville, Milwaukee, Minneapolis, and St Louis; (PADD 3) Albuquerque, Baton Rouge, Dallas, Houston, Jackson, and Mobile; (PADD 4) Denver and Salt Lake; (PADD 5) Los Angeles, Phoenix, San Francisco, and Seattle.

[3] The OPIS retail price data are based on credit card transactions received by OPIS from Wright Express LLC each business day. OPIS prices reflect actual transactions, not merely surveys or reports of posted retail prices. Wright Express is a leading administrator of fleet card programs used by businesses and other organizations. More than ninety percent of gasoline retail locations throughout the United States accept Wright Express fleet cards, and approximately half of the nation's retail gasoline outlets are represented in the data on a given day.

I. Wholesale Prices in Selected Urban Areas Before and After the Hurricanes

A. Summary of Pre- and Post-Katrina Branded Wholesale Price Changes

Gasoline wholesaling occurs through several distribution channels. A wholesaler may directly transfer gasoline to stations owned and operated by the wholesaler, at an internal transfer price. A wholesaler may sell gasoline to branded lessee dealers or to independently-owned branded stations, at delivered dealer tank wagon ("DTW") prices.[4] A wholesaler may also sell gasoline through the terminal rack, where jobbers (wholesale distributors) buy gasoline for delivery to retail outlets. Rack sales to jobbers are typically made at posted terminal wholesale, or "rack," prices.[5]

Staff's analysis of wholesale prices relied on rack price data. Rack price data provide useful information about general wholesale conditions because more than half of the gasoline in the United States is sold at terminal racks (although this percentage is lower on the West Coast).[6] Other non-rack wholesale price data cannot be easily broken down by firm, by day of sale, or by geographic location, and are therefore not suitable for this analysis.

Using the rack price data, staff looked at the average daily branded rack price and the price dispersion between the highest and lowest price at the rack. For the 31 cities, Table 6-1 shows the average daily wholesale branded rack prices and the average daily rack price dispersion for the last full week before Hurricane Katrina (the week ending August 20, 2005), and for the first full week after Katrina (the week ending September 3, 2005). Columns (4) and (5), labeled "Average Price," show average prices; the change in average price for the two weeks is shown in column (6). Columns (7) and (8), labeled "Range," measure the weekly average of the daily price spread between the highest and lowest posted prices for branded gasoline in an area for the two weeks; the change in the range is given in column (9). Columns (10) and (11), labeled "Inter-quartile," give the average daily difference between the 75th percentile and the 25th percentile branded prices; the change in the inter-quartile difference is given in column (12).[7]

The data show a pattern of post-hurricane average rack price increases consistent with the general pattern of regional price increases shown in Chapter 5. The average branded rack price in the week before the hurricane ranged from $1.92 per gallon in Harrisburg, Pennsylvania, to $2.15 per gallon in Chicago, Illinois and Albuquerque, New Mexico. In the first full week after Katrina, average rack prices increased in all cities. The largest increases were in the Northeast and the Mid-Atlantic, with 30 to 40 cents per gallon increases in the branded rack price. The

[4] For an additional discussion of the vertical relationships between gasoline wholesaling and retailing, *see* PETROLEUM MERGER REPORT at 225-31.

[5] In some cases contractual adjustments, including various discounts, affect the actual price paid by rack purchasers.

[6] In 2002, 61% of gasoline was sold at the rack in the United States. The percentage of gasoline sold at the rack ranged from 80% in the Gulf Coast to 27% on the West Coast, where DTW sales are more significant. *See* PETROLEUM MERGER REPORT at 242 tbl.9-2.

[7] The 75th percentile refers to firms whose price is exceeded by prices of 25% of other area firms; the 25th percentile refers to firms whose price is greater than the prices of 25% of other area firms. The inter-quartile measures how closely individual firms' prices are clustered around the market average. The difference between the highest and the lowest branded daily prices (the "range" columns described above) provides insight into how price dispersion is affected by price "outliers," those firms that are pricing either above or below all other sellers.

Southeast and the Midwest generally saw smaller increases than the Northeast and Mid-Atlantic, and the Gulf Coast experienced even smaller changes. The West Coast saw average rack prices similar to those in the Southeast. Increases in the Rocky Mountain area averaged about 30 cents per gallon. This increase overestimates Katrina's impact on prices in the Rocky Mountain area relative to its impact on prices in other areas, because by historical standards Rocky Mountain prices were unusually low during the week ending August 20.[8]

Price dispersion also increased in the week following Katrina. In the week before Katrina, high and low rack prices differed by less than ten cents per gallon in most areas. In that week, the inter-quartile range was generally between one and three cents per gallon, indicating that many area wholesalers priced close to the market average. In the week following Katrina, both measures of price dispersion increased significantly in most areas.[9] In absolute terms, price dispersion generally increased the most along the East Coast (Atlanta, Fairfax, Pensacola, and Spartanburg), the Gulf region east of Texas (Baton Rouge, Mobile, and Vicksburg), and parts of PADD II, such as Knoxville (which is supplied by the Colonial Pipeline). Somewhat smaller increases in dispersion occurred in the Mid-Atlantic and the Midwest. The smallest increases in dispersion took place in the Mountain states and the West Coast.[10]

Figures 6-1 through 6-3 illustrate how price dispersion, as measured by the difference between the highest and lowest price in an area, varied on a daily basis before and after both hurricanes.[11] These figures illustrate the dramatic increase in price variation after Katrina and, to a somewhat lesser extent, Rita.

However, drawing conclusions from increased price dispersion is difficult. Although some price variation is common in gasoline (and many other products), as a general economic phenomenon the relationship between the amount of price dispersion and the change in average prices has not been extensively studied. Nevertheless, the price dispersion data suggest two observations. First, after both hurricanes, most of the increase in dispersion was short-lived, typically lasting less than a week. Second, as discussed below, most (but not all) of the increase in dispersion can be attributed to a small number of wholesalers that had particularly pressing supply difficulties after the hurricanes.

Another striking effect during the post-hurricane periods concerns the relationship between the wholesale price of branded and unbranded gasoline. Normally, wholesale

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[8] The price of gasoline in the mountain states, especially Salt Lake City, was below the predicted price in the weeks leading up to Katrina according to the FTC Gasoline Price Monitoring Model. The FTC Gasoline Price Monitoring Model examines differences in current prices across the United States relative to historical price differences.

[9] One exception is Salt Lake City, where the range in wholesale prices decreased by several cents, although the inter-quartile dispersion increased by two cents.

[10] These general results were not without some exceptions. For example, the eastern portion of the Gulf Coast (Mobile, Baton Rouge, and Vicksburg) saw a greater increase in dispersion than the other portions of the Gulf. This may have been at least partly due to some firms freezing rack prices after Katrina in the eastern Gulf, as described in Chapter 5.

[11] Figures 6-1 through 6-3 show the high and low prices in area on a given day compared to the average area price. For example in Figure 6-3, the highest price in early September was about 60 cents above the average price for that day, while the lowest price was about 20 cents under the average price. As we describe later, the figures exclude firms with the highest post-Katrina prices. *See* discussion on page 10.

unbranded gasoline sells at a price several cents per gallon below the price of wholesale branded gasoline. The difference between the average rack price of branded and unbranded gasoline is generally regarded as a measure of the brand premium.[12] As the daily data in Figures 6-4 through 6-6 show, in selected cities unbranded prices exceeded average branded prices for some periods after both hurricanes.[13] These "price inversions" were as high as 30 to 40 cents per gallon for very short periods. Generally, the magnitudes of the inversions associated with Katrina were greater than the magnitudes of those associated with Rita. For the selected cities, the branded/unbranded price inversions were similar in magnitude to inversions elsewhere within these cities' larger geographical regions.

B. Competitive Analysis of Post-Katrina Wholesale Price Changes

Staff examined whether the post-Katrina increases in average wholesale prices and price dispersion are explained by changes in costs and increased uncertainty or, alternatively, by a lessening of competition. Market-wide increases in costs are typically associated with increases in average prices, while cost changes that affect firms differentially may affect the dispersion of prices. Holding costs constant, an exercise of market power after Katrina would also increase average wholesale prices.

1. *Changes in Costs and Wholesale Prices*. This inquiry focused on cost elements that changed significantly during the immediate post-Katrina period.[14] In this regard, two cost factors stand out: (1) changed supply conditions involving the bulk acquisition of gasoline from refineries by pipelines or marine vessels; and (2) changed product valuation reflecting changes in the overall scarcity of gasoline. As explained in the previous chapter, certain areas in the country experienced greater wholesale price increases than other areas because marginal supply conditions in the former were critically affected by the hurricanes. For example, after Katrina, cities on the East Coast experienced relatively sharp increases in wholesale (and retail) prices as a result of pipeline outages caused by Katrina.

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[12] The brand premium reflects the amount that many consumers are willing to pay for branded gasoline, or the amount that a retailer is willing to pay for more reliable branded supply, or both. The branded rack price includes physical services such as the brand's proprietary additives and credit card services, as well as non-physical services like brand value and supply assurances, which are provided by the branded firm. Unbranded gasoline has generic additives and no ancillary services attached to it.

[13] Staff used the unbranded low price instead of the unbranded average rack price, for two reasons. First, jobbers purchasing gasoline at the unbranded rack have the ability to purchase from any wholesaler. Most of the unbranded rack sale volumes should be associated with the lowest rack price. Second, after the hurricane, some wholesalers reportedly posted very high unbranded rack prices without having any product to sell. To the extent this behavior occurred, the unbranded average was biased upwards.

An analysis of unbranded rack price dispersion similar to the previous analysis of branded rack dispersion is not possible. First, too few wholesalers market unbranded gasoline from terminals in a typical region to allow staff to draw inferences regarding the distribution of prices. Second, average unbranded rack price data following Katrina and Rita may be biased upwards because, at the height of the supply disruption, some unbranded wholesalers may have continued to post prices even though they had no product to sell.

[14] Other cost factors that affect area wholesale prices (such as terminal fees and costs of fuel additives) were unlikely to have changed significantly in the immediate post-Katrina period and hence are not relevant to price changes during the period.

With respect to changes in product valuation, bulk spot prices are critical in explaining wholesale prices and short-term wholesale price fluctuations.[15] Unlike rack sales, which involve sales of much smaller truckload quantities for distribution to retail outlets, bulk spot transactions are thousands of barrels in size and occur at transfer points such as refineries, ports, or pipeline junctures. As mentioned in Chapter 4, bulk spot prices are not determined by a long-term contract. Rather, buyers and sellers typically arrive at the price of a bulk spot sale through a bid-and-ask negotiation process and may report prices to private reporting services such as OPIS and Platts. The key spot prices for highly liquid and competitive bulk markets (such as the New York Harbor and the Gulf Coast) respond quickly to changing supply and demand conditions.

In 1993, the Government Accounting Office (now the Government Accountability Office) explained the relationship between spot prices and prices at other levels of the supply chain, including terminal rack prices:

> The prices of storable products, such as petroleum, reflect not only current foregone alternative uses, but future foregone alternative uses. Thus, the current prices of crude oil and petroleum products already in inventory adjust to account for [expected] future events—such as further changes in the supply or demand—because the current owners of the oil or products could choose to hold onto them, awaiting prices available in the future.[16]

Spot prices convey important information about the value of inventories and the opportunity cost of sales. Changes in spot prices affect wholesalers' marginal costs of obtaining replacement supplies, which are a critical determinant of the prices wholesalers charge their customers.[17] Spot prices changed dramatically after Katrina, and wholesale rack prices responded to these changes in cost.

The relationship between rack prices and spot prices is illustrated in Figure 6-7, which compares Gulf spot prices to rack prices in Houston, Texas and Atlanta, Georgia. Although rack prices were less volatile than spot prices, rack prices were very responsive to changes in spot prices.[18] In the months before Katrina, the average monthly difference between the Houston rack price and the Gulf spot price of gasoline was between four and ten cents per gallon. In the weeks immediately following Katrina and Rita, the spot price of gasoline increased sharply. Rack prices also increased significantly, but not as fast or as much. Comparing Atlanta rack prices to Gulf spot prices reveals a similar pattern.

Generally, rack price dispersion can be attributed to cost factors including: (1) variation in bulk supply acquisition costs across wholesalers;[19] (2) the premium or discount at which a

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[15] [Confidential material redacted.]

[16] U.S. GOV'T ACCT. OFF., ENERGY SECURITY AND POLICY: ANALYSIS OF THE PRICING OF CRUDE OIL AND PETROLEUM PRODUCTS 61 (1993). This principle applies to all levels of the industry, as GAO went on to explain regarding gasoline retailers: "This [irrelevance of historical costs to current pricing] explains why station operators, who may already have some gasoline acquired at lower or higher costs, immediately adjust their retail prices to reflect the new value of inventory."

[17] As discussed in Chapter 4, staff found no evidence of manipulation of published spot prices.

[18] Rack prices are usually higher than spot prices because they reflect the cost of transport from the spot market to the rack, storage at the rack, and in the case of branded gasoline a brand premium.

[19] For example, some wholesalers may satisfy area marketing needs with gasoline from its own nearby

brand sells relative to others due to consumer or distributor preferences; and (3) differences in wholesalers' contractual relationships with their distributors.[20] Brand premiums are unlikely to change quickly and are not likely to be significant in explaining the sudden changes in price dispersion after Katrina. This leaves the first and third factors to be considered more carefully.

The supply disruptions associated with Katrina and Rita affected the bulk acquisition costs of individual wholesalers differently. In particular, wholesalers encountered more challenging supply problems if the hurricanes significantly reduced the wholesaler's own refinery production or affected the pipelines on which the wholesaler relied. These wholesalers tended to be among the higher priced sellers immediately after the hurricanes.

Indeed, in many areas, much of the increased wholesale price dispersion can be attributed to the higher prices charged by a small number of firms that, due to Katrina, either lost refinery output or experienced dramatically increased bulk supply costs relative to their competitors. Had the hurricanes affected firms more equally, the exclusion of a small number of firms from the analysis should not result in significant changes in price dispersion. This was not the case here. Table 6-2 shows how removal of higher priced firms from the samples changes the magnitude of price dispersion.[21] All cities in which one or more firms priced well above other firms are in regions where gasoline supply was most affected by Katrina, namely, the East Coast, the Midwest, and the Gulf Coast. If the pre- and post-Katrina samples exclude firms with the highest post-Katrina prices, the post-Katrina increase in price range is reduced by six cents per gallon in Boston and 51 cents per gallon in Mobile. The decrease in the range in some cities, such as Houston, is over 40%. The effect of removing these firms on the inter-quartile range was from under one cent to twenty-seven cents per gallon. On a percentage basis, the change in the inter-quartile range that results from dropping one or two firms is substantial.

The impact of one or two firms on rack price dispersion can be seen in Figures 6-1 through 6-3. These figures show the dispersion of rack prices from July through November 2005, in Atlanta, Georgia, Chicago, Illinois, and Fairfax, Virginia, both with and without the firms most significantly affected by Katrina. In these cities, these firms accounted for a sizeable portion of the increased dispersion in rack prices.

Firm A, the wholesaler removed in Atlanta (Figure 6-1), is a refiner also integrated into retail marketing ("refiner/marketer") that was disproportionately affected by a refinery shutdown caused by Katrina.[22] Over one-third of Firm A's southern marketing sales volume is typically sourced from its Gulf Coast refinery production. Post-Katrina, Firm A had to replace this supply with more expensive spot purchases. Like other wholesalers, Firm A also suffered localized inventory shortages at various Southeastern terminal locations along the Plantation and Colonial

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refinery, while other wholesalers may rely on exchange agreements with local refiners or pipeline shipments from more distant refineries.

[20] Wholesalers' jobber contracts may have different terms regarding discounts or volume commitments.

[21] Staff excluded the highest priced firm if its wholesale price was ten cents per gallon above the next highest firm's price for any day in the week after Katrina, a sizable differential based on staff's experience in analyzing pricing data. This pricing behavior occurred in six cities. In three cities, staff removed the two highest price firms, because their prices were within a few cents per gallon of each other but were more than ten cents higher than the third highest priced firm. In three cities in the Gulf Coast region, staff excluded three firms which had high prices that were more than ten cents higher than the next highest firm's price.

[22] [Confidential material redacted.]

pipeline systems. In addition to its own inventory shortages at these terminal locations, many of Firm A's normal wholesale suppliers stopped unbranded rack sales to maintain supply for their own branded networks.[23] When Firm A is excluded from the Atlanta sample for the post-Katrina week ending September 3, rack price dispersion as measured by the high-low price spread falls from a maximum of 59 cents per gallon (as shown in Table 6-2) to just under 25 cents per gallon.

In Chicago, of the two firms with the highest prices immediately following Katrina, one reduced refinery runs post-Katrina because of crude oil pipeline unavailability, while the other diverted products refined in the Midwest., that would normally have served Chicago, into regions that faced severe supply disruptions as they were typically supplied from the Gulf. When these two firms are excluded from the sample in Chicago (identified as Firm C and Firm D in Figure 6-2), dispersion drops significantly. Figure 6-2 also shows that the price dispersion in Chicago decreased in mid-September, which is approximately when a crude oil pipeline that serves the area, the Capline, returned to normal service.[24]

In Fairfax, Virginia (Figure 6-3), Firm B was the largest contributor to rack price dispersion in the region.[25] Firm B possesses no domestic gasoline production capabilities and relies on open market purchases of products to supply its branded stations.[26] Firm B's supply costs are therefore closely related to spot prices, which increased significantly during this time. Removing this company from the Fairfax sample reduces the post-Katrina high-low dispersion measure by over half.

Some firms were particularly hard hit by refinery outages while other firms were unaffected. As shown on Table 6-2 and discussed above, a sizeable portion of the increased price dispersion was due to a small number of firms that had substantially higher prices than other firms in a given city. These firms typically either lost refining capacity due to Katrina, or purchased gasoline supply at spot-related prices that increased more than average rack prices. Two firms cited as examples in Figures 6-1 through 6-3 accounted for over half of the firms removed from the various cities.[27]

Differences in how wholesalers managed their contractual relationships with their distributors also may have significantly affected the dispersion of wholesale prices. Staff found that a number of wholesalers rationed limited gasoline supplies by means other than by increasing prices.[28] Many wholesalers implemented volume limits per retailer immediately following Katrina and Rita.[29] Wholesalers limited their distributors to between 70% and just

[23] [Confidential material redacted.]

[24] [Confidential material redacted.]

[25] [Confidential material redacted.]

[26] *See* Ivan Weiss, *Russia's Lukoil Looks to U.S. to Expand Reach*, OIL DAILY, Apr. 3, 2006.

[27] [Confidential material redacted.]

[28] Wholesalers may have feared jeopardizing long-term relationships with their branded distributors if they passed on the full brunt of sharply increased spot prices through higher rack prices, or if certain distributors felt that they did not get a "fair share" of the limited supply available at terminals. [Confidential material redacted.]

[29] Volume allocations typically limit retailers from acquiring more than a specified percentage of their historical or contractual volume from their wholesaler. [Confidential material redacted.]

under 100% of their normal volumes. At least one firm limited supplies in affected areas as the hurricanes were approaching.[30]

Allocation by non-price means was used in many cases by wholesalers in areas directly hit by the hurricanes and by terminals in the Southeast, which suffered from supply disruptions as a result of outages along the Colonial and Plantation pipelines. To the extent that wholesalers differed in their reliance on price versus non-price rationing, rack price dispersion likely would have increased.

Wholesaler concerns about maintaining contractual relationships with downstream distributors generally did not extend to their unbranded gasoline sales. Wholesale contracts typically provide greater security of supply to branded distributors than to unbranded distributors. This supply assurance typically commands a price premium so that branded gasoline normally sells at wholesale for a few cents per gallon more than unbranded gasoline.[31] Unbranded gasoline customers have the flexibility to shop for lower prices and to switch wholesale suppliers because they have no contractual obligation to purchase from a specified supplier. This flexibility and the corresponding lack of commitment by wholesalers to suppliers make unbranded purchasers more vulnerable to supply disruptions.[32] As the last section discussed, many parts of the country experienced widespread and significant — though short-lived — price inversions after Katrina and Rita. Such inversions are commonplace during periods of supply shortage in light of the different contractual terms under which wholesalers sell branded and unbranded gasoline.

It is likely that greater uncertainty also played a significant role in explaining why wholesale price dispersion increased immediately after the hurricanes. Firms base their pricing decisions on expectations regarding future prices and costs. As wholesalers made pricing decisions in the aftermath of the hurricanes, they faced significant challenges, including rapidly changing spot prices, uncertainties about the status of hurricane-affected refineries, pipelines, and alternative supply options, and unusual demand surges due to panic buying. Also, wholesalers differed in their information about market conditions.[33] Under such circumstances, firms may form different expectations about future market conditions and hence appropriate price levels. As a result, price dispersion can be expected to increase during supply disruptions. Indeed, economic models of firm behavior predict that price dispersion is likely where firms have differing costs or are uncertain about the costs.[34]

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[30] [Confidential material redacted.]

[31] However, some rack wholesalers appear to be moving towards supplying unbranded customers contractually on a ratable basis similar to their branded customers.

[32] *See* PETROLEUM MERGER REPORT at 225; U.S. GEN. ACCT. OFF., ENERGY SECURITY AND POLICY: ANALYSIS OF THE PRICING OF CRUDE OIL AND PETROLEUM PRODUCTS 51 (1993); PHILLIP SORENSON, AN ECONOMIC ANALYSIS OF THE DISTRIBUTOR-DEALER WHOLESALE GASOLINE PRICE INVERSION OF 1990: THE EFFECTS OF DIFFERENT CONTRACTUAL RELATIONS (1991).

[33] Uncertainty about future prices and the duration of supply shocks affects how each firm will price. For example, if a supply shock is thought to be short-lived, the firm may be less quick to increase price than if it is thought to be a longer term issue. *See* U.S. GEN. ACCT. OFF., ENERGY SECURITY AND POLICY: ANALYSIS OF THE PRICING OF CRUDE OIL AND PETROLEUM PRODUCTS 63-64 (1993).

[34] *See* Keith C. Brown, *A Note on Optimal Fixed-Price Bidding with Uncertain Production Cost*, 6 BELL J. ECON. 695 (1975); Jennifer F. Reinganum, *A Simple Model of Equilibrium Price Dispersion*, 84 J. POL. ECON. 851

2. *Competition and Wholesale Price Changes*. The cost-related and other factors discussed in the preceding section explain a large share of the changes in wholesale gasoline prices in the aftermath of Katrina. Staff also evaluated whether any reduction in competition during the post-hurricane period resulted in price increases in excess of those attributable to cost-related factors.

This investigation found no evidence of either an explicit agreement or tacit understanding among wholesalers to restrict output and increase prices in the aftermath of Katrina. Indeed, the evidence appears inconsistent with a collusion hypothesis. The data show that the timing and magnitude of prices changes varied considerably across each area's wholesalers during this period. Price dispersion increased substantially as well. These facts undermine the hypothesis that wholesalers were colluding. High dispersion of prices makes coordination more difficult and suggests that sellers are not colluding. Collusion requires firms reaching an agreement, monitoring an agreement, and punishing deviations. Price (cost) dispersion makes all the requirements of collusion more difficult. Moreover, economic research has found that greater price dispersion indicates greater competition.[35]

In addition to substantial price dispersion, the rank order of firms based on branded rack prices changed considerably on a daily basis. Table 6-3 ranks firms in order by branded rack price in Atlanta, for several days before and after Katrina. Each firm's ranking varies considerably over the days presented. For example, Firm 1 was among the highest priced firms before Katrina and became the lowest price firm on September 1. Firm 8 went from the lowest price firm before Katrina to the upper end of the distribution the day after Katrina, and then became the firm with the second lowest price by September 3. The change in the ranking of firms in Atlanta is typical of other cities staff examined. While, by itself, the absence of stable pricing relationships among firms cannot eliminate the possibility of collusion, such instability is considered inconsistent with effective collusion.

Furthermore, staff found no evidence that, following Katrina, changes in concentration of wholesale sales (as measured by monthly sales at the state level) were associated with reductions in competition.[36] As Table 6-4 shows, in most states, state-level wholesale concentration rose from August to September 2005, perhaps because of differential effects of Katrina on the supply

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(1979); John A. Carlson & R. Preston McAfee, *Discrete Equilibrium Price Dispersion*, 91 J. POL. ECON. 480 (1983).

[35] *See, e.g.*, R. Abrantes-Metz, et al., *A Variance Screen for Collusion*, 24 INT'L J. INDUS. ORG. 467 (2006); John M. Connor, *Collusion and Price Dispersion*, 12 APPLIED ECON. LETTERS 335 (2005); Y. Bolotova, et al., *The Impact of Collusion on Price Behavior: Empirical Results from Two Recent Cases* (Dep't of Ag. Econ., Purdue Univ. working paper, 2005); and J. Harrington, *Detecting Cartels* (Johns Hopkins Univ. working paper, 2004).

[36] Data on city level concentration are not available. These state level concentration measures are based on EIA sales data of "prime suppliers," firms that produce or import product and sell the product to jobbers, retailers, or end-users within a state. *See* Energy Info. Admin., U.S. Dep't of Energy, http://www.eia.doe.gov/oss/forms.html#eia-782c. Sometimes referred to as "first sales into state," these data represent the first change in title after the product is either produced or brought into a state. As such, these sales explicitly represent wholesale transactions if made at terminal racks or on a DTW basis, or they implicitly represent a wholesale transaction in instances of internal company transfers to company owned and operated outlets. Though illustrative of changes and trends in wholesale concentration in gasoline, concentration based on these state-level EIA data are not likely to reflect concentration in well-defined markets for purposes of antitrust analysis. In its antitrust review of mergers involving gasoline marketing, the Commission has typically alleged geographic markets corresponding to metropolitan or similarly sized areas. *See* PETROLEUM MERGER REPORT at 221-22, 229-31.

sources of different wholesalers. However, there was no statistically significant correlation between changes in state level concentration and changes in state average wholesale prices from August to September 2005.[37] For example, states like Maine and Massachusetts experienced very different changes in wholesale concentration but exhibited about the same percentage increase, 18%, in wholesale price. Wholesale prices in Maryland also rose by nearly 18% in September, but state level wholesale concentration fell.[38] This pricing evidence strongly suggests that the increases in concentration observed in some states did not facilitate anticompetitive conduct at the wholesale level.

II. Retail Prices in Selected Urban Areas Before and After Katrina

A. Summary of Retail Price Changes

As discussed in Chapter 5, retail prices increased in all areas after Katrina. Retail prices increased more in some areas than in others because of the areas' different bulk supply relationships with the Gulf. As in the case of wholesale rack prices, dispersion for retail prices within a given city increased substantially immediately after Katrina. This section examines changes in average retail prices and retail price dispersion for the selected urban areas used in the preceding analysis of wholesale prices.[39]

Table 6-5 presents the weekly average of the daily retail prices and of measures of daily retail price dispersion for the last full week before Katrina (the week ending August 20) and for the first full week after Katrina (the week ending September 3) for the 31cities. Columns (4) through (6) report the average retail price and the change in the average retail price by area. Columns (7) through (9) present the differences between high and low prices and the changes in this range. Columns (10) through (12) show the inter-quartile range and the change in the inter-quartile range by city.

Retail gasoline prices increased after Katrina in all parts of the United States. As Chapter 5 explains, prices generally increased the most in the eastern United States. Average increases in the Rocky Mountain states were somewhat larger that in other western states. At least part of this difference apparently was due to Rocky Mountain state prices being unusually low (relative

[37] A standard statistical test appropriate for comparing concentration (known as the Herfindahl-Hirschman Index or HHI) and price changes indicated that there was likely no meaningful relationship between these data series. In other words, higher (or lower) prices were not associated with higher (or lower) levels of concentration.

[38] Katrina's landfall on August 29 could have affected price and concentration data for August 2005, and the usual month-to-month variation in state concentration statistics might create a spurious result when using August 2005 as a benchmark. Staff therefore estimated the correlation of September price and concentration changes compared to the averages for those variables for the first seven months of 2005. Here changes in September 2005 prices relative to this longer benchmark period were found to be significantly — but negatively — correlated with changes in state level concentration. In other words, smaller increases in state concentration were associated with greater increases in prices.

[39] There is no one-to-one correspondence between rack city and retail city. For example, the closest terminal rack for the city of Jackson, Mississippi, is in Vicksburg. The Washington, DC, metro area is served primarily from terminals in Baltimore, Maryland, and Fairfax, Virginia. The terminals in Raleigh, North Carolina, serve Chapel Hill. The same relationship exists for Nassau, New York, and Long Island, and Holland and Grand Rapids, Michigan.

to prices in other areas) in late August.[40] The geographic pattern of changes in average retail prices from the week before to the week after Katrina is consistent with the hurricane's disruption of refinery and pipeline operations. For example, Knoxville, which is supplied by the Colonial Pipeline, and Phoenix, which receives significant gasoline supply from the Gulf, experienced some of the largest increases in average retail prices during the first full week after Katrina. Not surprisingly, in general, average retail prices increased the most in the areas where average wholesale rack prices increased the most.

The dispersions of retail prices during the week before Katrina did not differ significantly from retail price dispersions observed during June 2005. Retail price ranges (the difference between the highest and lowest prices in an area) ranged from approximately 30 to 90 cents per gallon.[41] The inter-quartile range was between 3 and 15 cents per gallon. In other words, prices at 50% of the stations in an area were generally within 3 to 15 cents per gallon of each other. In any given area, retail prices were more dispersed than wholesale prices.

As with wholesale price dispersion, retail price dispersion after Katrina increased substantially in East Coast, Midwest, and Gulf Coast areas, generally the urban areas most directly affected by the supply outages caused by Katrina. The smallest increases in retail dispersion were in the Rockies and on the West Coast. This is consistent with the relatively small changes in wholesale dispersion in those areas. In general, urban areas that experienced greater average price increases also experienced greater increases in retail price dispersion.[42]

B. Competitive Analysis of Post-Katrina Retail Price Changes

The preceding discussion supports a conclusion that at least a substantial portion of the retail gasoline price changes following Katrina can be explained by supply reductions caused by the hurricane and their effects on wholesale prices. This section examines whether reductions in competition or the exercise of market power caused prices to increase further.

1. *Changes in Costs and Retail Prices*. As a general matter, gasoline retailers take into account a number of factors in setting prices. According to large, integrated refiner/retailers, the most important pricing factors are the wholesale cost of gasoline and competitor pricing.[43] Some of these retailers rely on surveys of prices charged by competing retailers, and take into account each relevant competitor's location, asset quality, number of pumps, credit card capabilities, proximity, and brand strength.[44] Other refiner/retailers mentioned other important influences on

[40] Based on the FTC Gasoline Price Monitoring Model, which identifies the normal range of price relationships across geographic areas based on historical data, average retail prices across the selected areas for the week ending August 20 generally reflect the typical geographic price dispersion at retail in the United States. However, as mentioned above, Rocky Mountain prices were an exception that week, being unusually low relative to prices elsewhere.

[41] Among other factors, dispersion levels are sensitive to the size of the geographic areas being considered. Larger areas are likely to have greater price dispersion than smaller ones.

[42] Based on a standard statistical test appropriate for this comparison, there was a significant correlation between higher average prices and greater price dispersion. Areas with larger price increases also had greater increases in price dispersion.

[43] Some retailers referred to the wholesale cost of gasoline as inventory replacement costs, while others referred to it as a concern about the margin between the wholesale and retail price of gasoline. [Confidential material redacted.]

[44] [Confidential material redacted.]

their retail pricing decisions, including sales volume,[45] price elasticity of demand,[46] inventory levels,[47] pricing volatility (including changes in crude oil prices),[48] and state laws (including regulations governing minimum mark ups and rates of pricing changes).[49] Other factors can also affect retail prices.[50] For example, some gasoline stations that sell large volumes of gasoline or that have significant in-store sales operate with lower margins.[51] Other differences in retail station costs and prices may be attributable to differences in zoning laws, local taxes, or real estate costs.[52]

Among the cost elements that affect retail prices, wholesale costs are the most relevant to this inquiry of post-Katrina prices because other costs (such as labor or real estate) are not likely to change significantly during a short period. Retail prices are highly responsive to price changes at the wholesale level, although adjustments generally occur with a time lag. A comparison of average wholesale rack price changes (Table 6-1) with average retail price changes (Table 6-5) from the week before to the week after Katrina, by PADD, shows that rack changes were generally a few cents per gallon larger than retail changes. For example, the Northeast and Mid-Atlantic saw an average rack price increase of 36 cents per gallon and an average retail increase of 28 cents per gallon. The Midwest had an average rack increase of 28 cents per gallon and an average retail increase of 24 cents per gallon. The West Coast had an average rack increase of 24 cents per gallon and an average retail increase of 17 cents per gallon. Figures 6-8 and 6-9 illustrate the relationship between average rack and retail prices in Atlanta and Houston, respectively, for a longer period, from June through November 2005. The difference between the rack price and the retail price reflects taxes, distribution and retailing costs, and retailer profit. In the three months before Katrina, the relationships between rack and retail prices of gasoline were relatively stable. On a monthly basis, the average difference between rack and retail prices changed by a few cents per gallon in the cities.[53]

As discussed earlier, dispersion in wholesale prices increased substantially immediately after Katrina. For the week after Katrina, the cents per gallon increase in retail price dispersion

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[45] [Confidential material redacted.]

[46] [Confidential material redacted.]

[47] [Confidential material redacted.]

[48] [Confidential material redacted.]

[49] [Confidential material redacted.]

[50] Price dispersion may also be affected by consumer behavior. A large volume of economic literature shows how differences in consumer search costs can affect the differences in prices across competing sellers. *See, e.g.*, G. Stigler, *The Economics of Information*, 69 J. POL. ECON. 213-225 (1961); H. Varian, *A Model of Sales*, 70 AMERICAN ECON. REV. 651-659 (1980).

[51] *See* PETROLEUM MERGER REPORT at 239.

[52] *See* Christopher Taylor & Jeffrey Fischer, *A Review of West Coast Gasoline Pricing and the Impact of Regulations*, 10 INT'L J. ECON. BUS. 225 (2003) (discussion of how these factors can affect retail prices).

[53] As shown by comparing Tables 6-1 and 6-5, in the immediate aftermath of Hurricane Katrina, the increase in the wholesale gasoline price was generally larger than the increase in the retail price. Average gross retail margins fell as a result. As shown on Figures 6-8 and 6-9, later in the month, as the average rack price began to fall, the average retail price fell somewhat more slowly. This caused an increase in average gross retail margins. This pattern of changes in gross retail margins reflects the usual lag in rack to retail price adjustment both when prices are increasing and prices are decreasing.

is similar in magnitude to the increase in rack price dispersion. For example, from the week before to the week after Katrina, the change in the inter-quartile range for rack prices in the Midwest (Table 6-1) was 8.5 cents per gallon, and the change in the inter-quartile for retail prices was 7 cents per gallon (Table 6-5). Only in the Mountain states and the West Coast did the inter-quartile measure of dispersion increase more for retail prices than for rack prices. However, the changes in inter-quartile dispersion in those regions were relatively small, one to three cents per gallon.[54] Although patterns varied somewhat across cities, retail price dispersion increased considerably immediately after Katrina but declined by mid-September. Rita, on the other hand, had relatively muted effects on retail price dispersion in most cities. Figures 6-10 and 6-11, which show retail price dispersion in Atlanta and Chicago from July through November 2005, are representative of changes in retail price dispersion.[55]

In sum, much of the increase in retail price dispersion appears driven by changes in wholesale rack prices. Some retailers increased prices more than others because they faced larger increases in wholesale prices. Retailers selling unbranded gasoline experienced particularly sharp escalation in their wholesale costs. Of course, not all retailers are supplied with gasoline sold at rack; others are supplied on a DTW basis and still others are company owned and operated outlets that are supplied at an internal transfer price. While weekly measures of DTW prices or internal transfer prices are not available, DTW prices likely changed less than the rack prices.[56] If DTW prices fell relative to rack prices, this may have contributed to increased dispersion at retail.[57]

The previous section noted that differences in how wholesalers managed their contractual relationships with their distributors increased the dispersion of wholesale prices. Wholesalers differed in reliance on non-price mechanisms (quantity allocations) versus price increases to ration limited gasoline supplies. These changes at wholesale likely affected retail price dispersion. Chapter 5 discusses this issue in more detail.

Finally, like wholesalers, retailers faced considerable uncertainty about demand and cost conditions in the immediate aftermath of Katrina. Many retailers were uncertain about when and at what price they would obtain their next supplies, and some were facing rapidly dwindling inventories.[58] Demand was highly uncertain due to unexpected panic buying. Some retailers

[54] However, these wholesale and retail measures of dispersion are not directly comparable, because the wholesale price data do not include all wholesale prices (such as DTW or unbranded prices) and do not measure the quantity sold by each firm.

[55] The graphs show the dispersion between the highest priced stations (95th percentile) and the lowest (5th percentile) and the inter-quartile range (between the 25th and 75th percentiles).

[56] For a discussion of how different wholesale prices change during a supply shock, see PHILLIP SORENSON, AN ECONOMIC ANALYSIS OF THE DISTRIBUTOR-DEALER WHOLESALE GASOLINE PRICE INVERSION OF 1990: THE EFFECTS OF DIFFERENT CONTRACTUAL RELATIONS (1991).

[57] The EIA data showing monthly DTW and rack prices is available at Energy Info. Admin., U.S. Dep't of Energy, *at http:://tonto.eia.doe.gov/dnav/pet/pet_pri_refmg_dcu_nus_m.htm*. The data did not indicate an inversion of DTW and rack prices, although this may be due to the monthly nature of the data. Moreover, company documents obtained by staff offered limited information about DTW rack inversions. [Confidential material redacted.]

[58] [Confidential material redacted.]

may also have had better information about market conditions than others. These chaotic market conditions also serve to explain why some retailers chose different prices.[59]

2. *Competition and Retail Price Changes*. This section considers whether reduced retail competition caused post-Katrina retail price increases to be greater than they otherwise would have been. As a result of consumer complaints, the investigation uncovered two instances of communications between retailers regarding prices. Staff forwarded these consumer complaints to the states attorneys general and the U.S. Department of Justice for further investigation.[60] With those possible exceptions, the investigation did not find evidence that coordination or other forms of market power caused price increases.

Table 6-5 shows that the magnitude of price dispersion was high and increased considerably during this period. These observations undermine the hypothesis that collusion among retail stations played a significant role in explaining observed price increases. A typical pattern of retail price changes is shown in Table 6-6. This table provides a retail price ranking for stations in the Atlanta zip code 30318 for which staff obtained data. Similar to what rack price rankings illustrated for wholesalers (Table 6-4), the retail price ranking of stations changed every day. For example, Station 1 went from the highest priced station in the days before Katrina to a relatively low priced station in early September. Station 2 went from a relatively high priced station to a relatively low priced station. Station 8 went from being relatively low priced to being relatively high priced. The pattern shown in this zip code was common for other zip codes that staff examined.

Because data on retail market concentration are not readily available, staff could not analyze directly whether price increases after Katrina were correlated with increases in retail concentration. However, because the vast majority of retail outlets remained open, it appears unlikely that changes in the number of competing stations could have caused significant reductions in competition outside areas that suffered direct damage from Katrina. Among the 31 cities for which staff obtained OPIS data, the only cities in which more than five stations reported transactions in the week after Katrina were Baton Rouge, Louisiana; Mobile, Alabama; Jackson, Mississippi; and Pensacola, Florida.[61] In these cities, the number of reporting stations decreased by ten percent or more.

III. Extent of Unusually High Retail Prices after Katrina

This section examines the frequency and persistence of very high retail prices at individual retail stations in the aftermath of Katrina. The data show that few retailers raised prices substantially above average levels, and that those prices were not maintained for very

[59] [Confidential material redacted.]

[60] Price-fixing of this kind could constitute a criminal violation of the antitrust laws. The Commission does not prosecute criminal antitrust violations and refers evidence of such violations to the U.S. Department of Justice (or state agencies as appropriate) for criminal prosecution.

[61] Staff calculated, by city, the number of stations with at least one transaction in the week before and after Katrina. The only other cities that had any reduction in the number of stations reporting transactions were Harrisburg, Pennsylvania (three stations); Charleston, West Virginia (three stations); and Albuquerque, New Mexico (five stations).

long. This pricing evidence may also reflect shortages at the refining level and damage to the transportation infrastructure that reduced the ability of retailers to obtain gasoline supplies.

According to published reports, shortly after Katrina, certain retailers charged close to $6.00 per gallon for gasoline.[62] However, such pricing extremes appear to have been rare. Of the nearly 30,000 pricing complaints received by the U.S. Department of Energy ("DOE") Gasoline Price Hotline between August 1 and October 3, 2005, about 1.2% cited prices for regular grade gasoline in excess of $4.00 per gallon, while approximately 0.5% cited prices in excess of $5.00 per gallon.

The OPIS retail price data, which reflect actual transactions at reported prices, indicate that post-Katrina prices rarely exceeded $4.00 per gallon. Table 6-7 shows the maximum price charged by any station in the OPIS sample within each city, in the weeks following Katrina. The table also shows the number of days that the retailer charged the maximum price, as well as the date when this price became the highest price in the city. Of the nearly 1.5 million station-day observations in this data, only one observation exceeded $4.00 per gallon for regular grade gasoline: a station in Nassau, New York charged $4.01 per gallon on September 3.[63] Only twelve OPIS-reported price observations exceeded $3.80 per gallon.

Consumer complaints about extraordinarily high prices do not totally comport with OPIS data. For example, the highest OPIS retail price in Atlanta for regular grade gasoline was $3.64 per gallon on August 31. By contrast, following Katrina and Rita, the DOE Gasoline Price Hotline received twenty-three consumer complaints in Atlanta of regular grade gasoline prices exceeding $4.00 per gallon and nine complaints of prices exceeding $5.00 per gallon.[64] Assuming the consumer complaints generally stated prices accurately, one reason why OPIS did not report prices higher than $3.64 per gallon may be that stations posted higher prices only for a short time during which no customers made fleet card purchases.[65] For example, staff interviewed an Atlanta station operator who stated that he priced at $4.00 per gallon for only forty-five minutes.[66]

The data suggest that retailers priced at the highest levels for only very brief periods. According to Table 6-7, in only one city did the highest price stay above $3.50 per gallon for more than one day; a high of $3.71 per gallon was reported in Chapel Hill, North Carolina, for four days. In the 12 other cities with highest prices over $3.50 per gallon, the peak price lasted

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[62] *See* Michael A. Salinger, Director, Bureau of Econ., Federal Trade Comm'n, *Moneyball and Price Gouging*, Address to Boston Bar Association (Feb. 27, 2006), *at http://www.ftc.gov/speeches/salinger/060227MoneyballandPriceGouging.pdf*; *see also* Press Release, U.S. Rep. Peter DeFazio, *DeFazio Calls for Investigation into Gas Price Spikes Following Hurricane Katrina*, Sept. 14, 2005, *at* http://www.house.gov/defazio/090805GPRelease.shtml.

[63] This station in Nassau, New York was not identified by the New York State Attorney General as a price gouging station.

[64] The DOE complaint data seem to indicate that these twenty-three complaints were for different stations, although some of the consumer complaint data lack sufficient detail to know this with certainty.

[65] The daily station price reported by OPIS is the last fleet card transaction price for that day. The purpose of a fleet card is to allow employees using a company car or truck to purchase fuel. A fleet card is used to track and monitor employee purchases and firms pay for this service. If firms are monitoring employee gasoline purchases, they should be encouraging their employees toward lower priced gasoline stations.

[66] [Confidential material redacted.]

one day. In cities where the peak price did not exceed $3.50 per gallon, the peak price generally lasted one or two days, and lasted for four or five days in only a couple of cases.[67]

Staff interviews with alleged price gouging retailers indicated that some of highest prices occurred when stations were running out of product, were uncertain about when they would be re-supplied or at what price,[68] were trying to ration their dwindling inventory,[69] or were trying to curtail panic buying.[70] In addition, because unbranded stations saw their wholesale costs increase above those of branded stations, the retail prices of unbranded gasoline increased to high levels. One national retailer told staff that it closed its stations in Florida (which normally bought from a refiner at prices tied to a Platts spot market price) because the firm could not afford to re-supply the stations without either selling gasoline at a loss or risking that it would violate the state's anti-gouging laws.[71]

The station-specific OPIS data allow a systematic evaluation of the broader question of how many of the highest-priced retailers departed from their "usual" pricing practices. This helps illustrate the degree to which atypical retail pricing behavior contributed to the prices in a given city area, and in particular to the highest tier of retail prices within a city area. For purposes of this analysis, a retail station departed from its usual pricing if: (1) the station increased its price by more than the average increase for stations in city; (2) the station increased its price by more than the average increase for stations with the same brand in the same city; and (3) the station's price was among the top five percent of stations in the city based on post-Katrina prices. This definition excludes stations that routinely priced above the city average, stations affiliated with brands that were hit particularly hard by the hurricane, and stations that maintained prices below the very highest in the city. To identify such departures from normal pricing behavior, staff developed a series of statistical screens.

The first screen uses pre-hurricane data (from June 1 to August 28, 2005) to estimate the relationship between gasoline prices at each station and the city average retail price, and then to test whether the station raised its price relative to the city average after Katrina.[72] For example, if a station normally priced less than two cents per gallon above the city average price prior to Katrina, the station failed the first screen if the station priced more than two cents per gallon above the city average in the week after Katrina.

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[67] One station posted a price of $3.30 per gallon for nine days in Salt Lake City.

[68] [Confidential material redacted.]

[69] [Confidential material redacted.]

[70] [Confidential material redacted.]

[71] [Confidential material redacted.]

[72] To estimate the price effects of each of the hurricanes on a given station we take the difference of that station and the city average or the brand average.

(1) $$P_{it} - P_{Ct} = \sum_{d=1}^{7} (\alpha_d - \beta_d) D_{dt} + \alpha_8 Katrina_t + (\varepsilon_{it} - \varepsilon_{Ct})$$

where P_{it} is the retail price for the station being considered on day t, P_{Ct} is the average retail price for the MSA, D_{dt} control for the day of the week and $Katrina_t$ is the post-hurricane dummy variable.

Stations that "failed" the first screen were then tested by a second measurement. This second screen also uses the pre-hurricane data (from June 1 to August 28, 2005) to estimate the relationship between gasoline prices at each station and the average retail price for affiliates with the same brand and in the same city. This showed whether the station increased its post-Katrina price by more than the average for the same brand and city. For example, if a station generally priced three cents or less per gallon above the brand average before Katrina, the station failed the second screen if its price was more than three cents per gallon above the brand average in that city in the week after Katrina.

Stations failing the first two screening tests were subjected to a third screen. A station failed the third screen if it charged prices above those charged by 95% of the stations in the city for at least 75% of the days the station appeared in the dataset during the week following Katrina.[73] This screen is designed to identify stations that persistently charged relatively high prices in the week after Katrina.

Table 6-8 presents the results of the station-specific screening analysis. The third column presents the number of retail stations by city in the sample. The fourth column shows the number of stations that raised prices in the week after Katrina relative to their normal relationship to the city average price.

Approximately 29% of retail stations in the sample (about 7,000 stations out of the total sample of about 24,000 stations) increased their prices relative to the city average. This occurred more frequently on the East Coast (particularly in the mid-Atlantic region) and in the Midwest than in the Gulf Coast, Mountain, and West Coast states. This finding suggests that in regions that experienced greater supply problems after Katrina, a higher percentage of stations increased their prices relative to the city average than in other regions.

The first screen does not account for how Katrina's effects may have differed significantly among wholesale suppliers within a city. As discussed above, several wholesalers in particular suffered supply disadvantages following Katrina. Stations affiliated with five brands accounted for a disproportionately large percentage of the 7,000 stations that increased prices relative to their normal relationship to the city average for these stations, when compared to the percentage of those five brands in relation to the population of all stations.[74] The five brands in question were associated with refiners that lost sizeable refining capacity as a result of Katrina.[75] Unbranded stations also accounted for a larger percentage of the 7,000 stations that failed the first screen than of the population of 24,000 stations. As documented above, because of wholesale branded/unbranded pricing inversions after Katrina, unbranded gasoline stations paid significantly higher wholesale prices than did most branded stations in the week after Katrina.

The sixth and seventh columns of Table 6-8 show the results of the second screen, which controls for differences in Katrina's effects on individual brands selling gasoline within a city.

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[73] That is, a station is considered high priced if it prices within the top 5% of all stations in the city at least 75% of the time that the station appears in our data during the week following either Katrina or Rita (*i.e.,* 1 of 1 days, 3 or 4 days, or 5 of 6 days).

[74] The distribution of brands among the 7,000 stations that increased prices differs significantly from the distribution of brands across all 24,000 stations, based on a standard statistical test appropriate for this comparison.

[75] [Confidential material redacted.]

About 23% (approximately 5,400) of the stations in the population of 24,000 failed both of the first two screens. The second screen significantly reduces the differences among cities in the percentage of stations that changed their pricing behavior after Katrina. The distribution of brands for the approximately 5,400 stations that failed the first two screens is essentially the same as that for the population of 24,000 stations.[76]

Applying the first and second screens to pricing data for three and four weeks after Hurricane Rita, when supply conditions were more normal, 17% to 18% of stations increased their prices relative to the brand and city averages, compared to the 23% that did so in the week after Katrina. The greater supply uncertainty during the week after Katrina may explain this difference.

The first two screens do not control for lower-priced stations that changed their pricing behavior. The third screen identifies stations that charged higher prices than those charged by 95% of stations in the same city for at least 75% of the days that the stations in question appeared in the dataset during the weeks following Katrina. The results of applying the third screen (to stations that failed the first and second screens) are shown in the last two columns of Table 6-8. Less than one percent of the 24,000 stations increased their prices relative to the city average and the brand average and, in addition, were among the highest price stations in these cities after Katrina.

These results suggest that a small percentage of stations charged unusually high prices after Katrina relative to the overall market trend, even in the regions most impacted by Katrina. Few firms charged unusual prices (as compared to their historical pricing relationship to city and brand averages) that were among the highest sustained prices in a city area, and most of the highest-priced stations in a city area did not price outside of their typical relationship to city and brand averages.

The results from the analysis of the OPIS data likely overstate the extent of anomalous pricing by stations. As discussed above, the screens do not take into account some reasons why a station may have increased its prices after the hurricanes. For example, stations that paid rack prices for branded gasoline may have experienced greater wholesale price increases than stations carrying the same brand that paid DTW prices. During periods of constrained supply, a branded wholesaler supplies its DTW customers before supplying its branded jobbers.[77] Without data on the distribution method by station, staff cannot account for this potential issue. If such data were available, the number of stations identified by the screens would likely have been further reduced. In addition, the data could not account for likely localized supply and demand effects associated with the hurricanes, such as panic buying or stations running out of gasoline.

From this analysis, staff made several important observations. First, although media and consumers reported that some stations charged over $4.00 per gallon for regular gasoline at some time after the hurricanes, prices were rarely this high. Among the nearly 1.5 million post-Katrina

[76] The distribution of brands among the 5,400 stations that raised prices *independent* of brand effects did not differ significantly from the distribution of brands across all 24,000 stations, based on a standard statistical test appropriate for the comparison.

[77] For a discussion of how inversions affect pricing based on differing vertical relationships, see PHILLIP SORENSON, AN ECONOMIC ANALYSIS OF THE DISTRIBUTOR-DEALER WHOLESALE GASOLINE PRICE INVERSION OF 1990: THE EFFECTS OF DIFFERENT CONTRACTUAL RELATIONS (1991).

station-day price observations in the OPIS sample analyzed by Commission staff, there were 12 observations of prices above $3.80 per gallon and one observation of a price above $4.00 per gallon.[78]

Second, regardless of whether they appeared in the OPIS data, the very small fraction of stations that charged prices significantly above $3.80 per gallon apparently did so for very short periods, *i.e.*, hours rather than days. Although this analysis cannot explain the reason these stations charged the prices they did – whether they were running low on gasoline inventories with uncertainty about when they would receive new supplies, or whether they were attempting to exploit the uncertainty in the market – it is likely that these stations did not sell much gasoline at the high prices.[79]

IV. Conclusions

In sum, the data analyzed in this chapter suggest that cost-related factors explain at least the vast majority of the increase in average prices and price dispersion that occurred after Katrina, at both the wholesale (rack) and retail levels. The increase in the spot price of gasoline, which is the most important determinant of wholesale (rack) prices, was greater than the increase in the rack price in the days after Katrina. Similarly, the increase in the rack price of gasoline, which is the most important determinant of retail prices, was greater than the increase in average retail prices in the days after Katrina. Firms that were responsible for a substantial portion of the rack price dispersion typically had cost-based reasons for higher wholesale rack prices.

While post-Katrina rack and retail price dispersion increased, and the relationship between branded and unbranded wholesale prices became inverted, these phenomena were relatively short-lived. Furthermore, as explained previously in this chapter, the level and increase in price dispersion both at the rack and retail levels in each city does not suggest widespread collusion at either level in the aftermath of Katrina.

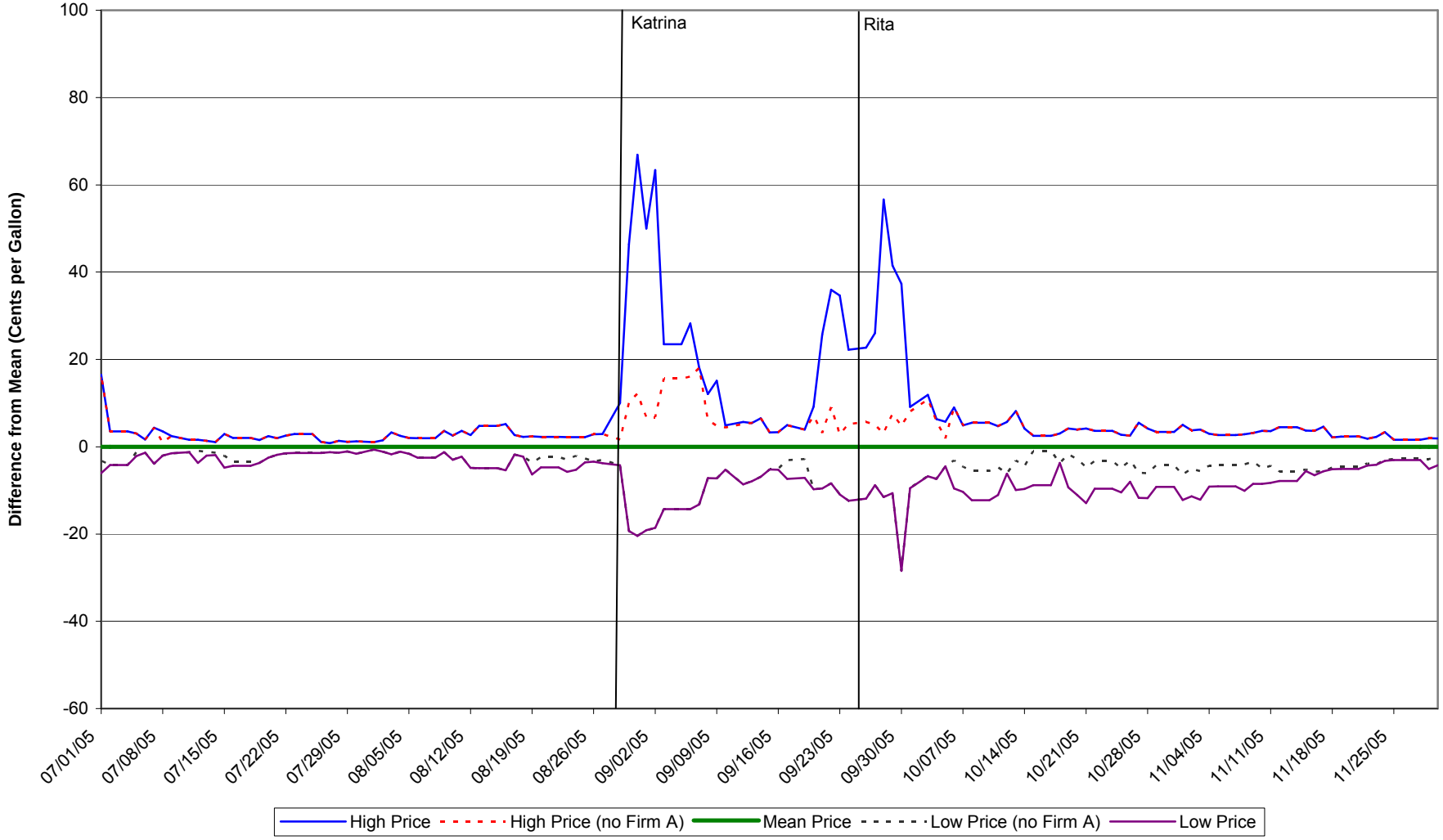
According to our analysis using statistical screens, in the week after Katrina, approximately 23% percent of stations for which data were available raised their retail gasoline prices relative to the average price in the same city and relative to stations of the same brand within the city. However, less than 1% of stations raised their prices in these ways and also consistently charged prices above those charged by 95% of stations in the same city following Katrina. Interviews with retailers suggest that some charged relatively high prices in response to station-level supply shortages and imprecise and changing perceptions of market conditions.[80]

[78] Prices above $3.75 per gallon were observed at only three dozen locations in New York, Maryland, Virginia, and a single location in Boston. Only 482 of the 24,197 stations (fewer than two percent) for which staff obtained post-hurricane pricing data had maximum prices in excess of $3.50 per gallon.

[79] See Chapter 7 for the average reduction in sales by stations that were accused of gouging.

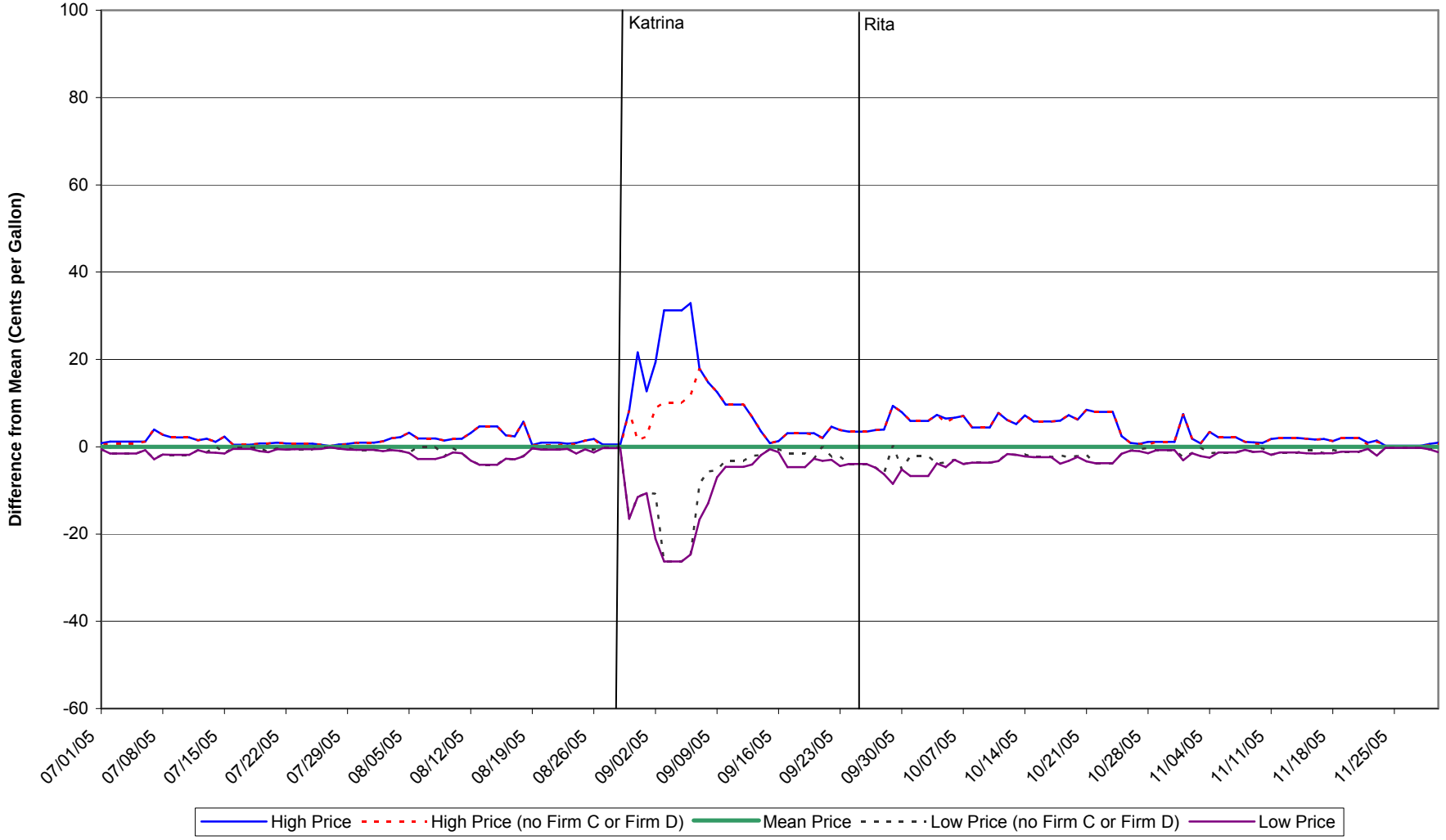
[80] [Confidential material redacted.]

Figure 6-1
Atlanta Gasoline Rack -_ M ean Centered
7/1/2005 -11/ 30/2005



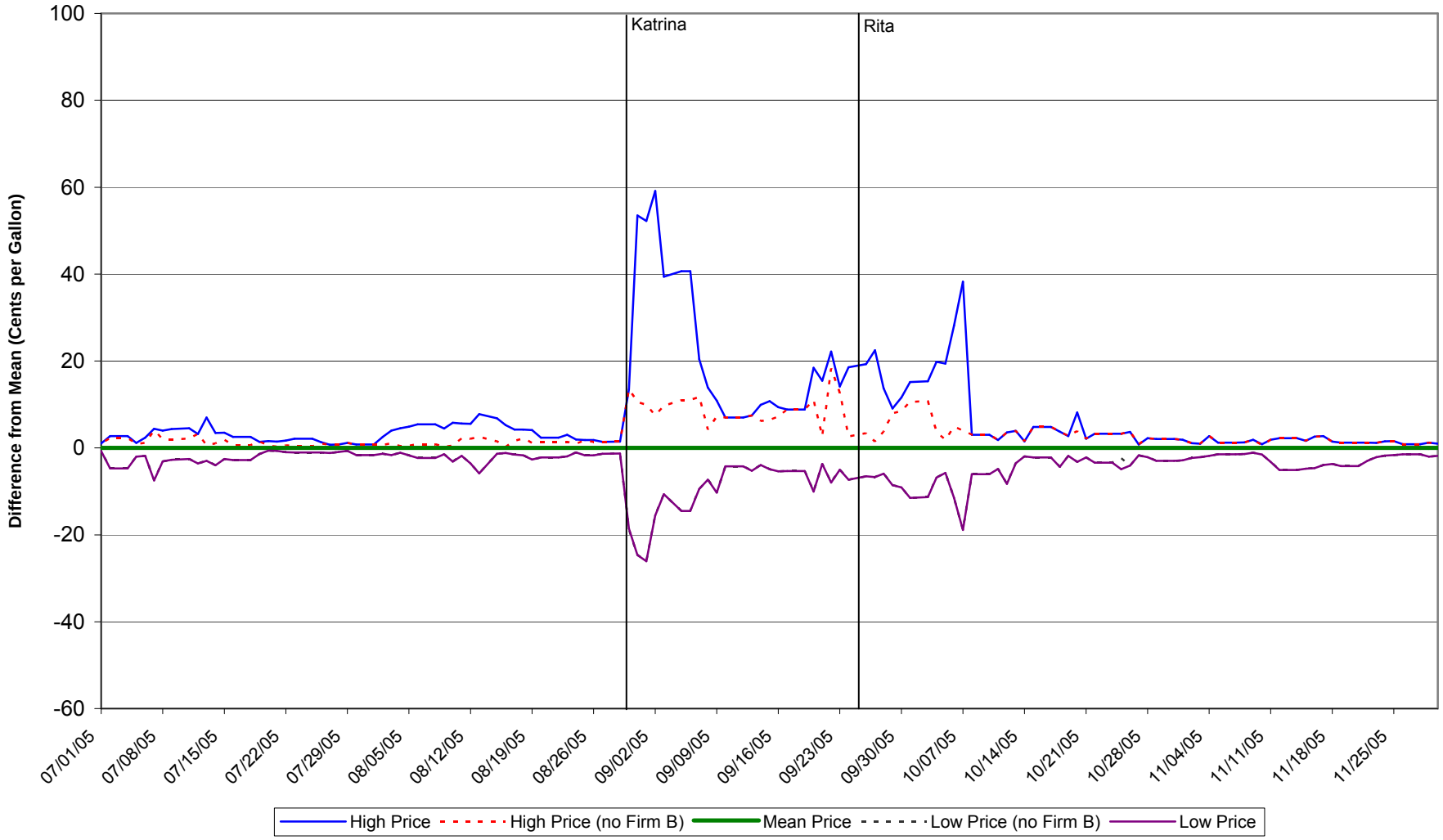
Source: Oil Price Information Service (OPIS)

Figure 6-2
Chicago Gasoline Rack -_ M ean Centered
7/1/2005 -11/ 30/2005



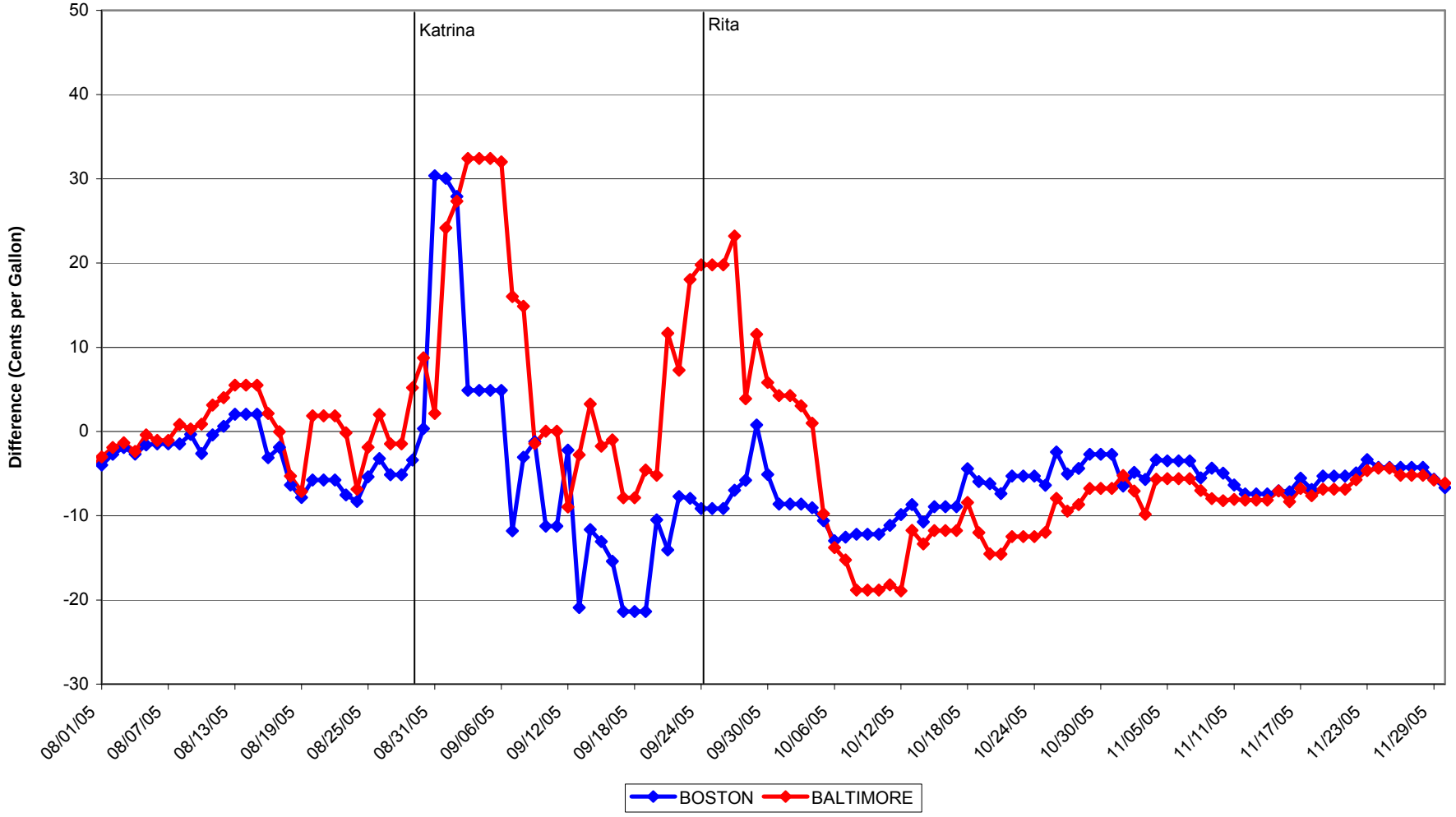
Source: Oil Price Information Service (OPIS)

Figure 6-3
Fairfax Gasoline Rack -. M ean Centered
7/1/2005 -11/ 30/2005



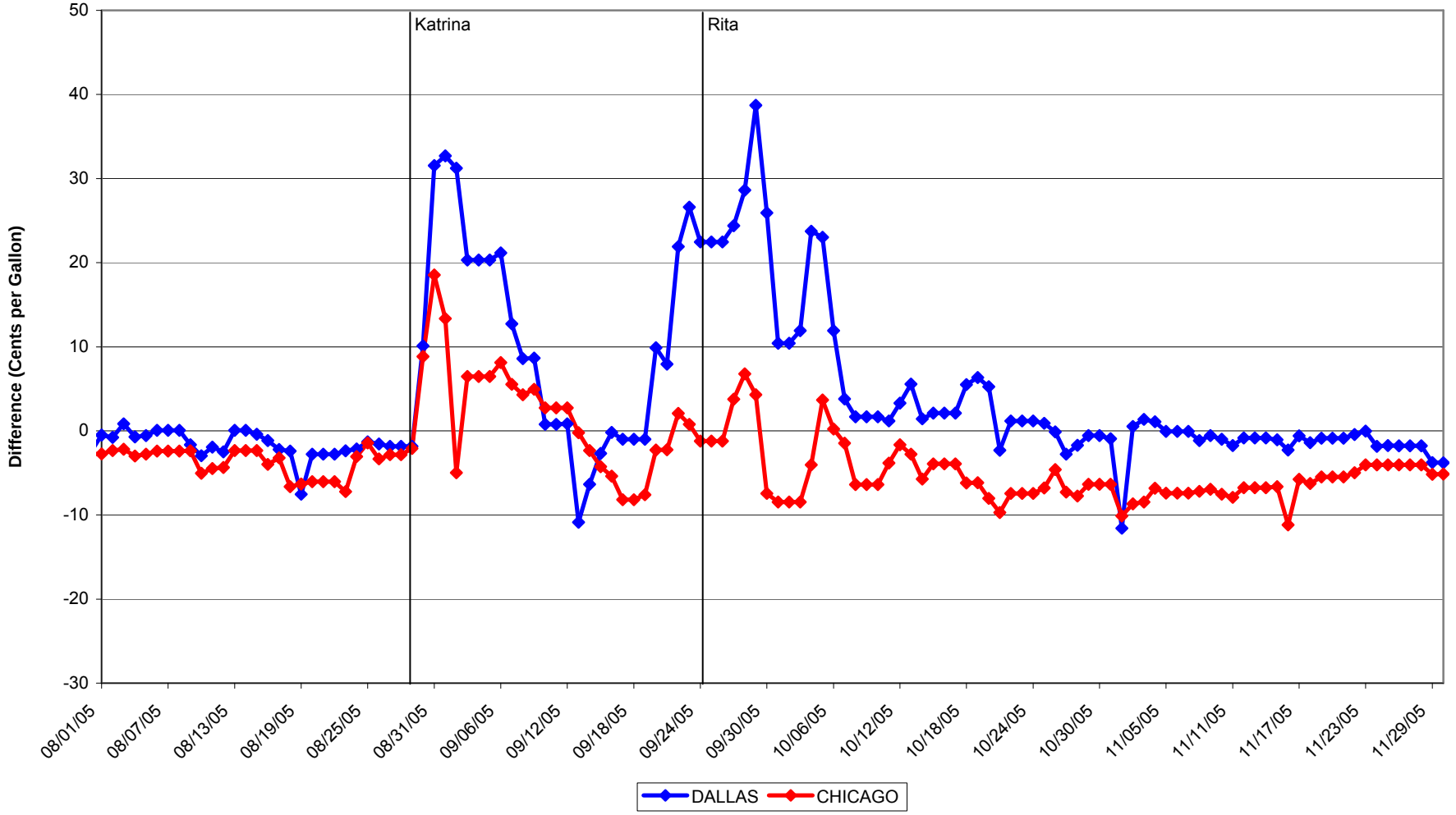
Source: Oil Price Information Service (OPIS)

Figure 6-4
Gasoline Rack Inversions (Low Unbranded Rack - Average Branded Rack)
East Coast
8/1/2005 -11/ 30/2005



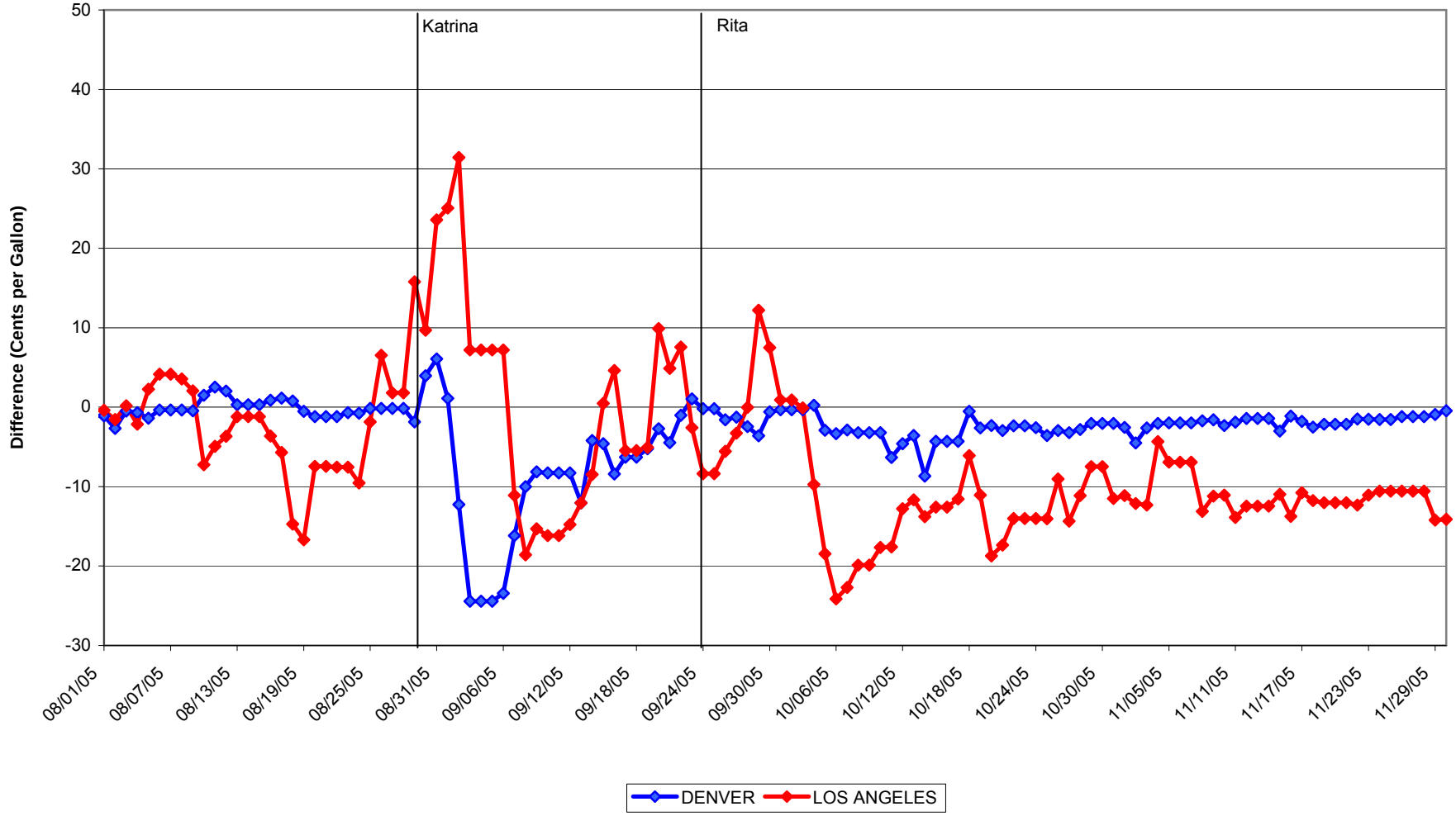
Source: Oil Price Information Service (OPIS)

Figure 6-5
Gasoline Rack Inversions (Low Unbranded Rack - Average Branded Rack)
Gulf Coast/Midwest
8/1/2005 -11/ 30/2005



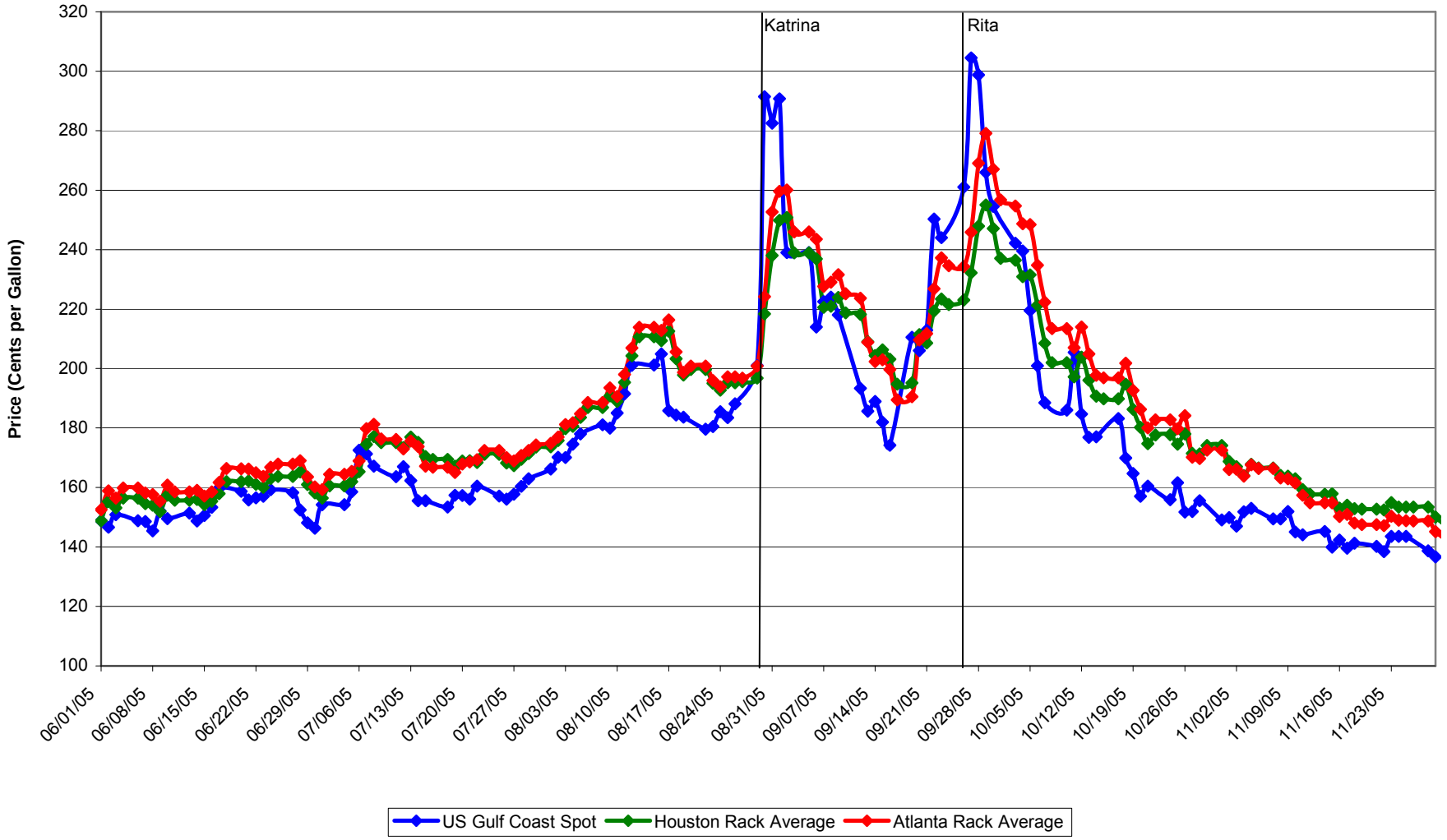
Source: Oil Price Information Service (OPIS)

Figure 6-6
Gasoline Rack Inversions (Low Unbranded Rack - Average Branded Rack)
Mountain/West Coast
8/1/2005 -11/ 30/2005



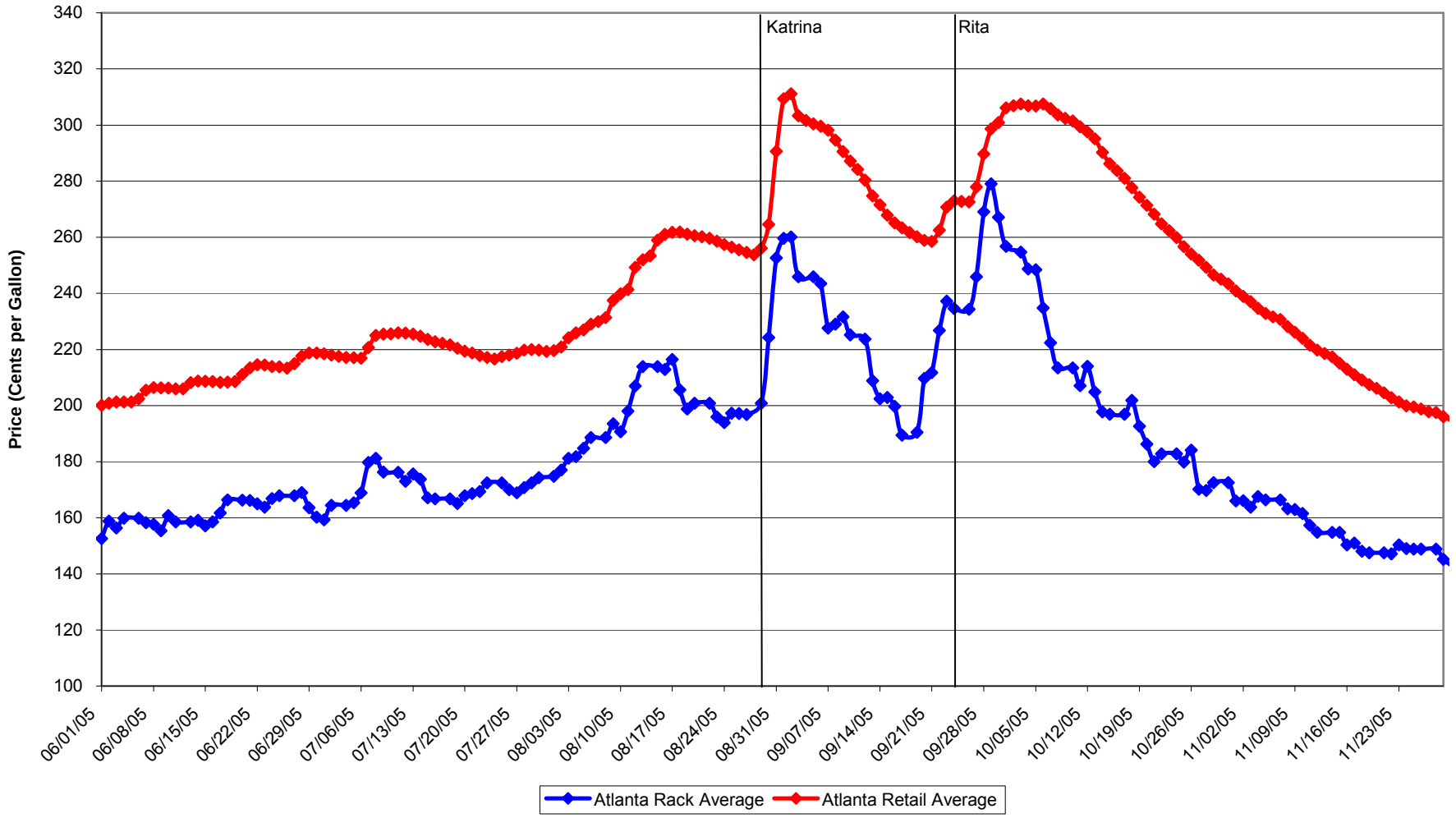
Source: Oil Price Information Service (OPIS)

Figure 6-7
Gulf Coast Spot vs. Rack Average
(Regular Gasoline)
Houston, TX and Atlanta, GA 6/1/2005 - 11/30/20 05



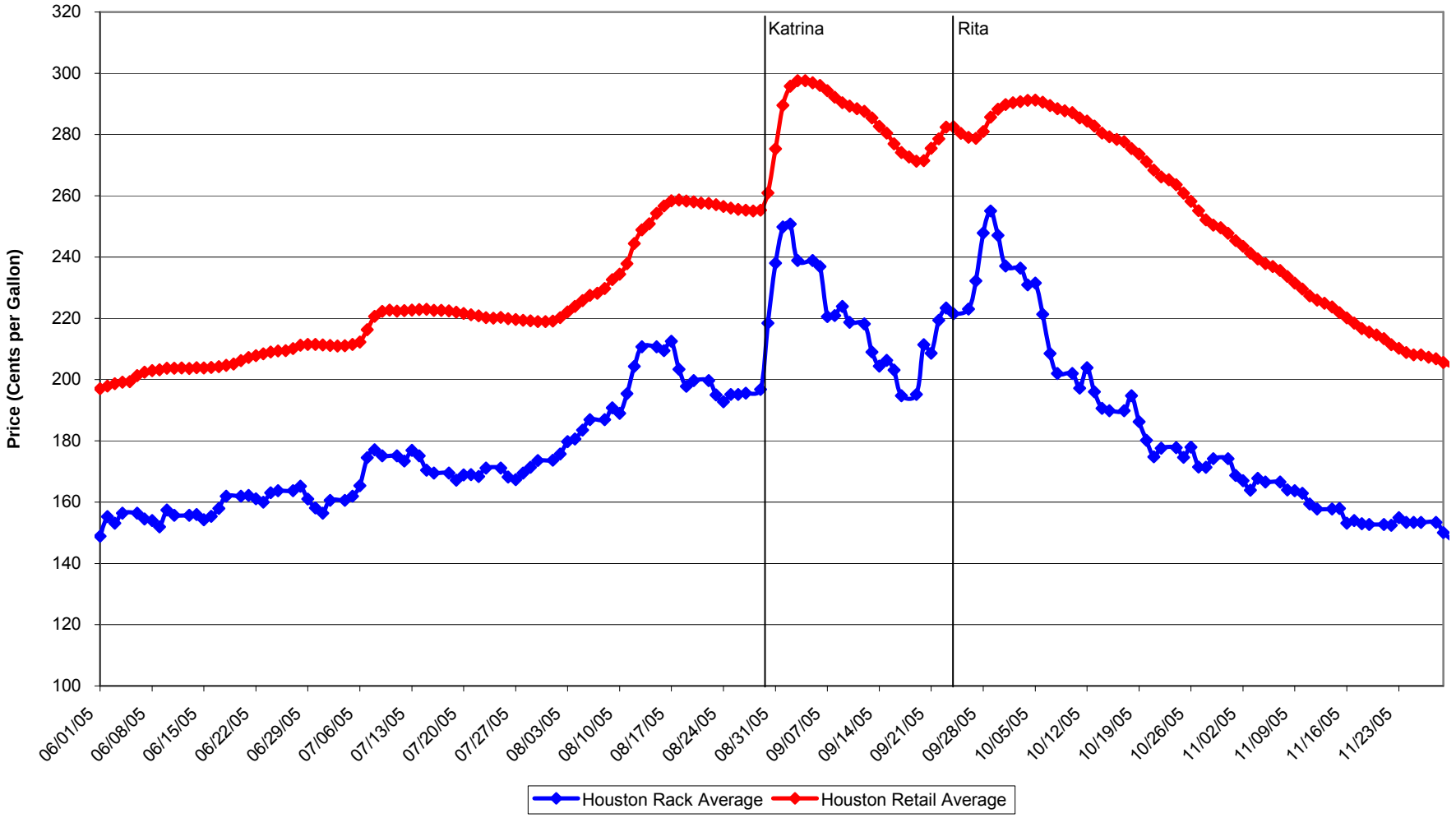
Source: EIA and OPIS; Rack average of branded and unbranded regular gasoline

Figure 6-8
Rack vs Retail with Taxes
(Regular Gasoline)
Atlanta, GA 6/1/20 05 -11/30/2005



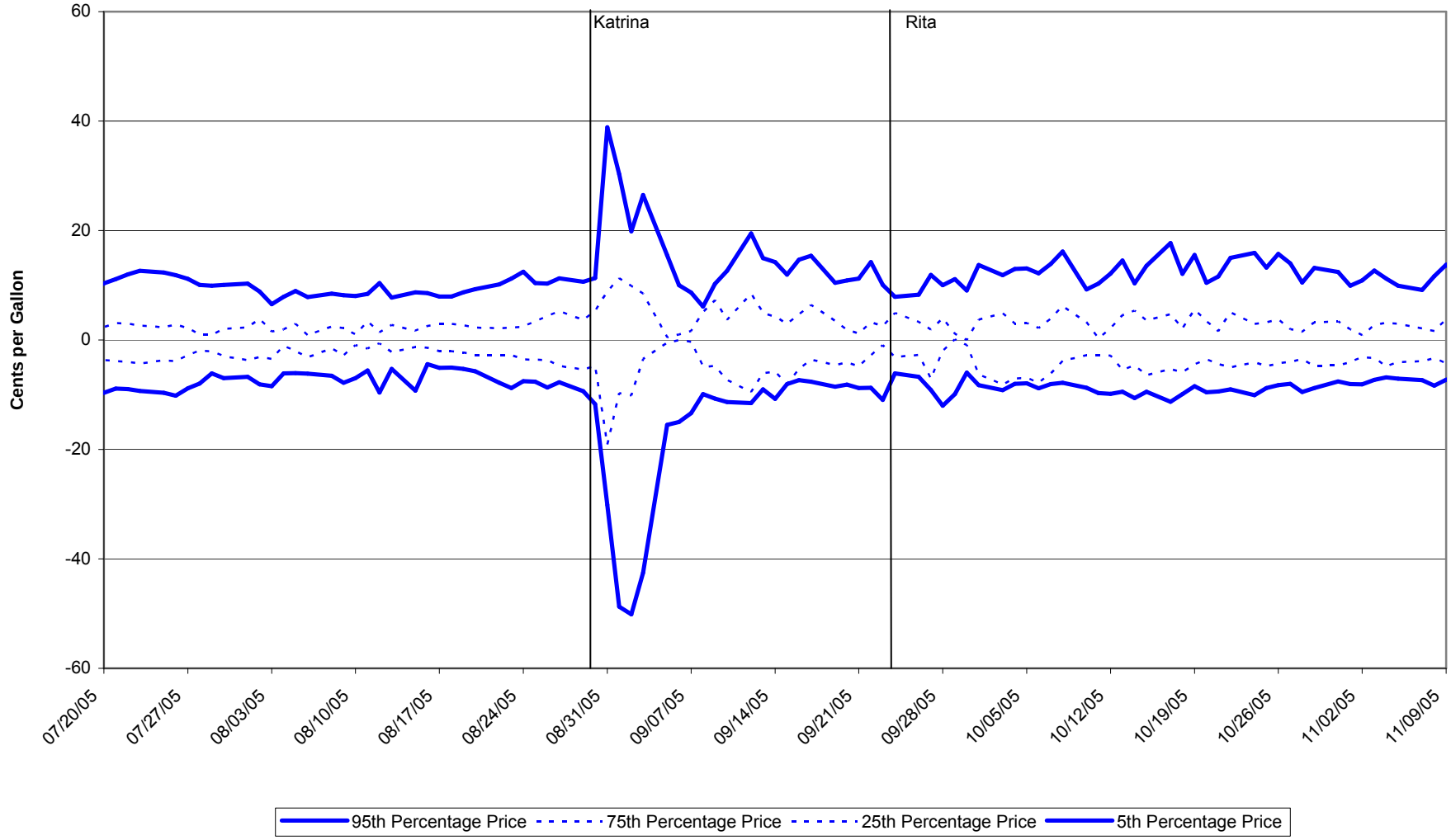
Source: OPIS; Rack average of branded and unbranded regular gasoline

Figure 6-9
Rack vs Retail with Taxes
(Regular Gasoline)
Houston, TX 6/1/20 05 - 11/30/2005



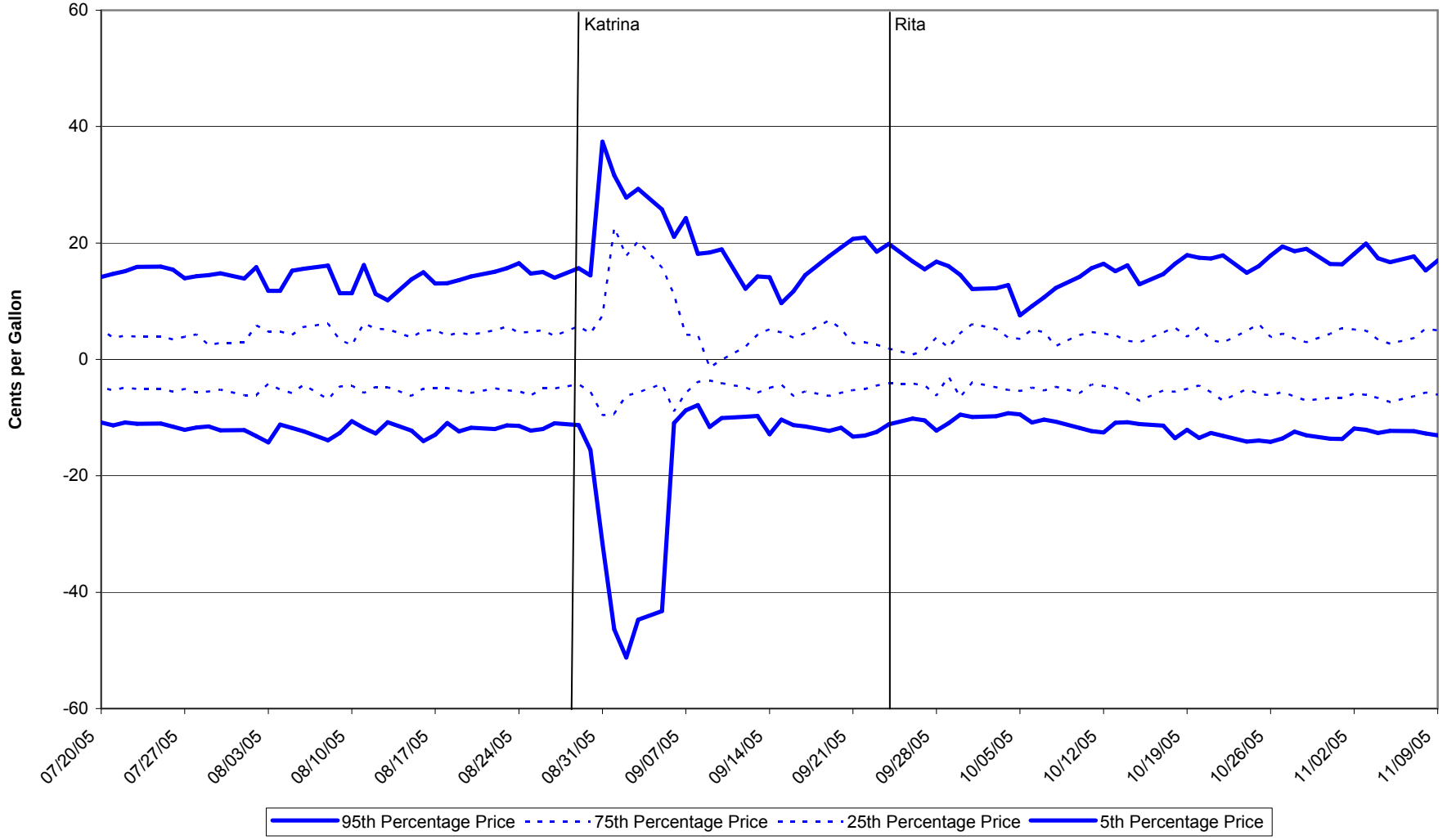
Source: Oil Price Information Service (OPIS): Rack average of branded and unbranded regular gasoline

Figure 6-10
Atlanta Gasoline Retail - - Mean Centered
7/20/2005 -11 /9/2005



Source: Oil Price Information Service (OPIS)

Figure 6-11
Chicago Gasoline Retail - - Mean Centered
7/20/2005 -11 /9/2005



Source: Oil Price Information Service (OPIS)

Table 6-1
Average Rack Prices and Rack Price Dispersion in the Week Before (Week ending Aug 20) and After (Week ending Sept 3) Katrina
Part I of II

			Average Price (Dollars per Gallon)			Range			Inter-quartile		
PADD	City	State	Week ending Aug 20	Week ending Sept 3	Change	Week ending Aug 20	Week ending Sept 3	Change	Week ending Aug 20	Week ending Sept 3	Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Northeast	Boston	MA	2.02	2.37	0.36	0.04	0.24	0.21	0.01	0.06	0.04
Mid-Atlantic	Baltimore	MD	2.08	2.35	0.27	0.05	0.37	0.32	0.02	0.15	0.13
	Fairfax	VA	2.09	2.33	0.24	0.06	0.53	0.46	0.02	0.15	0.13
	Harrisburg	PA	1.92	2.30	0.38	0.05	0.28	0.24	0.02	0.07	0.05
	Long Island	NY	2.00	2.32	0.31	0.04	0.19	0.15	0.02	0.11	0.09
	Newark	NJ	2.02	2.40	0.39	0.05	0.28	0.23	0.02	0.09	0.08
	Average				0.32			0.28			0.10
Southeast	Atlanta	GA	2.09	2.29	0.20	0.08	0.59	0.52	0.02	0.13	0.11
	Charleston	WV	2.04	2.27	0.23	0.04	0.24	0.20	0.01	0.14	0.12
	Pensacola	FL	2.03	2.14	0.11	0.10	0.72	0.62	0.03	0.37	0.35
	Raleigh / Apex	NC	2.01	2.23	0.22	0.03	0.12	0.09	0.03	0.12	0.09
	Average				0.19			0.36			0.17
Midwest	Chicago	IL	2.15	2.43	0.28	0.05	0.30	0.25	0.03	0.13	0.10
	Cleveland	OH	2.05	2.32	0.27	0.08	0.29	0.21	0.04	0.13	0.09
	Holland	MI	2.06	2.33	0.27	0.00	0.00	0.00	0.00	0.00	0.00
	Indianapolis	IN	2.04	2.36	0.32	0.11	0.28	0.17	0.05	0.10	0.05
	Knoxville	TN	1.99	2.19	0.20	0.06	0.59	0.52	0.02	0.15	0.13
	Louisville	KY	2.14	2.38	0.23	0.12	0.30	0.18	0.03	0.19	0.16
	Milwaukee	WI	2.14	2.44	0.29	0.05	0.22	0.17	0.03	0.12	0.09
	Minneapolis	MN	2.11	2.44	0.33	0.07	0.24	0.18	0.02	0.11	0.09
	St. Louis	MO	2.13	2.45	0.32	0.05	0.17	0.12	0.03	0.09	0.06
	Average				0.28			0.20			0.09
Gulf Coast	Albuquerque	NM	2.15	2.43	0.28	0.08	0.18	0.09	0.05	0.09	0.04
	Baton Rouge	LA	1.98	2.07	0.09	0.07	0.78	0.71	0.02	0.27	0.25
	Dallas Metro	TX	2.11	2.28	0.16	0.08	0.27	0.19	0.03	0.10	0.07
	Houston	TX	2.07	2.26	0.19	0.09	0.28	0.20	0.03	0.08	0.05
	Mobile	AL	1.99	2.04	0.05	0.07	0.73	0.67	0.02	0.19	0.17
	Vicksburg	MS	1.99	2.04	0.05	0.06	0.62	0.56	0.03	0.17	0.14
	Average				0.14			0.40			0.12

Table 6-1
Average Rack Prices and Rack Price Dispersion in the Week Before (Week ending Aug 20) and After (Week ending Sept 3) Katrina
Part II of II

			Average Price (Dollars per Gallon)			Range			Inter-quartile		
PADD	City	State	Week ending Aug 20	Week ending Sept 3	Change	Week ending Aug 20	Week ending Sept 3	Change	Week ending Aug 20	Week ending Sept 3	Change
Mountain	Denver	CO	2.08	2.42	0.33	0.09	0.15	0.06	0.03	0.08	0.04
	Salt Lake City	UT	1.93	2.19	0.26	0.15	0.12	-0.03	0.05	0.07	0.02
	Average				0.30			0.02			0.03
West Coast	Phoenix	AZ	2.09	2.36	0.27	0.05	0.09	0.04	0.03	0.05	0.02
	Los Angeles	CA	2.11	2.32	0.21	0.04	0.07	0.02	0.02	0.04	0.02
	San Francisco	CA	2.08	2.34	0.26	0.03	0.07	0.04	0.02	0.04	0.03
	Seattle	WA	2.09	2.28	0.20	0.07	0.11	0.04	0.02	0.04	0.03
	Average				0.24			0.04			0.02

Source: Oil Price Information Survey (OPIS)

Table 6-2
Changes in Post-Katrina Dispersion in Rack Prices from removing Outlier Companies (Week ending Sept 3)
Part I of II

			Average price (Dollars per Gallon)			Range			Inter-quartile		
PADD	City (# of firms removed)	State	All Companies	Outliers Removed	Change	All Comp-anies	Outliers Removed	Change	All Companies	Outliers Removed	Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Northeast	Boston (1)	MA	2.373	2.358	-0.015	0.242	0.183	-0.059	0.056	0.053	-0.003
Mid-Atlantic	Baltimore (1)	MD	2.347	2.330	-0.017	0.369	0.259	-0.111	0.149	0.147	-0.002
	Fairfax (1)	VA	2.329	2.293	-0.036	0.527	0.249	-0.278	0.153	0.120	-0.033
	Harrisburg (2)	PA	2.301	2.267	-0.034	0.283	0.130	-0.152	0.072	0.062	-0.010
	Long Island	NY									
	Newark	NJ									
South-East	Atlanta (1)	GA	2.292	2.253	-0.039	0.594	0.248	-0.345	0.135	0.126	-0.009
	Charleston	WV									
	Pensacola (3)	FL	2.140	1.982	-0.159	0.720	0.227	-0.493	0.374	0.099	-0.275
	Raleigh / Apex	NC									
Midwest	Chicago (2)	IL	2.430	2.400	-0.030	0.300	0.230	-0.070	0.129	0.105	-0.024
	Cleveland	OH									
	Holland	MI									
	Indianapolis	IN									
	Knoxville (1)	TN	2.190	2.151	-0.039	0.585	0.261	-0.32/4	0.146	0.148	0.002
	Louisville	KY									
	Milwaukee	WI									
	Minneapolis	MN									
	St. Louis	MO									
Gulf Coast	Albuquerque	NM									
	Baton Rouge (3)	LA	2.066	1.960	-0.106	0.784	0.288	-0.496	0.271	0.117	-0.155
	Dallas Metro	TX									
	Houston (1)	TX	2.260	2.250	-0.010	0.283	0.171	-0.112	0.078	0.076	-0.001
	Mobile (3)	AL	2.039	1.950	-0.089	0.734	0.219	-0.515	0.189	0.111	-0.079
	Vicksburg (2)	MS	2.044	1.969	-0.074	0.619	0.185	-0.434	0.174	0.054	-0.120

Table 6-2
Changes in Post-Katrina Dispersion in Rack Prices from removing Outlier Companies (Week ending Sept 3)
Part II of II

PADD	City (# of firms removed)	State	Average price (Dollars per Gallon)			Range			Inter-quartile		
			All Companies	Outliers Removed	Change	All Comp-anies	Outliers Removed	Change	All Companies	Outliers Removed	Change
Mountain	Denver	CO									
	Salt Lake City	UT									
West Coast	Phoenix	AZ									
	Los Angeles	CA									
	San Francisco	CA									
	Seattle	WA									

Source: Oil Price Information Survey (OPIS)

Table 6-3

Rankings of Atlanta Branded Rack Prices - Regular Gasoline

1=lowest price, 11=highest price

	08/26/05	08/27/05	08/29/05	08/30/05	08/31/05	09/01/05	09/02/05	09/03/05	09/05/05
Firm 1	10	10	9	2	10	1	7	8	8
Firm 2	8	11	10	4	4	2	1	5	5
Firm 3	2	3	2	9	6	5	3	4	4
Firm 4	7	4	3	6	1	3	4	3	3
Firm 5	9	8	7	5	2	8	9	10	10
Firm 6	6	6	5	7	9	10	5	6	6
Firm 7	3	2	11	11	11	11	11	11	11
Firm 8	1	1	1	8	5	4	2	2	2
Firm 9	4	9	8	3	3	7	8	7	7
Firm 10	11	7	6	1	7	9	10	9	9
Firm 11	4	9	8	3	3	7	8	7	7
Firm 12	5	5	4	10	8	6	6	1	1

Source: Oil Price Information Service (OPIS)

Table 6-4
State Level Price and Concentration

PADD	State	HHI August 2005	HHI September 2005	% Change in State Resale Price (EIA 782A)
Northeast	CT	1311	1368	15.1%
	MA	1228	1243	18.0%
	ME	1395	1606	18.3%
	NH	1052	1093	17.0%
	RI	1364	1302	17.0%
	VT	1079	1128	20.1%
Mid-Atlantic	DC	2705	2698	15.3%
	DE	1404	1412	16.9%
	MD	1393	1347	17.7%
	NJ	1049	1077	18.0%
	NY	1047	1071	17.8%
	PA	1393	1464	18.2%
Southeast	FL	1001	1023	14.2%
	GA	1102	1123	15.3%
	NC	1115	1138	15.8%
	SC	931	991	17.9%
	VA	1208	1201	16.6%
	WV	1464	1505	14.9%
Midwest	IA	938	896	9.3%
	IL	1243	1321	8.7%
	IN	2202	2424	10.4%
	KS	1321	1259	8.8%
	KY	2516	2866	13.3%
	MI	1989	2098	7.6%
	MN	1381	1492	5.4%
	MO	1275	1291	11.3%
	ND	2360	2006	9.2%
	NE	1310	1275	8.0%
	OH	2045	2109	10.6%
	OK	1241	1169	11.6%
	SD	1132	1133	9.7%
	TN	1132	1181	14.3%
	WI	1283	1315	8.9%
Gulf Coast	AL	1106	1179	8.6%
	AR	1036	1029	12.8%
	LA	1139	1284	10.6%
	MS	1064	1201	11.3%
	NM	1577	1623	10.8%
	TX	1036	999	14.2%
Mountain	CO	1275	1240	12.9%
	ID	1202	1175	19.0%
	MT	2445	2271	17.4%
	UT	1418	1448	19.5%
	WY	1247	1285	15.8%
West Coast	AK	3319	3122	8.8%
	AZ	1011	1038	14.5%
	CA	1333	1325	9.9%
	HI	3659	3699	20.4%
	NV	1464	1510	13.0%
	OR	1758	1792	9.9%
	WA	1552	1588	10.9%

Source: Energy Information Administration (EIA), Form 782A
HHIs calculated by EIA.

Table 6-5
Retail Price Changes between Pre-Katrina Period (Week ending Aug 20) and Post-Katrina Period (Week ending Sept 3)
Part I of II

			Average Price (Dollars per Gallon, excludes taxes)			Range			Inter-quartile		
PADD	City	State	Week ending Aug 20	Week ending Sept 3	Change	Week ending Aug 20	Week ending Sept 3	Change	Week ending Aug 20	Week ending Sept 3	Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Northeast	Boston	MA	2.59	2.90	0.31	0.80	0.99	0.19	0.08	0.14	0.07
	Harrisburg	PA	2.52	2.84	0.32	0.49	0.72	0.23	0.05	0.10	0.05
	Nassau	NY	2.66	3.01	0.35	0.74	1.08	0.34	0.07	0.16	0.09
	Newark	NJ	2.53	2.85	0.31	0.59	0.84	0.25	0.07	0.12	0.05
Mid-Atlantic	Washington DC	DC	2.70	2.94	0.24	0.33	0.52	0.19	0.09	0.15	0.06
	Washington DC	MD	2.69	2.94	0.25	0.68	0.95	0.26	0.10	0.17	0.07
	Washington DC	VA	2.62	2.85	0.23	0.67	0.90	0.22	0.15	0.19	0.05
	Average				0.28			0.25			0.06
	Atlanta	GA	2.60	2.84	0.24	0.75	1.02	0.28	0.05	0.15	0.11
	Chapel Hill	NC	2.57	2.88	0.31	0.59	0.92	0.33	0.05	0.14	0.09
Southeast	Charleston	WV	2.63	2.83	0.20	0.56	0.62	0.05	0.07	0.15	0.08
	Pensacola	FL	2.58	2.64	0.06	0.39	0.53	0.14	0.03	0.12	0.09
	Average				0.20			0.20			0.09
	Chicago	IL	2.79	2.95	0.16	0.81	0.90	0.09	0.10	0.18	0.08
	Cleveland	OH	2.62	2.85	0.24	0.46	0.76	0.29	0.09	0.13	0.03
	Grand Rapids	MI	2.70	2.95	0.25	0.42	0.62	0.20	0.09	0.16	0.06
	Indianapolis	IN	2.60	2.89	0.30	0.47	0.72	0.25	0.08	0.15	0.07
Midwest	Knoxville	TN	2.47	2.88	0.41	0.74	0.93	0.19	0.05	0.15	0.10
	Louisville	KY	2.62	2.81	0.19	0.54	0.71	0.17	0.08	0.18	0.11
	Milwaukee	WI	2.75	2.99	0.24	0.60	0.71	0.11	0.04	0.12	0.08
	Minneapolis	MN	2.59	2.81	0.22	0.58	0.71	0.13	0.08	0.07	0.00
	St. Louis	IL	2.56	2.81	0.25	0.46	0.71	0.25	0.04	0.12	0.08
	Average				0.24			0.19			0.07
	Albuquerque	NM	2.63	2.87	0.23	0.39	0.49	0.09	0.03	0.07	0.04
	Baton Rouge	LA	2.51	2.59	0.08	0.42	0.67	0.25	0.06	0.12	0.06
	Dallas	TX	2.60	2.79	0.19	0.68	0.77	0.09	0.06	0.10	0.04
Gulf Coast	Houston	TX	2.56	2.76	0.19	0.89	0.77	-0.12	0.05	0.09	0.03
	Jackson	MS	2.50	2.55	0.05	0.32	0.72	0.40	0.04	0.15	0.11
	Mobile	AL	2.53	2.62	0.10	0.40	0.68	0.28	0.05	0.17	0.11
	Average				0.14			0.17			0.07

Table 6-5
Retail Price Changes between Pre-Katrina Period (Week ending Aug 20) and Post-Katrina Period (Week ending Sept 3)
Part II of II

			Average Price (Dollars per Gallon, excludes taxes)			Range			Inter-quartile		
PADD	City	State	Week ending Aug 20	Week ending Sept 3	Change	Week ending Aug 20	Week ending Sept 3	Change	Week ending Aug 20	Week ending Sept 3	Change
Mountain	Denver	CO	2.52	2.80	0.28	0.54	0.63	0.10	0.07	0.06	-0.01
	Salt Lake	UT	2.39	2.67	0.28	0.54	0.61	0.06	0.06	0.08	0.02
	Average				0.28			0.08			0.00
West Coast	Phoenix	AZ	2.56	2.88	0.31	0.61	0.74	0.13	0.03	0.09	0.06
	Los Angeles	CA	2.79	2.90	0.12	0.91	0.94	0.03	0.09	0.09	-0.01
	San Francisco	CA	2.83	2.97	0.14	0.58	0.55	-0.03	0.10	0.10	0.00
	Seattle	WA	2.68	2.82	0.13	0.45	0.62	0.17	0.09	0.10	0.01
	Average				0.17			0.07			0.01

Source: Oil Price Information Survey (OPIS)

Table 6-6
Rankings of Atlanta Retailers in Zip Code 30318
1=lowest price, 9=highest price

	08/26/05	08/27/05	08/28/05	08/29/05	08/30/05	08/31/05	09/01/05	09/02/05	09/03/05	09/04/05
Station 1	7	7	6	9	7	5	3	3	4	6
Station 2	6	7	5	8	5	3	1	1	3	N/A
Station 3	1	1	N/A	1	1	1	2	N/A	N/A	3
Station 4	5	6	N/A	7	4	4	5	2	1	1
Station 5	3	4	3	4	2	4	4	2	1	3
Station 6	3	3	2	3	5	6	7	N/A	N/A	N/A
Station 7	4	5	4	6	3	2	N/A	N/A	N/A	4
Station 8	3	2	1	2	6	7	7	4	3	5
Station 9	2	4	3	5	2	3	6	2	2	2

N/A indicates the retailer had no posted price.
Source: Oil Price Information Service (OPIS)

Table 6-7

Highest Retail Gasoline Price and Duration by City
(Price in Dollars per Gallon, includes taxes)

Date	City	Highest Retail Price in City	Average Price of City	Days at Max Price
16-Oct	Albuquerque	3.40	2.86	2
31-Aug	Atlanta	3.64	2.91	1
2-Sep	Baton Rouge	3.30	2.68	2
7-Sep	Boston	3.90	3.21	1
1-Sep	Chapel Hill	3.71	3.13	4 (1 station)
31-Aug	Charleston	3.50	2.91	1
2-Sep	Chicago	3.65	3.13	1
2-Sep	Cleveland	3.50	3.08	1
4-Oct	Dallas	3.55	2.98	1
5-Sep	Denver	3.30	3.01	1
31-Aug	Grand Rapids	3.52	3.10	1
4-Sep	Harrisburg	3.75	3.22	1
3-Oct	Houston	3.45	2.91	1
2-Sep	Indianapolis	3.62	3.17	1
30-Sep	Jackson	3.41	2.86	2
2-Sep	Knoxville	3.66	3.30	1
30-Sep	Little Rock	3.41	2.96	1
4-Oct	Los Angeles	3.56	2.98	1
3-Sep	Louisville	3.50	2.95	2
1-Sep	Milwaukee	3.50	3.19	4 (26 stations)
3-Sep	Minneapolis	3.26	2.84	2
2-Sep	Mobile	3.50	2.76	5 (4 stations)
3-Sep	Nassau	4.01	3.41	1
2-Sep	Newark	3.65	3.17	1
12-Oct	Pensacola	3.50	2.81	2
4-Sep	Phoenix	3.46	3.15	1
14-Sep	Salt Lake	3.30	2.84	9 (1 station)
30-Sep	San Francisco	3.56	3.06	1
3-Sep	Seattle	3.45	2.90	4 (4 stations)
9-Oct	Spartanburg	3.47	2.90	1
31-Aug	St Louis	3.50	2.90	2
2-Sep	Washington DC	3.96	3.16	1

Source: Oil Price Information Service (OPIS)

Table 6-8
Station Specific Retail Price Screen: June - August vs. Week After Katrina
Part I of II

PADD	City	Number of Stations in Sample	Number of Stations Changed Pricing Behavior Relative to Market Average	Percentage of Total Stations	Number of Stations Changed Pricing Behavior Relative to Brand Average	Percentage of Total Stations	Number of Stations 95% Screen	Percentage of Total Stations
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Northeast	Boston	1,589	398	25.0%	348	21.9%	3	0.2%
	Harrisburg	229	68	29.7%	49	21.4%	4	1.7%
	Nassau	742	163	22.0%	131	17.7%	4	0.5%
	Newark	612	123	20.1%	116	19.0%	1	0.2%
	Washington DC	1,482	505	34.1%	356	24.0%	27	1.8%
	Total	4,654	1,257	27.0%	1,000	21.5%	39	0.8%
Southeast	Atlanta	2,248	812	36.1%	642	28.6%	3	0.1%
	Chapel Hill	633	233	36.8%	158	25.0%	5	0.8%
	Charleston	196	59	30.1%	41	20.9%	12	6.1%
	Pensacola	198	27	13.6%	19	9.6%	11	5.6%
	Total	3,275	1,131	34.5%	860	26.3%	31	0.9%
Midwest	Chicago	1,990	755	37.9%	457	23.0%	9	0.5%
	Cleveland	572	184	32.2%	132	23.1%	8	1.4%
	Grand Rapids	346	113	32.7%	83	24.0%	2	0.6%
	Indianapolis	599	193	32.2%	139	23.2%	9	1.5%
	Knoxville	416	134	32.2%	110	26.4%	2	0.5%
	Louisville	399	115	28.8%	75	18.8%	3	0.8%
	Milwaukee	540	183	33.9%	143	26.5%	11	2.0%
	Minneapolis	829	190	22.9%	158	19.1%	1	0.1%
	St Louis	953	324	34.0%	255	26.8%	7	0.7%
	Total	6,644	2,191	33.0%	1,552	23.4%	52	0.8%

Table 6-8
Station Specific Retail Price Screen: June - August vs. Week After Katrina
Part II of II

PADD	City	Number of Stations in Sample	Number of Stations Changed Pricing Behavior Relative to Market Average	Percentage of Total Stations	Number of Stations Changed Pricing Behavior Relative to Brand Average	Percentage of Total Stations	Number of Stations 95% Screen	Percentage of Total Stations
Gulf Coast	Albuquerque	283	63	22.3%	49	17.3%	1	0.4%
	Baton Rouge	312	51	16.3%	40	12.8%	3	1.0%
	Dallas	1,662	501	30.1%	411	24.7%	3	0.2%
	Houston	1,965	441	22.4%	437	22.2%	5	0.3%
	Jackson	223	31	13.9%	27	12.1%	13	5.8%
	Mobile	348	74	21.3%	61	17.5%	9	2.6%
	Total	4,793	1,161	24.2%	1,025	21.4%	34	0.7%
Mountain	Denver	666	178	26.7%	140	21.0%	6	0.9%
	Salt Lake	484	133	27.5%	112	23.1%	6	1.2%
	Total	1,150	311	27.0%	252	21.9%	12	1.0%
West Coast	Los Angeles	1,627	314	19.3%	273	16.8%	0	0.0%
	Phoenix	836	311	37.2%	221	26.4%	2	0.2%
	San Francisco	302	77	25.5%	76	25.2%	8	2.6%
	Seattle	700	164	23.4%	161	23.0%	0	0.0%
	Total	3,465	866	25.0%	731	21.1%	10	0.3%
	Grand Total	23,981	6,917	28.8%	5,420	22.6%	178	0.7%

Source: Oil Price Information Service (OPIS)

Chapter 7

Analysis of Price Increases in the Aftermath of Hurricane Katrina

Hurricane Katrina disrupted refinery and pipeline operations, leading to a sudden, large reduction in gasoline supply in the United States. This supply reduction resulted in dramatically higher retail gasoline prices. Prices began to decline by mid-September as the industry infrastructure started to recover and as other supply responses, including imports, took effect. However, before prices could fall to pre-Katrina levels, Hurricane Rita struck in late September, inflicting additional damage on refineries and other infrastructure assets, exacerbating supply shortages and forcing retail prices back up.

This chapter focuses on possible "price gouging" by firms in the aftermath of the hurricanes. It is no surprise that market prices increased significantly given the supply disruptions in the Gulf Coast. The question we sought to answer, however, is whether certain firms or groups of firms took unfair advantage of the supply disruptions by increasing prices beyond what was justified by cost or other supply factors.

In this chapter, we analyze the pricing behavior of firms during the aftermath of the storms to see whether their behavior qualifies as price gouging under the standard established by Congress in Section 632. Our primary conclusions are: (1) among large wholesale sellers of light petroleum products, it was primarily those with refining operations that had substantial increases in operating margins after Katrina, *i.e.*, price increases that are not directly attributable to cost increases; firms without refining operations generally did not show substantial increases in operating margins after the hurricane; (2) the firms with the largest price increases did not raise their prices by a greater amount than firms facing similar market conditions; and (3) with very few exceptions, price increases by retailers do not meet Section 632's definition of price gouging.

I. Definition of Price Gouging for the Purposes of this Analysis

For the purposes of this analysis, we applied a definition of price gouging that is consistent with Section 632, which sets forth the criteria by which the Commission should look for evidence of price gouging.[1] Under this standard, price gouging occurs when a firm's monthly average sales price for gasoline in a particular area is higher than for a previous month, *and* where such higher prices are not substantially attributable to *either* (1) increased costs, or (2) national or international market trends.[2]

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[1] Section 632 states: "the Commission shall treat as evidence of price-gouging any finding that the average price of gasoline available for sale to the public in September, 2005, or thereafter [in a specified area] . . . exceeded the average price of such gasoline in that area for the month of August, 2005, unless the Commission finds substantial evidence that the increase is substantially attributable to additional costs in connection with the production, transportation, delivery, and sale of gasoline in that area or to national or international market trends." In addition, Section 632 specifically requires an examination of profit levels of certain large sellers of gasoline and distillates and certain gasoline retailers against whom price gouging complaints were lodged. This examination of profits is the first step in this chapter's economic analysis of firm price increases in the aftermath of Katrina.

[2] Although widely understood to refer to significant price increases (often during periods of unusual market conditions), the term "price gouging" is not a well-defined term in economics. No federal statute defines "price

To determine whether the price increases were cost-based, we examined financial data on company profit margins.[3] If price increases are attributable to increased costs, then operating margins should remain relatively unchanged. Thus, we looked at operating margins in refining and marketing to examine the relationship between increased prices and costs.[4] We then examined additional pricing data to see if the price increases were attributable to overall market trends.[5]

II. Operating Margins for Large Wholesale Sellers of Refined Petroleum Products

To determine whether operating margins for large firms increased in the aftermath of Hurricane Katrina, we examined cost and revenue data from 53 large wholesalers (defined, in accordance with Section 632, as firms with total U.S. wholesale sales of gasoline and distillates in excess of $500 million in 2004), obtained through compulsory process.[6]

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gouging" or establishes it as a law violation. As Part III examines in more detail, some state statutes ban price gouging, but these laws vary widely in how they define the practice.

[3] Choosing the correct measurement of profits is not an easy task. As an accounting term, profit generally refers to the financial results of operations for a firm as a whole, and many of the petroleum companies involved in our analysis are multinational, multi-divisional and multi-product corporations. Using profit and loss information from these companies as a whole would not provide useful comparative information necessary to understand what happened to firms' prices and costs for the domestic sale of gasoline before and after Katrina. For example, operating margins may vary due to changes in 1) dollar sales revenues, 2) refining costs, including costs of refinery inputs such as crude oil, 3) marketing costs, and 4) sales, general and administrative expenses, and other costs relating to the refining and marketing of gasoline and petroleum distillates. On a percentage basis, net operating margins may be calculated by subtracting the sum of these costs from product revenues and dividing this difference by product revenues.

[4] While useful in assessing possible price gouging, it is important to understand that increases in operating margins do not necessarily reflect an increase in market power that might arouse antitrust concerns. In changing market conditions, even an industry that is perfectly competitive may exhibit a significant increase in operating margins without any increase in concentration or market power. For example, producers of an agricultural commodity in one part of the country may benefit greatly from frost damage afflicting producers elsewhere. Demand for the more fortunate producers increases, but in the short run it is costly to meet this extra demand because the marginal cost of expanding output is high. Under these circumstances, market prices rise to reflect the high marginal costs of expanding output, but because the average cost of their total output does not change much, these producers would show much higher operating margins. The resulting higher prices create incentives for outside suppliers to bring product into the market and for consumers to purchase less of this scarce resource.

[5] Our assessment of possible price gouging uses monthly comparisons of operating margins and market trends. A monthly period is appropriate for several reasons. First, firms typically do not regularly collect relevant accounting cost data for periods shorter than a month. Second, significant changes in firm operating margins that might occur for only a week or two in a month are still likely to be reflected in a monthly result. Third, trends in market prices, which can create a useful comparison for changes in individual firm prices, can be more confidently established using monthly averages compared to price changes for some shorter period.

[6] Staff initially identified large wholesale suppliers of gasoline and distillate from the ReferenceUSA business database and EIA's prime supplier sales volumes as reported to that agency on form EIA-782C. ReferenceUSA, *available at* http://www.referenceusa.com; Form EIA-782C, *available at* Energy Info. Admin., U.S. Dep't of Energy, *EIA-782C, Monthly Report of Prime Supplier Sales of Petroleum Products Sold for Local Consumption, at* http://www.eia.doe.gov/oss/forms.html#eia-782c. The Commission issued Orders to 84 firms under Section 6(b) asking for revenue and cost data. Thirty-one CID recipients claimed that they did not meet the reporting threshold of $500 million in wholesale sales for calendar year 2004. The remaining 53 firms submitted the requested information. The Orders requested sufficient detail to compare changes in average revenues, average

These 53 firms differ considerably in their scale and scope of operations, and these differences may have affected their pricing behavior and profitability. The firms differ in the degree to which they are vertically integrated into refining, wholesaling, and retailing. They also differ in terms of the geographic scope of their business. In order to evaluate the impact of such differences, staff grouped the respondents into the following three categories:

Group 1	Refiners	Wholesalers with refining and possibly retail operations
Group 2	Wholesaler/Retailers	Wholesalers with retail operations, but no refining
Group 3	Wholesalers Only	Wholesalers without refining or retail operations

The following table shows the weighted average operating margin percentage between September 2004 and August 2005, and for August and September 2005. Refiners' operating profit margins increased substantially in September 2005, compared both to the previous month and to the preceding twelve-month period. Operating margins for both groups of wholesalers did not vary much in September compared to previous periods.

	Average Monthly Operating Margins September 2004 – August 2005	Operating Margins August 2005	Operating Margins September 2005
Refiners	4.14%	3.38%	8.23%
Wholesaler/Retailers	0.27%	0.46%	-0.35%
Wholesalers	0.64%	-0.41%	0.67%

Figure 7-1 shows monthly operating margins for the three groups from September 2005 back to January 2003. As the figure indicates, operating margins for all three groups change from month to month, with refiners' margins being particularly volatile even before the disruption caused by Katrina.[7] Therefore, one should not infer too much from the change in margins from one month to the next.[8]

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costs, and operating margins over the relevant time period. In addition to revenue data, the Commission requested the following monthly cost information from each firm for the time period reviewed: crude and other raw material costs; refining expenses; refined product purchase costs; other miscellaneous costs; marketing costs; general, sales and administrative costs; research and development costs; and income taxes. The Orders also requested firm data on total number of barrels sold.

[7] For example, between January 2003 and September 2005 refiners' margins reached as low as –2.12% and as high as 8.75%. Refiners' margins in September 2005 reached a level comparable to the peak seen in Spring 2004

A. Group 1: Refiners

Group 1 included 30 firms.[9] In September 2005, the average refiners' monthly operating margin was 8.23%, representing a substantial increase over August 2005 when it averaged 3.38%. However, it is common for refiners to experience month-to-month volatility in margins, which limits the usefulness of comparing margins between any two months – *e.g.*, an abnormally low margin in August can make the difference appear high.[10]

Nevertheless, many refiners experienced significant increases in their operating margins between August and September 2005. Many of these September 2005 operating margins are also high relative to the average monthly operating margin between September 2004 and August 2005. The increase in refiners' operating margins implies that average refiner prices increased without a corresponding increase in average costs. While inter-firm comparisons may be skewed by differences in reported data, refiners' prices increased by 24 cents per gallon between August and September 2005.[11] Meanwhile, refiners' raw material costs increased by two cents per gallon over the same period.[12] Thus, the higher refiners' prices are apparently not explained by increased average costs.

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and approached again in Spring 2005. However, comparing percentages from one period to the next may be misleading since price levels are increasing over time. In particular, peaks in percentage margins in Spring 2004 and 2005 exceed that of September 2005, but the absolute margin (average price minus average cost) is higher in September 2005. While revenue per barrel exceeded the refined cost per barrel by about $25 per barrel in September 2005, the difference was closer to $15 per barrel in the Spring of 2004 and 2005.

[8] These data also show that operating margins may vary across firm groups. The greater capital intensity for refiners as compared to wholesalers can be expected to be associated with relatively greater operating margins at that industry stage, everything else equal.

[9] Many of these firms are integrated in the marketing of light petroleum products at the wholesale and retail levels. Reported earnings for Group 1 firms were generated from refining operations, wholesale marketing activities, and retail sales (where retail stores are owned and operated by the firm). Respondents varied significantly in how they complied with the CID due to the uniqueness of each company's data processing capabilities, reporting structure, refining capabilities, vertical integration and product mix. In most cases, revenues reported were only for light petroleum products. Other firms were unable to report only light petroleum product revenue and included revenues for lubricants, asphalts, petrochemicals, propane, and other non light petroleum products. Refining costs generally included costs to produce light petroleum products as well as the costs incurred to produce non-light petroleum products. These reporting variations limit the usefulness of inter-firm profit comparisons. However, the consistency of the reporting by each firm permits a useful comparison of how individual firms' financial results varied from one period to the next.

[10] To gain a longer perspective, consider that refiners' monthly operating margins averaged 4.14% between September 2004 and August 2005. As a group, therefore, refiners had a significant increase in operating margins in September 2005 compared to both August 2005 and the average from the previous 12 months. The group average can be misleading because differences in firms' reporting methods can skew the average across all refiners. Table 7-1(a) presents operating margins for each of the 30 refiners in Group 1.

[11] The staff used data submitted by the firms to calculate the weighted average price per barrel sold by dividing the refined product revenue by the volume of refined barrels sold. This includes the revenue from internally refined barrels as well as externally purchased barrels.

[12] The cost of a refined barrel includes crude and other raw material costs, plus the costs to operate the refinery divided by the gross output of the company's refineries as submitted to the EIA on form 810. This cost does not include the cost of barrels purchased for resale. Refiners' disclosure of their non-public EIA data submissions is discussed in detail in Section III.

B. Group 2: Wholesaler/Retailers

Group 2 included eight wholesalers that also own retail outlets. The firms in this group purchase their refined product directly from refiners, either on the spot market or from other wholesalers. Average operating margins declined in this group from 0.46% in August 2005 to a negative margin of -0.35% in September 2005. Between September 2004 and August 2005, the average monthly operating margin was 0.27%. Thus, for the average firm in this group, any price increase was actually less than their increase in costs.[13]

C. Group 3: Wholesalers

Group 3 consisted of 15 firms that had wholesale-only operations (no retail outlets or refinery operations) with annual sales of more than $500 million. These companies provide refined products to the retail market or to other wholesalers, or trade on commodity exchanges. The average firm in this group had an operating margin of 0.67% in September 2005, representing an increase over the average of –0.41% in August 2005. However, the average monthly operating margin between September 2004 and August 2005 was 0.64%, so the average operating margin in September 2005 is not abnormally high.

Operating margins at the individual firms in this group varied substantially, as shown in Table 7-1(c). Although three firms had large increases in margins between August and September 2005, two of them (Firms J and S) showed large negative margins in August. Moreover, Firm J's September 2005 margin was lower than its average over the previous 12 months, and Firm S's was roughly similar to its average.[14] Firm L explained in an interview that its September 2005 margin was largely due to the firm's practice of building distillate stocks at the end of the summer in preparation for the winter heating season.[15] After Katrina, the firm sold off some of this inventory at spot market prices, generating a significant gain. However, in the following months, the firm had to replenish this inventory at market prices and incurred significant losses.[16]

In sum, many refiners experienced a significant increase in operating margins in September 2005 compared to August 2005 and compared to the preceding 12 months. Large wholesalers, both those with and without retail operations, generally did not have significantly higher margins: for these two groups of firms, higher prices for gasoline and other refined products in September 2005 were largely offset by increases in average costs.

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[13] Table 7-1(b) presents operating margins for each of the individual firms in this group. Two of them, Firms B and C, experienced large increases in operating margins between August and September 2005. [Confidential material redacted.] Both of these firms are concentrated in the Northeast, where post-Katrina price increases were greatest, and have large retail operations there. In discussions with staff, Firm B indicated that its increased margin was due to retail operations, not wholesale which is the focus of this section. As discussed elsewhere, Northeast retail prices increased relatively more than in other parts of the country. Approximately half of Firm C's profit margin increase derived from its futures market holdings (used to hedge its inventory position). We will return to these two wholesalers later in this Chapter.

[14] [Confidential material redacted.]

[15] [Confidential material redacted.]

[16] Had Firm L sold at a lower-than-market price during September, it would still have needed to replenish inventory, leading to a larger net loss averaged over the period.

III. Refiner Pricing Relative to Market Trends

Because increases in average costs generally do not appear to explain the higher refiner prices, staff examined whether they might be attributable to general market trends. To address this question, staff evaluated whether any individual refiner increased its prices substantially more than other firms facing similar market conditions. Because the hurricanes primarily disrupted refineries and pipelines delivering bulk supplies, refinery margins would likely have increased in the short term even if the industry was perfectly competitive. The large reduction in gasoline-supply capacity resulted in the allocation of scarce supplies through higher prices. Even under perfect competition, the expected short-term price increase would be larger than any increase in refiners' average costs.

In order to examine how actual refiner prices increased relative to market trends, staff initially calculated a benchmark average price increase for all firms in the area. It then calculated two sets of individual refiner prices (based on two different data sets) and compared these individual refiner prices against the benchmark to see how much each refiner's prices increased and whether any of those prices were substantially above the benchmark.[17] Staff determined that an individual refiner had increased price substantially more than other firms if – in either data set – that refiner exceeded the benchmark price increase by more than five cents per gallon. Staff adopted a five cents per gallon standard to distinguish between normal market fluctuations in firms' prices and price changes that potentially reflect price gouging. This standard is based on the statistical range of pre-hurricane firm price changes from July 2005 to August 2005. More specifically, the standard deviation of firm price changes in the EIA data for July and August 2005 was roughly 2.5 cents per gallon. The standard deviation figure is a measure of how much price changes for individual firms varied from the average price change. Based on this historical trend, one would expect that, under relatively normal, pre-hurricane conditions, about one out of 40 firms would increase prices by more than five cents per gallon over the change in overall market average. Staff believes that a five cents per gallon standard is a relatively conservative (*i.e.*, is likely to include more cases) standard compared to what many would view as excessively large increases over market average.

We first present refiner pricing of light petroleum products – gasoline, No. 2 distillate (diesel and home heating oil), and jet fuel. Next, we present refiner pricing of gasoline alone as specifically required by Section 632. In both analyses, we compare individual refiner price increases to a national average price increase, in accordance with the price gouging standard established in Section 632. However, because there is substantial variation in the market conditions faced by each of these refiners, we then discuss whether these price increases were comparable to other firms facing similar market conditions in (1) use of retail or wholesale distribution channels, (2) product mix (gasoline, diesel, or jet fuel), and (3) geography.

A. Pricing of Light Petroleum Products

The data on operating margins described in Section II of this chapter cover a variety of light petroleum products (and in some cases other products as well), but only include large refiners (those with U.S. wholesale sales of $500 million or more). Thus, to create a benchmark

[17] We collected data on individual refiner prices from two sources. First, we used total domestic petroleum product revenues from the operating margins data discussed in Section II of this chapter. As discussed above, the set of products over which refiners reported revenues varied, complicating inter-firm comparisons of price increases. Thus, we also collected confidential firm-specific pricing data submitted monthly by the refiners to EIA.

for market trends, staff used publicly available EIA data that capture pricing by all refiners in the market, while analyzing a smaller set of light petroleum products.[18] Staff calculated this benchmark using a weighted average of all refiners' wholesale and retail prices for three separate products: gasoline, No. 2 distillate, and jet fuel.[19] As shown in Table 7-2, between August and September 2005, this benchmark average price increased from $1.94 per gallon to $2.19 per gallon, or 25 cents per gallon. This increase is slightly higher than the average refiner price increase of 24 cents per gallon calculated from the operating margins data, which included other products in addition to gasoline, diesel, and jet fuel, and consisted of only the 30 firms in Group 1. Despite these differences, the data on operating margins is generally consistent with the EIA data on the magnitude of the refiner price increases between August and September 2005. Because the EIA data include all refiners and a well-defined set of products, staff used the 25 cents per gallon figure as the benchmark national average price increase to describe the trend in the market as a whole.

For both August and September 2005, staff calculated each refiner's price by dividing total refined product revenue by total refined products sold. Staff then compared these refiners' prices to the benchmark price increase of 25 cents per gallon to determine whether any firms had an average price increase of 30 cents per gallon or more. After this, staff analyzed any firms that met this standard to see whether they faced different local market conditions that could explain their relatively higher prices.

Staff used two different data sources for refiner prices and created two groups of refiners for purposes of analysis. First, staff used the operating margin data presented in Table 7-1(a), even though those data includes some non-light petroleum products.[20] Using this data, eight of the 30 refiners had price increases of 30 cents per gallon or more.[21]

However, reporting inconsistencies among refiners limit the usefulness of inter-firm comparisons of operating margins. Thus, in order to better understand the specific market conditions faced by individual refiners, staff then analyzed confidential pricing data that refiners submit monthly to the EIA.[22] As with the benchmark average price increase, this analysis

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[18] The analysis is based on the following EIA sources: Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Refiner Petroleum Product Prices by Sales Type, at* http://tonto.eia.doe.gov/dnav/pet/pet_pri_refoth_dcu_nus_m.htm; Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Refiner Motor Gasoline Sales Volumes, at* http://tonto.eia.doe.gov/dnav/pet/pet_cons_refmg_c_nus_EPM0_mgalpd_m.htm; U.S. Dep't of Energy, *Petroleum Navigator, Refiner Sales Volumes of Other Petroleum Products, at* http://tonto.eia.doe.gov/dnav/pet/pet_cons_refoth_d_nus_VTR_mgalpd_m.htm.

[19] The weighted average sums the total revenue for each product (the EIA national average price for refiners multiplied by the total quantity sold by refiners) and divides that number by the sum of refiners' sales volumes for all three products. In August and September 2005, these products constituted nearly 80 percent of total refiner sales of finished petroleum products.

[20] The analysis is based on individual firm data obtained via compulsory process.

[21] [Confidential material redacted.] It is worth noting that of these eight refiners, two [Confidential material redacted.] had lower operating margins in September than in August. These are represented as Refiners S and Z in Table 7-1(a). A third, represented as Refiner E, [Confidential material redacted.] had only a small increase in its operating margins, while its September 2005 margin was smaller than the average monthly margin over the preceding 12 months. For these three refiners, it thus appears that the price increases can be substantially attributed to cost increases.

[22] Firms submit this data on EIA Form 782A, *available at* Energy Info. Admin, U.S. Dep't of Energy,

focused on a specific set of light petroleum products: gasoline, diesel, and jet fuel. For each of the 28 firms for which there were usable EIA data, staff calculated its average price across all products, states, and distribution channels.[23] This group of 28 includes seven of the eight refiners identified as outliers in the analysis of the operating margins data.[24]

Using EIA data, the first two columns of Table 7-3 present average prices for each of these 28 refiners in August and September 2005. In September, the average price across all twenty-eight refiners was $2.20 per gallon, which represented an increase of 25 cents per gallon over the average price in August 2005. This increase matches the benchmark increase of 25 cents per gallon. While prices increased substantially from August to September, the difference between the maximum and minimum refiner average price actually declined from roughly 26 cents per gallon to 22 cents per gallon. Thus, while the overall level of refiner prices increased substantially, there was less dispersion among them.

Again, however, individual firms' price increases varied substantially. As before, staff identified as outliers any firm whose price increase exceeded the national benchmark increase by five cents per gallon or more. Using the EIA data, six firms' price increases met this threshold.[25] Five of these six firms also had operating margin increases.[26] Consequently, these five refiners meet the standard for price gouging established in Section 632.

However, there are numerous market-based reasons that could explain why particular firms' prices increased more than others. Some of these factors include geographic location, product mix, and percentage of sales to retail. There were substantial regional price variations throughout the country. EIA data shows that prices increased by 13% in the United States as a whole. However, prices in Minnesota increased by 7%, while in South Carolina -- which relies heavily on deliveries from the Colonial Pipeline that were severely disrupted -- prices increased by 18%. Therefore, all else being equal, a firm that sells a higher proportion of its gasoline in South Carolina would be expected to have a larger price increase than a firm that sells a higher proportion of its gasoline in Minnesota. Similarly, in PADD I, the price of gasoline increased by 17%, but the price of diesel increased by 13%. Again, all else being equal, a firm selling a

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http://www.eia.doe.gov/pub/oil_gas/petroleum/survey_forms/eia782aip4.pdf. Form 782A requests prices and volumes by state, product, and distribution channel (retail or wholesale). For wholesale sales of gasoline, the data also indicate whether it is a bulk, rack, or DTW (dealer tank wagon) transaction, which we also included in the analysis. Staff requested waivers from these firms permitting access to their confidential EIA submissions, and were able to use this data for 28 of the 30 refiners in Group 1.

[23] Refiner N [Confidential material redacted.] does not appear in the 782A data [Confidential material redacted.]. Refiner F [Confidential material redacted.] is working with EIA to resolve reporting inconsistencies, so its data could not be included in time for this Report. [Confidential material redacted.] Refiner F has provided the Commission with the data directly. In ensuing footnotes, we describe the results of using this data. However, it would be inappropriate to include them in the general findings because EIA has not verified the data.

[24] [Confidential material redacted.]

[25] Four firms [Confidential material redacted.] were identified in both sets of data. Three firms [Confidential material redacted.] were outliers in the operating margins data but not in the EIA data. Two firms [Confidential material redacted.] were outliers in the EIA data but not in the operating margins data. A tenth firm [Confidential material redacted.] was an outlier in the operating margins data, but, due to reporting problems, we do not include its EIA data in the general findings.

[26] Refiner S [Confidential material redacted.] had a lower operating margin in September 2005 than in August so that its price increase can be substantially attributed to cost increases.

higher proportion of gasoline in PADD I would have a larger average price increase than a firm selling a larger proportion of diesel. Another important difference among firms is the percentage of the firms' sales to retail versus wholesale customers. The weighted average retail price of gasoline, diesel, and jet fuel increased by 29 cents per gallon while the weighted average wholesale price of these products increased by 25 cents per gallon. Thus, a refiner conducting more of its sales through company-operated retail locations would have shown a larger price increase than one selling more of its product to wholesale customers.[27]

To account for such variations in refiners' geography, product mix, and use of distribution channels, staff compared these actual average prices to a calculated "predicted" average price, based on the statewide average price for each product in each distribution channel.[28] These latter prices are publicly available from the EIA.[29] These firm-specific predicted average prices estimate each firm's average price as though it had set prices equal to the state averages but maintained the same sales volumes.[30] For the refiners whose price increases exceeded the benchmark increase, staff determined that a firm's high price in

[27] Furthermore, the hurricanes may have altered the product and geographic mix of individual firms, increasing the portion of higher-priced product sales. For example, one refiner that lost refinery production saw its retail sales increase from 70% of its gasoline sales in August to 80% of its total gasoline sales in September. Since the retail sales also include a retail margin, this change in sales mix explains part of the firm's price increase.

[28] Accounting for refiners' geographic location by state is somewhat inconsistent with the definition of price gouging in Section I, which compares firms' prices with national or international market trends. However, at the time Congress passed Section 632, the disproportionate impact of the hurricanes on gasoline prices in different areas of the country, as documented in Chapters 5 and 6, was unknown.

[29] Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Refiner Petroleum Product Prices by Sales Type, at* http://tonto.eia.doe.gov/dnav/pet/pet_pri_refoth_dcu_nus_m.htm (End Users, No. 2 Distillate); Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Refiner Petroleum Prices by Sales Type, at* http://tonto.eia.doe.gov/dnav/pet/pet_pri_refoth_a_EPD2_PWG_cpgal_m.htm (Resale No. 2 Distillate); Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Refiner Petroleum Prices by Sales Type, at* http://tonto.eia.doe.gov/dnav/pet/pet_pri_refoth_a_EPJK_PTG_cpgal_m.htm (End Users, Kerosene-Type Jet Fuel); Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Refiner Petroleum Prices by Sales Type, at* http://tonto.eia.doe.gov/dnav/pet/pet_pri_refoth_a_EPJK_PWG_cpgal_m.htm (Resale, Kerosene-Type Jet Fuel); Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Gasoline Prices by Formulation, Grade, Sales Type, at* http://tonto.eia.doe.gov/dnav/pet/pet_pri_allmg_a_EPM0_PTA_cpgal_m.htm (End Users, Gasoline); Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Gasoline Prices by Formulation, Grade, Sales Type, at* http://tonto.eia.doe.gov/dnav/pet/pet_pri_allmg_a_EPM0_PDS_cpgal_m.htm (DTW, Gasoline); Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Gasoline Prices by Formulation, Grade, Sales Type, at* http://tonto.eia.doe.gov/dnav/pet/pet_pri_allmg_a_EPM0_PRA_cpgal_m.htm (Rack, Gasoline); Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Gasoline Prices by Formulation, Grade, Sales Type, at http://tonto.eia.doe.gov/dnav/pet/pet_pri_allmg_a_EPM0_PBS_cpgal_m.htm* (Bulk, Gasoline). In some states, EIA will occasionally withhold or not report a price for a particular product sold through a particular distribution channel. For example, EIA has never reported a price for bulk sales of gasoline in Vermont. In these cases, where possible we imputed a price based on the average difference between the state price and the relevant PADD or sub-PADD price between September 2004 and August 2005. If EIA had not reported a state price over this period, the observation was dropped. The total volume for all observations that were dropped or used an imputed price was less than 1 percent of the total volume analyzed.

[30] For example, suppose a firm sold 100 gallons of gasoline and 100 gallons of diesel in a particular state. If the average prices in that state were $2.00 per gallon for gasoline and $2.30 per gallon for diesel, the predicted price for that firm would be $2.15 [(100*$2.00 + 100*$2.30) / (100+100) = $2.15]. Similarly, if another firm sold 200 gallons of gasoline and 100 gallons of diesel, its predicted price would be $2.10 [(200*$2.00 + 100*$2.30) / (200+100) = $2.10]. See the Appendix to this chapter for a precise explication of these predicted prices.

September 2005 was substantially attributable to market conditions if its price was not more than five cents per gallon above its firm-specific predicted price in that month.

In addition to the actual average prices in August and September 2005, Table 7-3 also presents the firm-specific predicted prices for each of the 28 refiners for September 2005. Of the six refiners whose price increases were substantially above the benchmark increase in the EIA data, two (Refiners T and W) exceeded their predicted average prices by more than five cents per gallon in September 2005. Thus, although six refiners had price increases exceeding the benchmark increase, four of them had prices that were apparently similar to other firms facing similar local market conditions in terms of geography, product mix, and distribution channel.

There remain two refiners whose price increases for the set of light petroleum products (gasoline, number 2 distillate, and jet fuel) were not substantially explained by costs or local market trends: Refiners T and W.[31] Before examining these refiners in detail we first discuss refiner pricing of gasoline alone.

B. Pricing of Gasoline

Section 632 specifically requires the Commission to evaluate potential price gouging in the pricing of gasoline. To do so, staff applied the same methodology to gasoline as we did for the broader mix of products discussed above. Based on publicly-availably EIA data, the weighted national average (retail and wholesale) price of gasoline increased from $1.97 per gallon in August 2005 to $2.24 per gallon in September 2005.[32] Staff used this 27 cents per gallon difference as the national benchmark price increase for gasoline. As before, staff calculated the average gasoline price for each refiner for which EIA data was available, and compared these prices to both the average market increase of 27 cents per gallon and firm-specific predicted prices that account for geography and distribution channel.[33, 34]

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[31] [Confidential material redacted.] We performed the same analysis on the data submitted by Refiner F that is unverified by EIA. According to this data, its average price for light petroleum products increased from $2.00 to $2.23 per gallon between August and September 2005, or less than the benchmark price increase of 25 cents per gallon. Moreover, its September 2005 predicted price was $2.22. In sum, Refiner F appears to have been pricing in line with market trends.

[32] Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Refiner Petroleum Product Prices by Sales Type*, *at* http://tonto.eia.doe.gov/dnav/pet/pet_pri_refoth_dcu_nus_m.htm; Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Refiner Motor Gasoline Sales Volumes*, *at* http://tonto.eia.doe.gov/dnav/pet/pet_cons_refmg_c_nus_EPM0_mgalpd_m.htm.

[33] Staff also compared each firm's average price in each state to its predicted price in that state, out of a concern that a national average might mask the fact that a firm may have increased price substantially in some states while lowering it in others. Of more than 500 state-firm combinations (the average firm operates in nineteen states) in September 2005, there were eight instances (less than two percent) in which (i) a firm's price in one state exceeded its state-specific predicted price by more than ten cents per gallon and (ii) its sales volume in that state was substantial (more than ten million gallons). In one of these instances, the firm's price exceeded its predicted price by a similar amount in the prior twelve months. Four of them were driven by bulk sales (sales to other wholesalers) from small refiners, and bulk prices are known to be volatile. The remaining three instances derived mostly from unbranded rack sales. However, because of unbranded price inversions after the hurricanes – *i.e.*, unbranded prices that exceeded branded prices – the difference between these firms' actual prices and their predicted prices (using EIA statewide averages) does not represent a deviation from market trends. We verified these inversions in the OPIS data on wholesale prices described in Chapter 6.

[34] As discussed earlier, we identified two non-refining wholesalers (Firms B and C) with gasoline price increases that were not substantially attributable to cost increases. Although we lack the detailed EIA pricing data

Table 7-4 displays the results for the 28 refiners for which we have EIA pricing data.[35] Eight firms showed price increases for gasoline that exceeded 32 cents per gallon, or five cents per gallon above the national benchmark increase.[36] Seven of these eight refiners also showed higher operating margins between August and September 2005, indicating that average cost differences did not substantially explain the firms' higher prices.[37] Consequently, these seven refiners meet the standard for price gouging established in Section 632, when we focus on the pricing of gasoline alone.

To understand whether these gasoline price increases could be attributed to local market trends, we compared each refiner's actual price with its predicted price, which estimates the firm's price if it had priced at the market average for each retail and wholesale (bulk, rack, and DTW) distribution channel and in each state in which it operates. Adjusting for these different local market conditions appears to explain why four of the seven firms had larger than predicted price increases that were not substantially attributable to increased costs. For example, while Refiner L's actual average price increased by 41 cents per gallon, Refiner L made large retail sales in several states where market prices increased by substantially more than the national average. In one of these states, while Refiner L's average retail price increased by 49 cents per gallon, the average retail price in the state increased by 47 cents per gallon.[38] Refiner L's average price for all the states and distribution channels in which it had sales is $2.37 per gallon, virtually identical to its predicted average price of $2.36 per gallon. Thus, it appears that this portion of Refiner L's price increase can be attributed largely to market trends and not price gouging.

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from these wholesalers, staff gathered information in interviews with them permitting an analysis of their price increases similar to that for the refiners. Firm B [Confidential material redacted.] sold 55 percent of its volume through its own retail outlets, and the rest through a wholesale unit at DTW prices. According to the operating margins data, its average price increased 41 cents per gallon. Nationally, the average retail and DTW prices increased by 35 and 27 cents per gallon, respectively. Thus, Firm B meets the price gouging standard under Section 632. However, assuming this proportion of retail versus wholesale sales was identical in August, and because nearly all of Firm B's operations are in PADD I, staff calculated predicted prices for Firm B using the PADD I average retail and DTW prices from EIA. This predicted price increased 39 cents per gallon, implying that Firm B was pricing in line with PADD-level market trends. Likewise, staff obtained from Firm C [Confidential material redacted.] a breakout of its wholesale operating margins data, apart from its futures trading activities. Its average price increased 31 cents per gallon, while the national average resale price increased only 26 cents per gallon. Because in the OPIS data Firm C is observed quoting rack prices, and because almost all its operations are in PADD I, staff compared this price increase to the PADD I rack price, which increased 31 cents per gallon. In addition, in the OPIS data Firm C's rack and retail price increases are each within 3 cents per gallon of the average increase by local competitors. Thus, both Firms B and C had price increases that are substantially explained by local, but not national, market trends. Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Gasoline Prices by Formulation, Grade, Sales Type, at* http://tonto.eia.doe.gov/dnav/pet/pet_pri_allmg_c_R10_EPM0_cpgal_m.htm.

[35] Staff performed the same analysis on the data submitted by Refiner F [Confidential material redacted.] that is unverified by EIA. According to this data, its average price for gasoline increased from $2.02 to $2.25 per gallon between August and September 2005, or less than the benchmark price increase of 27 cents per gallon. Moreover, its September 2005 predicted price was $2.24, so it appears to have been pricing in line with market trends.

[36] [Confidential material redacted.]

[37] [Confidential material redacted.]

[38] [Confidential material redacted.]

Three refiners, T, W, and DD, had prices that were higher than the average price level charged by firms facing similar local market conditions, and had price increases that could not be substantially attributed to cost increases or national market trends.[39] Overall, these three refiners are relatively small, together accounting for one percent of gasoline sales in the EIA data and less than two percent of U.S. refining capacity.[40]

Refiner T's refinery operations were interrupted by Katrina. This firm is a relatively small refiner that sells unbranded gasoline; as documented in Chapter 6 of this Report, unbranded gasoline prices increased more post-Katrina than branded prices. The EIA data do not permit a comparison to this market trend, which could explain this refiner's relatively large price increases. However, staff's analysis of OPIS data reveals that, in three states constituting approximately 80% of Refiner T's sales, its rack prices for gasoline were no more than five cents per gallon above the state average rack price for unbranded gasoline.[41] Refiner T's claim that it lost money on gasoline sales during September 2005[42] is consistent with its operating margins data. In this case, Refiner T's lower diesel costs may have obscured its substantially higher gasoline costs, which may account for its higher gasoline prices.[43]

Refiner W's large price increases appear to stem from the fact that it operates in a part of the United States that had lower than average prices prior to Hurricane Katrina. Consequently, Refiner W's price increase from August to September 2005 may look unusually large.[44] However, if we carry the analysis one step further and compare Refiner W's actual price increase for gasoline to the increase in its predicted price – that is, if, instead of comparing price levels, we compare the change in its actual price to the change in its predicted price – Refiner W's story does not look so dramatic. Refiner W's predicted average gasoline price in August 2005 is $2.00, compared to its actual price of $2.04. Its predicted average price in September 2005 is $2.31, compared to its actual price of $2.36. Thus while its actual price increased 32 cents per gallon (as shown in Table 7-4), its predicted price increased 31 cents per gallon, similar to other firms operating in its particular market. To look at it another way, Refiner W was four cents per gallon above its predicted price in August and five cents per gallon above its predicted September price. Refiner W does not appear to have altered the way it prices relative to the rest of the market in the wake of Katrina.[45]

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[39] [Confidential material redacted.]

[40] [Confidential material redacted.]

[41] [Confidential material redacted.]

[42] [Confidential material redacted.]

[43] From the data on operating margins, the primary reason Refiner T's costs did not increase in line with its revenues appears to have been a decrease in the total cost of distillate purchases. In its EIA submissions, Refiner T's gasoline and diesel sales each declined by 20%. Yet its operating margins data indicate that while diesel costs decreased 20%, gasoline costs actually increased by 5%. Increased diesel profits may have offset gasoline losses so that the firm's cost increase (for gasoline) is not reflected in the operating margins data.

[44] [Confidential material redacted.]

[45] The results are virtually identical when looking at Refiner W's pricing for all light petroleum products, as in Table 7-3.

Refiner DD's price increase derives primarily from a large bulk sale of gasoline (that is, a sale to another wholesaler or refiner). Bulk prices are known to be volatile.[46] It is again useful to compare Refiner DD's actual price increase with its predicted price increase.[47] While Refiner DD's actual price in September was $2.30, 15 cents above its predicted price ($2.15), its actual price in August was $1.98, which is 11 cents above its predicted price ($1.87) in that month. Thus, while its actual price increased 32 cents per gallon, its predicted price increased 28 cents per gallon. Thus, Refiner DD's price increase was comparable – by the standard used in this Chapter, within five cents per gallon – to price increases by firms facing similar market conditions.

C. Summary of Refiner Results

Based on the available price and accounting cost data that staff reviewed – and applying a strict application of Section 632's gouging definition – it is possible to identify several refiners as "price gougers." Focusing on the results for gasoline alone, eight out of the 28 refiners for which data were available showed price increases in the August-to-September period in excess of 32 cents per gallon, well beyond the national average increase of 27 cents per gallon. Seven of these eight firms also showed significantly higher operating margins in September than in August 2005.[48] Five of the seven refiners whose gasoline price increases met the Section 632 standard also met the standard for the broader set of light petroleum products.

Further analysis, however, suggests that these refiners, while meeting the Section 632 definition, may not have been "gouging" as we commonly understand the term. There are significant differences among refiners in the geographic areas where they sell gasoline and the distribution channels they use. As we explained in Chapters 5 and 6, Katrina's price impacts varied geographically and by distribution channel. For example, prices increased much more on the East Coast than in other areas, while bulk prices and unbranded rack prices showed much more volatility than DTW prices and branded rack prices, respectively. Thus, it is misleading to compare a refiner's overall average price increase with a single national average price increase because it does not reflect these differing market conditions which impact refiners differently.[49] Of the seven refiners that staff identified as having unusually large price increases based on a comparison to the national benchmark average, staff's analysis shows that four set their prices at levels similar to other firms facing similar market conditions.

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[46] According to EIA data, the daily Gulf Coast spot price of gasoline varied from a low of $1.74 per gallon to a high of $3.05 per gallon during the month of September 2005. [Confidential material redacted.]

[47] We compared actual and predicted price increases for all refiners, as another way of comparing price increases to market trends as instructed by Section 632. Only Refiner T has a price increase that exceeds its predicted price increase by five cents per gallon. This is true when looking at pricing of light petroleum products generally or gasoline in isolation.

[48] All seven of the firms that showed significantly higher operating margins in September 2005 were also among those refiners whose refinery output of gasoline increased in September relative to August 2005.

[49] More generally, there are limitations in using the available cost data to assess individual firm pricing. One must use caution in making inter-firm comparisons due to differences in cost accounting procedures across firms. It can be difficult to attribute certain refinery costs directly to individual products, such as gasoline, since the refinery produces a slate of products and the same may be necessary for each of them. Available accounting data reflect overall company costs geographically, but these differ across the country and, as we have seen, Katrina had differential impacts on different parts of the country. Finally, accounting costs reflect average, not marginal, costs, and from an economic perspective only the latter is relevant to short-run pricing decisions.

For the other three cases – all involving small refiners – it is likely that other factors explain their high prices relative to the national benchmark average. For two of these refiners, their August-to-September price increases were not significantly greater than those of comparable firms, even though their September prices were higher than other firms facing similar market conditions. In other words, Hurricane Katrina did not lead these two refiners to alter their pricing behavior relative to other similarly situated firms. Thus, while we identified seven firms with price increases that could not be substantially attributable to cost increases or national market trends, the EIA data suggest that the increases for six of the firms can be explained by variations in geographical location and distribution methods. The remaining refiner showed large rack sales of unbranded gasoline and OPIS data indicate that this refiner's unbranded rack prices were similar to the statewide averages where the refiner operates. In addition, it appears that this refiner's gasoline costs increased more than its aggregate accounting data suggest.

IV. Gross Margins and Price Changes Compared to Market Trends for Targeted Retailers

To analyze price increases at the purely retail level, staff sought information from retailers that various states accused of price gouging in the wake of Hurricane Katrina.[50] The Commission issued Section 6(b) Orders to 99 retailers, many of whom had settled state charges without a trial and paid a fine.[51] These Orders requested information, as required by Section 632, on prices and profits for September 2005 and the previous 12 months. Ultimately, staff received complete responses from 39 retailers.[52] Of the 39, 15 had multiple locations, while the remaining 24 responding firms had only a single location. Because the submissions for the multiple-location retailers provided aggregate data for all of their retail locations, it was

[50] Section 632 required the Commission to look for evidence of price gouging by, and to obtain profitability information from, any retailer of gasoline and distillates against which multiple complaints of price gouging (with identifying information) were filed with a Federal or state consumer protection agency in August or September 2005. Although we anticipated that this would provide staff with a large group of retailers to investigate, it turned out that staff was unable to find any complaints filed with either federal agencies or state attorneys general's offices that met this standard. For example, almost 20,000 complaints were logged by the Department of Energy's gasoline price hotline during the week immediately following Katrina. However, many of the complaints failed to identify the gas station or retailer sufficiently to allow staff to contact the target for additional information, none of the complaints contained information that would allow the Commission to contact the complainant for information identifying the retailers complained about, and none of the stations that were identifiable was the subject of more than a single complaint.

[51] Staff also interviewed many of the 99 retailers to which we issued Orders.

[52] Many individual retailers stated that they could not supply the requested financial data because they lacked sophistication or computer expertise. Many of these retailers claimed they do not keep the financial data in the form that the Commission requested. Twenty-one retailers submitted responses that were incomplete, providing insufficient data to compare their profitability pre- and post-hurricane. Thirty-nine retailers either did not respond at all or submitted their response too late for inclusion. Staff discussed with the retailers the problems associated with complying with the 6(b) Orders. In all instances, staff was convinced that the potential benefit of making the retailer create the data necessary for the analysis was outweighed by the time it would have taken to get the information, an important consideration given the time frame under which we were required to provide the Report.

impossible to analyze the specific location that had allegedly price-gouged.[53] As a result, staff focused on the 24 single-location retailers that had been targeted by state authorities.

Table 7-5 summarizes gross margins for September 2005 and previous periods under review.[54] With respect to the 24 single-location retailers, the data show that gross margins for this group increased by two cents per gallon from August 2005 to September 2005.[55] Gross margins in September 2005 were five cents per gallon higher than the average for the previous twelve months. Again, there is substantial variation among the individual firms. We should note, however, that monthly gross margins for individual retailers are highly volatile, even under normal operating conditions. Between September 2004 and August 2005, monthly gross margins for individual retailers varied within a wide range. For example, Retailer E's gross margin was 0 cents per gallon in one month but 53 cents per gallon in another. The range is even greater for other retailers.[56]

Nevertheless, a retailer was classified as having a price increase that was not substantially explained by increased costs if its gross margin increased by more than five cents per gallon or more between August and September 2005. Fourteen of these 24 retailers had gross margin increases that met or exceeded this threshold. Thirteen of these 14 retailers' September gross

[53] In September 2005, the combined revenue for these multiple location retailers was $1.2 billion, while the combined revenue for the 24 single location retailers was $6.2 million. The large difference between the revenues for the submitting firms necessarily limits the analysis of the data using any averages of the combined firms as the results would generally just reflect the results of the 15 large multiple location retailers. Inclusion of all locations for the multiple location retailers precludes our making any comment on the profitability of any single location owned by the multiple location retailers accused of gouging.

[54] Retailer profits are measured by gross margin per gallon, which equals the average price per gallon sold minus the average cost per gallon purchased from wholesalers. As noted above, retailers incur other costs such as rent, labor, heating and power costs and so forth, but these are omitted from the analysis since they are unlikely to have changed significantly over the comparison period of interest. Gross margins on the sale of gasoline also do not reflect retail sales and profits of convenience store items, automotive repairs and other revenue sources related to a gasoline retailer's operation.

[55] EIA data on the difference between retail and DTW prices for gasoline approximates retailer margins, providing a benchmark for comparison of the changes in margins at the targeted retailers. Nationwide, the difference between retail and DTW prices for all grades of gasoline increased from 6 to 14 cents per gallon between August and September 2005. Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Gasoline Prices by Formulation, Grade, Sales Type, at* http://tonto.eia.doe.gov/dnav/pet/pet_pri_allmg_a_EPM0_PDS_cpgal_m.htm (DTW, Gasoline); Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Gasoline Prices by Formulation, Grade, Sales Type, at* http://tonto.eia.doe.gov/dnav/pet/pet_pri_allmg_c_nus_EPM0_cpgal_m.htm. At the targeted single-location retailers, margins increased from 14 to 16 cents per gallon on average—much less than the nationwide average increase in the margin between retail and DTW prices. *See* Table 7-5.

[56] This volatility in month to month gross margins may be attributable to changes in the cost of purchased refined products from delivery to delivery and the speed of retailer responses to changing market conditions. In addition, a retailer's accounting methodology may contribute to gross margin volatility because costs for inventory are recorded and reported on a monthly basis. Inventory can be valued on an average cost basis, a first in first out basis (FIFO), or a last in first out basis (LIFO). Assuming the retailers employ a consistent application of inventory valuation, they will still provide different cost bases for inventory and cost of goods sold when comparing the retailers with one another. Further, when prices are rising and LIFO is the accounting methodology used, the results will show lower margins as the higher priced goods are removed from inventory accounts first. Conversely, when prices are rising and FIFO is used, the lower cost inventory is removed first showing higher gross margins for the reported sale and reporting period. Additionally, receipt of inventory close to month end could drastically alter the monthly cost of goods purchased for these small retailers.

margins also exceeded their average monthly gross margin for the previous 12 months by at least five cents gallon, thus requiring further analysis under Section 632 to determine if the price increases are substantially attributable to national or international market trends.

Staff then examined how the price increases for these retailers compared with market trends. According to EIA data, the nationwide average price of gasoline increased by 35 cents per gallon-- from $2.08 to $2.43-- between August and September 2005, which is nearly identical to the 36 cents per gallon increase by the group of 24 single-location retailers for which we have data.[57] Thus, the benchmark increase in retail gasoline prices is 35 cents per gallon. A retailer's price increase could not be substantially attributed to national market trends if its price increase exceeded the benchmark increase by more than five cents per gallon. Of the 14 retailers with increased gross margins, 6 had price increases exceeding this threshold: Retailers F, G, L, M, R, and U.[58] These six retailers thus meet the standard for price gouging defined in Section 632.

However, Katrina's impact on gasoline prices varied substantially in different areas of the country. Indeed, twelve of the fourteen retailers with increased gross margins are located in PADD I, where the average price of gasoline increased by 43 cents per gallon between August and September. To understand local market trends that may have affected these retailers, for each of the 24 retailers, staff analyzed state-level prices from EIA and local market area prices from OPIS.[59] The changes in these prices between August and September are presented in the last two columns of Table 7-5. Of the 6 retailers with price increases not substantially attributable to cost increases or national market trends, only one (Retailer G) had a price increase that was more than five cents per gallon above the average increase in their local market price, as reflected in the OPIS data.[60]

Thus, the price increases by the six retailers were not substantially attributable to national market trends. However, for five of the retailers, the increases may have been attributable to local market trends. Thus, while all six retailers meet the standard for price gouging as defined in Section 632, we conclude that it is not appropriate to identify all of them as price gougers because these specific retailers operated in sections of the country where prices were differentially greater than other parts of the country. This analysis of monthly data indicates that pricing by these targeted retailers as a group was comparable to market trends and that price increases, having little effect on margins, were substantially attributable to increased costs. We also note that the 24 targeted retailers also experienced a sharper decline in sales volumes relative to the rest of the country.[61] While the targeted retailers' sales volumes declined by 22% between August and September 2005, total product supplied fell only nine percent nationwide.[62]

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[57] Energy Info. Admin., U.S. Dep't of Energy, http://tonto.eia.doe.gov/dnav/pet/pet_pri_allmg_c_nus_EPM0_cpgal_m.htm.

[58] [Confidential material redacted.]

[59] Energy Info. Admin., U.S. Dep't of Energy, http://tonto.eia.doe.gov/dnav/pet/pet_pri_allmg_a_EPM0_PTA_cpgal_m.htm.

[60] [Confidential material redacted.]

[61] In interviews with staff, one of these targeted retailers [Confidential material redacted.] claimed that, as an independent, it was cut off after the hurricane while fuel went to branded customers at the wholesale level.

[62] Seasonal patterns in gasoline demand typically cause sales volumes to decline between August and September of every year. Between 2000 and 2004, the average decline between August and September was 8

The 6 retailers with price increases not substantially attributable to cost increases or national market trends suffered sales volume declines on average of about twenty percent.

Finally, although staff analyzed price gouging under the Section 632 standard, monthly comparisons may be inadequate to detect very short-term price increases, such as those that last less than a week. To investigate potential short-term retail price manipulation, staff compared the list of the 99 retailers against whom states filed price-gouging complaints with station-specific OPIS retail data for 31 cities. This data set contains daily prices at individual stations during the period June through November 2005. Of the eight matches found, six were in the Atlanta area.

Figure 7-2 presents average retail prices between June and November 2005 for the targeted Atlanta retailers and for all other Atlanta retailers.[63] There are two points to note. First, even before Katrina, the targeted retailers consistently had higher average retail prices than the other stations. Second, the episodes of higher prices involved price spikes (relative to the average of all other retailers) of up to about 20 cents per gallon and lasted two days or less. We found the same results when we examined each of the eight targeted retailers individually.

V. Conclusion

As required by Section 632, the Commission analyzed instances of potential price gouging where firms were found to be selling gasoline in particular areas at a higher monthly average price compared to the average price for a previous month, and, where such price increases are not substantially attributable to (1) increased costs or (2) national or international market trends.

Of the 28 refiners for which data were available, staff found that seven showed gasoline price increases that were above the benchmark level (five cents per gallon over the national average) in September 2005 that were not substantially attributable to increased costs. One other small refiner had a qualifying price increase but the price increase was substantially attributable to cost increases.[64] With respect to gasoline alone, seven refiners with higher operating margins showed higher gasoline prices that could not be attributed to national market trends. Consequently, these seven refiners meet the Section 632 definition of price gouging. However, when staff factored in variations in geography, product mix, and distribution channels of these refiners, it found that their price increases did not significantly exceed the average of other firms facing similar market conditions.

Looking more broadly, five of the seven firms that had gasoline price increases substantially above the national benchmark also showed increases in light petroleum product

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percent.

[63] Not every station appears in the OPIS database everyday. The targeted retailers' average price will tend to be more volatile on days when fewer of these stations appear in the data.

[64] This was a very small unbranded gasoline refiner that increased its prices to a level that, based on its operating margins data, could not be immediately attributable to either to increased costs or local market trends. However, this refiner's gasoline costs increased substantially more than what was suggested by the raw operating margins data, which, by reflecting sales of multiple petroleum products, obscured the effect of increased gasoline costs. Moreover, this refiner's unbranded gasoline prices were similar to the statewide average unbranded prices reported by OPIS.

prices that were substantially above the national benchmark. All of these refiners showed significant increases in operating margins in September 2005 compared to the previous month.

With respect to non-refining wholesalers, staff found that their operating margins generally did not increase, suggesting that increased costs primarily caused the price increase. For the few non-refining wholesalers that enjoyed significantly higher operating margins, the increases were attributable to either (1) retail operations in areas that experienced the largest post-Katrina price increases, or (2) activities not directly related to gasoline sales, such as futures market trading and distillate sales from inventory. Although two of these wholesalers had price increases that would constitute price gouging under Section 632, their price increases appear to be substantially in line with local market trends.

Finally, staff investigated the behavior of retailers targeted by states for price gouging violations. Based on available profitability data obtained via compulsory process, staff concluded that the high average price increase for the retailers as a group generally was substantially attributable to both increased costs and market trends. However, 6 of 24 targeted single-location retailers did meet the Section 632 definition of price gouging because they had price increases that could not be substantially attributed to increased costs or national market trends.[65]

[65] It is worth noting that all but one of these retailers appear to have been pricing in line with local market trends. Moreover, these retailers had higher than average prices before Katrina, and their price spikes, relative to the market average, were short-lived.

Appendix: Calculating Firm-Specific Predicted Prices

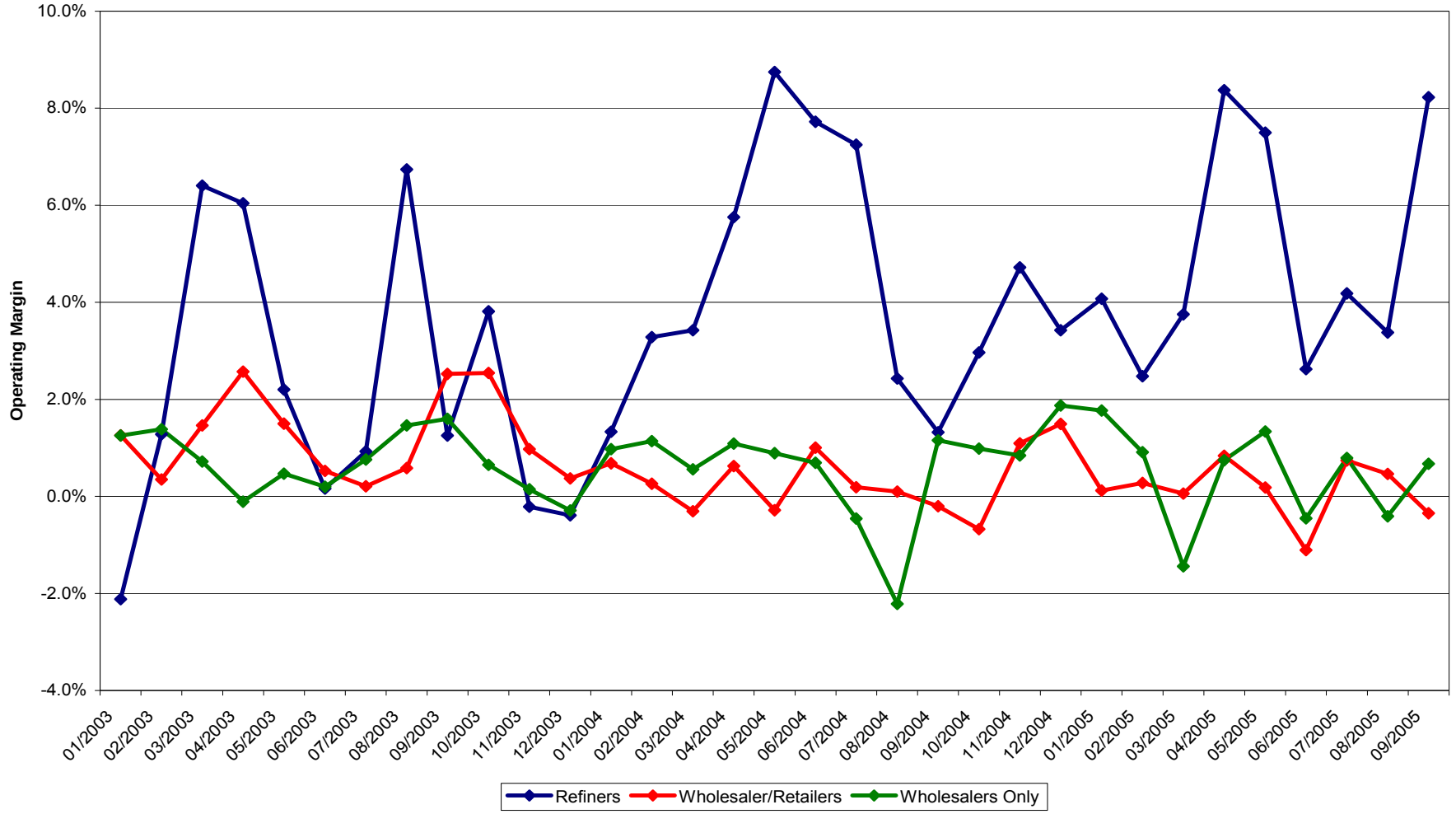
To be precise, the following formulas show how the actual and predicted average prices would be calculated if a firm ("Firm1") sold gasoline and diesel but only in one state and only in one distribution channel.

$$P_{Firm\ 1}^{Actual} = \frac{P_{Gasoline}^{Firm\ 1} * Q_{Gasoline}^{Firm\ 1} + P_{Diesel}^{Firm\ 1} * Q_{Diesel}^{Firm\ 1}}{Q_{Gasoline}^{Firm\ 1} + Q_{Diesel}^{Firm\ 1}}$$

$$P_{Firm\ 1}^{Benchmark} = \frac{P_{Gasoline}^{StateAvg} * Q_{Gasoline}^{Firm\ 1} + P_{Diesel}^{StatgeAvg} * Q_{Diesel}^{Firm\ 1}}{Q_{Gasoline}^{Firm\ 1} + Q_{Diesel}^{Firm\ 1}}$$

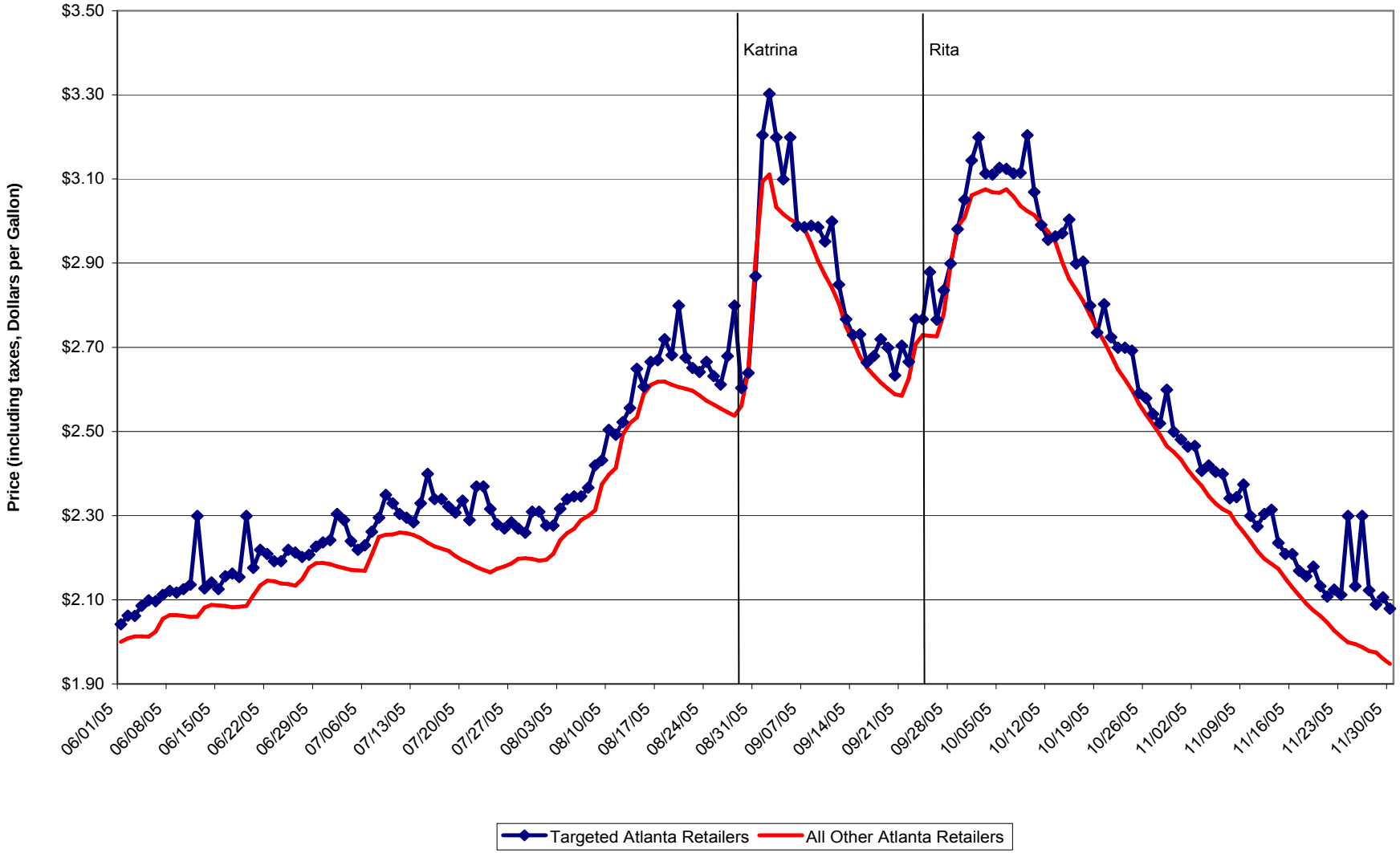
For firms with operations in multiple states and sales at both the wholesale and retail levels, the formula is more complicated but the basic idea is the same: the predicted price weights the overall state average wholesale and retail prices for gasoline and diesel by the firm's wholesale and retail sales volumes of gasoline and diesel in that state. For firms that sell products in multiple states and/or multiple distribution channels, both the actual and predicted average prices would include terms to account for these factors. Specifically, the numerator includes *P*Q* terms for each (product, state, distribution channel) combination, while the denominator includes each relevant *Q* for the firm.

Figure 7-1
Monthly Group Operating Margins
January 2003 - September 2005



Source: Various CID resp.

Figure 7-2
Atlanta Regular Gasoline Retail Prices
6/1/2005 - 11/30/2005



Source: Oil Price Information Service (OPIS)

Table 7-1(a)
Group 1 Refiners' Operating Margins

	Monthly Average, Sep-04 to Aug-05	Aug-05	Sep-05	Difference, Sep-05 minus Aug-05
	(1)	(2)	(3)	(4)
Refiner A	4.97%	4.59%	10.65%	6.06%
Refiner B	0.52%	2.69%	1.77%	-0.92%
Refiner C	4.01%	6.49%	7.73%	1.24%
Refiner D	2.58%	0.79%	1.84%	1.05%
Refiner E	2.57%	-0.92%	0.92%	1.84%
Refiner F	3.97%	4.99%	8.90%	3.91%
Refiner G	5.39%	4.30%	12.33%	8.03%
Refiner H	6.41%	6.49%	10.76%	4.27%
Refiner I	8.28%	15.22%	18.05%	2.83%
Refiner J	5.51%	7.57%	11.53%	3.96%
Refiner K	4.04%	6.36%	17.29%	10.93%
Refiner L	-2.16%	-5.06%	1.92%	6.98%
Refiner M	5.42%	7.85%	16.39%	8.54%
Refiner N	6.04%	7.37%	16.34%	8.97%
Refiner O	13.69%	10.40%	19.43%	9.03%
Refiner P	1.38%	4.75%	14.53%	9.78%
Refiner Q	2.46%	1.00%	12.95%	11.95%
Refiner R	4.94%	-2.60%	-1.13%	1.47%
Refiner S	1.81%	1.65%	-2.36%	-4.01%
Refiner T	3.53%	5.24%	7.86%	2.62%
Refiner U	6.63%	-0.83%	6.42%	7.24%
Refiner V	1.58%	1.57%	12.12%	10.55%
Refiner W	4.83%	5.59%	13.89%	8.29%
Refiner X	4.29%	3.90%	15.38%	11.48%
Refiner Y	4.25%	7.28%	10.66%	3.38%
Refiner Z	4.82%	6.66%	2.10%	-4.55%
Refiner AA	3.68%	14.07%	14.43%	0.36%
Refiner BB	2.14%	-0.65%	11.86%	12.51%
Refiner CC	5.73%	5.99%	10.05%	4.06%
Refiner DD	4.26%	7.83%	11.80%	3.97%
Group 1 Average	4.14%	3.38%	8.23%	4.85%

Source: Various CID resp.

Table 7-1(b) Group 2 Wholesaler/Retailers' Operating Margins				
	Monthly Average, Sep-04 to Aug-05	Aug-05	Sep-05	Difference, Sep-05 minus Aug-05
	(1)	(2)	(3)	(4)
Firm A	-0.90%	-0.03%	-7.41%	-7.38%
Firm B	5.02%	0.23%	8.77%	8.54%
Firm C	-1.89%	-9.59%	7.03%	16.62%
Firm D	1.99%	10.16%	-5.91%	-16.07%
Firm E	-1.73%	-1.78%	0.09%	1.87%
Firm F	-0.01%	0.66%	0.05%	-0.61%
Firm G	0.07%	0.94%	1.33%	0.39%
Firm H	0.45%	2.43%	1.73%	-0.70%
Group 2 Average	0.27%	0.46%	-0.35%	-0.81%

Table 7-1(c) Group 3 Wholesalers' Operating Margins				
	Monthly Average, Sep-04 to Aug-05	Aug-05	Sep-05	Difference, Sep-05 minus Aug-05
	(1)	(2)	(3)	(4)
Firm I	0.81%	0.87%	-10.90%	-11.77%
Firm J	4.64%	-15.13%	2.00%	17.13%
Firm K	1.02%	0.29%	1.02%	0.73%
Firm L	-0.22%	-0.09%	8.50%	8.59%
Firm M	0.16%	0.21%	0.44%	0.23%
Firm N	1.28%	1.84%	1.88%	0.04%
Firm O	0.82%	0.89%	-0.10%	-0.99%
Firm P	2.01%	8.24%	-5.09%	-13.33%
Firm Q	36.31%	66.14%	-73.86%	-140.00%
Firm R	-0.35%	-1.22%	-0.28%	0.94%
Firm S	-1.27%	-11.72%	-0.54%	11.18%
Firm T	-0.22%	-0.60%	0.46%	1.06%
Firm U	1.02%	0.29%	1.02%	0.73%
Firm V	-0.02%	-1.64%	1.20%	2.84%
Firm W	0.02%	-0.14%	1.68%	1.82%
Group 3 Average	0.64%	-0.41%	0.67%	1.08%

Source: Various CID resp.

Table 7-2 Benchmark Price Increase						
	August 2005			September 2005		
	Price ($/Gallon)	Quantity (Gallons)	Revenue	Price ($/Gallon)	Quantity (Gallons)	Revenue
Retail						
Gasoline	$2.079	62,742	$130,441	$2.421	59,441	$143,907
No. 2 Distillate	$1.937	19,914	$38,573	$2.173	19,624	$42,643
Jet Fuel	$1.853	47,950	$88,851	$2.102	44,627	$93,806
Wholesale						
Gasoline	$1.954	345,745	$675,586	$2.208	316,295	$698,379
No. 2 Distillate	$1.882	153,257	$288,430	$2.113	144,477	$305,280
Jet Fuel	$1.851	14,991	$27,748	$2.066	16,243	$33,558
Total		644,599	$1,249,629		600,707	$1,317,573
Weighted Average Price			$1.939			$2.193

Source: Energy Information Administration (EIA)

Table 7-3
Refiner Average Prices for Light Petroleum Products

	Actual Price (Cents per Gallon)			Predicted Price (Cents per Gallon)	
	Sep-05	Aug-05	Increase (1) - (2)	Sep-05	Difference to Actual Price (1) - (4)
	(1)	(2)	(3)	(4)	(5)
Refiner A	217.1	194.3	22.8	216.7	0.4
Refiner B	224.8	198.3	26.5	223.5	1.3
Refiner C	215.8	195.1	20.7	216.8	-1.0
Refiner D	217.6	198.0	19.6	219.4	-1.8
Refiner E	214.9	191.1	23.8	216.8	-1.9
Refiner G	222.6	193.6	29.0	223.3	-0.7
Refiner H	225.2	195.1	30.1	227.0	-1.8
Refiner I	218.0	195.8	22.2	222.6	-4.6
Refiner J	212.2	193.0	19.2	213.8	-1.6
Refiner K	223.2	195.5	27.7	223.5	-0.3
Refiner L	230.3	193.9	36.4	228.9	1.4
Refiner M	227.9	199.8	28.1	227.2	0.7
Refiner O	215.5	188.9	26.6	213.9	1.6
Refiner P	223.1	193.6	29.5	221.9	1.2
Refiner Q	221.2	196.1	25.1	220.3	0.9
Refiner R	222.3	195.0	27.3	221.4	0.9
Refiner S	227.0	194.0	33.0	230.8	-3.8
Refiner T	220.1	185.2	34.9	207.0	13.1
Refiner U	215.5	192.6	22.9	218.7	-3.2
Refiner V	226.6	198.6	28.0	223.9	2.7
Refiner W	231.0	201.2	29.8	225.7	5.3
Refiner X	224.4	195.2	29.2	221.6	2.8
Refiner Y	222.5	205.4	17.1	222.9	-0.4
Refiner Z	209.1	180.9	28.2	206.3	2.8
Refiner AA	227.1	206.5	20.6	224.9	2.2
Refiner BB	224.9	191.7	33.2	227.0	-2.1
Refiner CC	215.0	190.1	24.9	217.0	-2.0
Refiner DD	218.8	190.9	27.9	213.3	5.5
Average	220.3	194.9	25.4	220.5	-0.2

Source: Energy Information Administration (EIA), Various CID resp.

Table 7-4
Refiner Average Prices for Gasoline

	Actual Price (Cents per Gallon)			Predicted Price (Cents per Gallon)	
	Sep-05	Aug-05	Increase (1) - (2)	Sep-05	Difference to Actual Price (1) - (4)
	(1)	(2)	(3)	(4)	(5)
Refiner A	217.2	195.6	21.6	220.3	-3.1
Refiner B	229.7	201.6	28.1	228.1	1.6
Refiner C	218.0	198.7	19.3	219.5	-1.5
Refiner D	222.4	200.8	21.6	224.7	-2.3
Refiner E	216.6	193.3	23.3	219.4	-2.8
Refiner G	225.3	196.7	28.6	227.1	-1.8
Refiner H	222.0	186.7	35.3	227.9	-5.9
Refiner I	217.9	196.8	21.1	223.6	-5.7
Refiner J	213.2	196.7	16.5	217.0	-3.8
Refiner K	232.8	203.3	29.5	233.3	-0.5
Refiner L	236.6	195.2	41.4	236.0	0.6
Refiner M	227.8	199.5	28.3	227.8	0.0
Refiner O	217.7	190.8	26.9	215.5	2.2
Refiner P	225.4	197.7	27.7	225.4	0.0
Refiner Q	223.4	199.9	23.5	223.4	0.0
Refiner R	225.4	197.4	28.0	225.4	0.0
Refiner S	229.8	196.6	33.2	234.4	-4.6
Refiner T	223.4	186.7	36.7	208.3	15.1
Refiner U	220.7	196.6	24.1	223.5	-2.8
Refiner V	226.6	199.2	27.4	224.0	2.6
Refiner W	235.6	203.7	31.9	230.5	5.1
Refiner X	230.6	198.7	31.9	227.9	2.7
Refiner Y	226.5	206.3	20.2	227.1	-0.6
Refiner Z	214.2	184.0	30.2	207.3	6.9
Refiner AA	231.6	205.2	26.4	231.7	-0.1
Refiner BB	232.1	193.5	38.6	237.7	-5.6
Refiner CC	220.3	193.9	26.4	222.3	-2.0
Refiner DD	230.4	198.3	32.1	215.0	15.4
Average	224.2	197.5	26.7	224.9	-0.7

Source: Various CID resp., Energy Information Administration (EIA)

Table 7-5
Retailers' Gross Margins and Price Increases

	Monthly Average Gross Margin, Sep-04 to Aug-05	Aug-05 Gross Margin	Sep-05 Gross Margin	Individual Retailer Price Change, Sep-05 minus Aug-05	OPIS Local Average Retail Price Change	EIA State Average Retail Price Change
Multiple Location Retailers Combined	$0.09	$0.07	$0.13	$0.38	N/A	N/A
Retailer A	$0.26	$0.94	-$1.08	$0.32	$0.30	$0.30
Retailer B	$0.09	$0.09	$0.09	$0.33	$0.32	$0.30
Retailer C	$0.53	$0.61	$1.31	$0.24	$0.48	$0.40
Retailer D	$0.02	$0.15	$0.14	$0.26	$0.48	$0.40
Retailer E	$0.14	$0.53	$0.02	$0.34	$0.53	$0.40
Retailer F	$0.13	$0.18	$0.38	$0.56	$0.53	$0.40
Retailer G	$0.21	$0.28	$0.36	$0.61	$0.50	$0.47
Retailer H	$0.12	$0.24	$0.33	$0.35	$0.48	$0.40
Retailer I	$0.08	$0.20	$0.22	$0.49	$0.36	$0.36
Retailer J	$0.02	$0.06	$0.24	$0.30	$0.48	$0.40
Retailer K	$0.02	-$0.03	$0.07	$0.28	$0.48	$0.40
Retailer L	$0.19	$0.32	$0.59	$0.48	$0.48	$0.40
Retailer M	$0.10	$0.20	$0.30	$0.44	$0.48	$0.40
Retailer N	$0.18	$0.22	$0.47	$0.34	$0.42	$0.33
Retailer O	$0.19	$0.21	$0.26	$0.36	$0.42	$0.33
Retailer P	$0.10	$0.18	$0.17	$0.14	$0.48	$0.40
Retailer Q	$0.05	$0.07	$0.09	$0.35	$0.47	$0.32
Retailer R	$0.05	$0.03	$0.23	$0.43	$0.47	$0.32
Retailer S	$0.03	$0.04	$0.05	-$0.23	$0.48	$0.40
Retailer T	$0.19	$0.25	$0.33	$0.14	$0.48	$0.40
Retailer U	$0.05	$0.15	$0.43	$0.44	$0.48	$0.40
Retailer V	$0.06	$0.06	$0.08	$0.40	$0.47	$0.32
Retailer W	$0.13	$0.16	$0.12	$0.41	$0.50	$0.47
Retailer X	$0.04	-$0.11	-$0.01	$0.32	$0.37	$0.32
Weighted Avg. of Individual Retailers	$0.11	$0.14	$0.16	$0.36	$0.44	$0.36

Source: Various CID resp., Oil Price Information Service (OPIS)

Chapter 8

Congressional Budget and Impoundment Control Act Tax Expenditures By Sellers of Refined Petroleum Products

I. Introduction and Background

Section 632 requires the Commission to provide a summary of tax expenditures attributable to (1) large gasoline wholesalers and (2) other wholesalers and retailers against which price gouging complaints have been alleged.[1] Section 3(a)(3) of the Congressional Budget and Impoundment Control Act ("Budget Act") defines "tax expenditures" as "revenue losses attributable to provisions of the Federal tax laws which allow a special exclusion, exemption, or deduction from gross income or which provide a special credit, a preferential rate of tax, or a deferral of tax liability."[2] In other words, a "tax expenditure is measured by the difference between tax liability under present law and the tax liability that would result from a recomputation of tax without benefit of the tax expenditure provision."[3]

The Budget Act requires that a list of tax expenditures be presented with the annual budget. The staff of the Department of the Treasury prepares the tax expenditure estimates that the Office of Management and Budget ("OMB") uses for inclusion with the President's annual budget package.[4] Separately, the Congress's Joint Committee on Taxation ("Joint Committee") presents its own tax expenditure calculations annually to the House Committee on Ways and Means and the Senate Committee on Finance.[5] These two tax expenditure calculations report different figures because they use different estimating techniques and assumptions.[6] One way in which these figures differ involves the exception to the passive loss rules provided for working interests in oil and gas properties: the Treasury reports an estimate, while the Joint Committee does not.[7]

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[1] As discussed above in Chapter 7, pursuant to Section 632, staff sought profitability and tax data from gasoline and distillate wholesalers with 2004 revenues greater than $500 million. As also discussed above, because of the difficulty of matching gasoline price gouging complaints with specific retail locations, staff sought profitability and tax data from retailers against which states had filed or settled allegations of retail price gouging.

[2] Congressional Budget and Impoundment Control Act of 1974 § 3(a)(3), 2 U.S.C. § 622(3).

[3] STAFF OF JOINT COMM. ON TAX'N, JCS-1-05, ESTIMATES OF FED. TAX EXPENDITURES FOR FISCAL YEARS 2005-2009 at 26 (Joint Comm. Print 2005) ("JOINT COMM. ESTIMATES 2005-2009"), *available at* http://www.house.gov/jct/s-1-05.pdf.

[4] *See, e.g.*, OFFICE OF MGT. & BUDGET, ANALYTICAL PERSP.: BUDGET OF THE U.S. GOV'T, FISCAL YEAR 2006 at 3-5 (2005) ("2006 ANALYTICAL PERSPECTIVES"), *available at* http://www.whitehouse.gov/omb/budget/fy2006/pdf/spec.pdf.

[5] *See, e.g.*, JOINT COMM. ESTIMATES 2005-2009 at 1.

[6] The Joint Committee identifies three ways in which its estimates may differ from those calculated by Department of Treasury staff. First, the Joint Committee staff methodology involves a broader definition of the normal income tax base against which tax expenditures are measured. Second, each group's estimates span different time periods. Third, for any annual report, the Joint Committee staff excludes provisions that are estimated to result in less than $50 million over the relevant five fiscal years. *See* JOINT COMM. ESTIMATES 2005-2009 at 23.

[7] *See* JOINT COMM. ESTIMATES 2005-2009 at 25. Unlike the Treasury staff, the Joint Committee staff does not classify this provision as a tax expenditure. Instead, it considers the effects of this passive loss exception as already "incorporated in the estimates of related tax expenditures." JOINT COMM. ESTIMATES 2005-2009 at 6.

The 2006 Analytical Perspectives, which was the most recent publication at the time of the Commission's investigation, describes 146 income tax provisions for which Treasury estimates tax expenditures. Of these, eleven are categorized as specific to energy.[8] Companies that reported credits or deductions related to these categories provided data that could be aggregated to provide the summary information contained in our Report.[9]

Each estimated tax expenditure category reported below in Tables 8-1 and 8-2 is associated with a special provision of the tax code that extends a benefit beyond the normal tax treatment for an energy-related expense. For example, exploration and development costs associated with the successful drilling of an oil and gas well normally would be amortized over the life of the well. (Thus, if a firm elected to use straight-line depreciation, an investment of $1 million in a well with a 20-year life would be expensed $50,000 each year for twenty years.) The special provision associated with exploration and development costs allows integrated oil companies special treatment for intangible drilling costs (*e.g.*, wages, the costs of using machinery for grading and drilling, or the cost of unsalvageable materials used in constructing wells). These companies may expense 70% of such costs in the first year and amortize the remaining 30% over five years rather than amortize over the productive life of the property.[10] Another example of a special benefit associated with oil and gas production allows an enhanced oil recovery credit "equal to 15 percent of the taxpayer's costs for tertiary oil recovery on U.S. projects. Qualifying costs include tertiary injectant expenses, intangible drilling and development costs on a qualified enhanced oil recovery project, and amounts incurred for tangible depreciable property."[11]

[8] *See* 2006 ANALYTICAL PERSPECTIVES at 317 tbl.19-1. The Fiscal Year 2007 Analytical Perspectives was released in February 2006. The 2007 "Energy" category was expanded to twenty-seven tax expenditure items to reflect the impact of new legislation, mostly attributable to the Energy Tax Incentives Act of 2005. *See* OFFICE OF MGT. & BUDGET, ANALYTICAL PERSP.: BUDGET OF THE U.S. GOV'T, FISCAL YEAR 2007 at 304-06 (2006) ("2007 ANALYTICAL PERSPECTIVES"), *available at* http://www.whitehouse.gov/omb/budget/fy2007/pdf/spec.pdf.

[9] Many of the categories will have received no response because they reflect tax expenditure categories not available to the firms responding to the Commission inquiry. In addition, some categories may have been eliminated. In particular, the Alternative Fuel Production Credit appears to have expired in 2002, but companies still reported these credits for the years covered in this investigation. The Clean Fuel Vehicles and Property deduction and credit is phasing out this year, and will be unavailable in 2007. *See* 2006 ANALYTICAL PERSPECTIVES at 336-37.

[10] *See* 2006 ANALYTICAL PERSPECTIVES at 336.

[11] 2006 ANALYTICAL PERSPECTIVES at 336.

Table 8-1
Estimated Tax Expenditures as Reported by the Office of Management and Budget
Corporate Taxpayers Only (in Millions of Dollars)

Part I of II

Category	Tax Year 2003[12]	Tax Year 2004[13]
Expensing of exploration and development costs, fuels	180	230 [240]
Excess of percentage over cost depletion, fuels[14]	530	1210 [510]
Alternative fuel production credit[15]	1,230	1000 [850]
Exception from passive loss limitation for working interests in oil and gas properties[16]	.....	.....
Capital gains treatment of royalties on coal[17]	.....	.....
Exclusion of interest on energy facility bonds[18]	20	20 [20]
Enhanced oil recovery credit	360	300 [360]

[12] OFFICE OF MGT. & BUDGET, ANALYTICAL PERSP.: BUDGET OF THE U.S. GOV'T, FISCAL YEAR 2005 at 290 tbl.18-2 (2004) ("2005 ANALYTICAL PERSPECTIVES"). Treasury and Joint Committee staff estimate tax expenditures for corporations and individuals. The Commission surveyed only corporate entities, and thus this Report covers only tax expenditures attributed to corporations.

[13] 2006 ANALYTICAL PERSPECTIVES at 320 tbl.19-2. Numbers reported in brackets are from 2005 ANALYTICAL PERSPECTIVES at 290 tbl.18-2. Treasury Department officials informed Commission staff that the accuracy of the estimates improves with subsequent Analytical Perspectives.

[14] Percentage depletion deductions give special treatment to independent fuel mineral producers and royalty owners, so that they can take immediate deductions rather than cost depletion capitalized expenses on limited quantities of output. Under cost depletion, outlays are deducted over the productive life of the property based on the fraction of the resource extracted. Under percentage depletion, oil and gas taxpayers deduct 100% of net property income. Unlike depreciation or cost depletion, percentage depletion deductions can exceed the cost of the investment.

[15] The alternative fuel production credit allows a non-taxable credit of $3 per oil-equivalent barrel of production (in 1979 dollars) that is provided for several forms of alternative fuels available if the price of oil stays below $29.50 (in 1979 dollars). The credit generally expired for production put into service on December 31, 2002.

[16] Owners of working interests in oil and gas properties are exempt from the "passive income" limitations. As a result, the holder of the working interest – who (on behalf of himself and all other owners) manages the development of wells and incurs all the costs of their operation – may aggregate negative taxable income from such interests with his income from all other sources.

[17] Sales of certain coal under royalty contracts can be treated as capital gains rather than ordinary income.

[18] Interest earned on State and local bonds used to finance construction of certain energy facilities is tax-exempt. These bonds are generally are subject to the State private-activity bond annual volume cap.

Part II of II		
Category	**Tax Year 2003**	**Tax Year 2004**
New technology credit[19]	280	330 [350]
Alcohol fuel credits[20]	20	20 [20]
Tax credit and deduction for clean-fuel burning vehicles[21]	50	20 [40]
Exclusion of conservation subsidies provided by public utilities[22]	.....	.....

[19] A new technology credit of 10% is available for investment in solar and geothermal energy facilities. In addition, a credit of 1.5 cents (indexed for inflation) is provided per kilowatt hour of electricity produced from certain renewable resources. Generally, qualifying sources include wind, closed-loop biomass, open-loop biomass (including agricultural livestock waste nutrients), geothermal energy, solar energy, small irrigation, landfill gas, and trash combustion used to produce electricity at a facility placed in service before January 1, 2006.

[20] Alcohol fuel income tax credits are provided for ethanol that is derived from renewable sources and used as fuel. The credit equals 53 cents per gallon in 2001 and 2002; 52 cents per gallon in 2003 and 2004; and 51 cents per gallon through 2010. To the extent that ethanol is mixed with taxable motor fuel to create a gasoline/ethanol mix ("gasohol"), taxpayers may claim an exemption from the Federal excise tax rather than the income tax credit. In addition, small ethanol producers are eligible for a separate credit of 10 cents per gallon.

[21] This item consists of a tax credit and deduction for clean-fuel vehicles and property. The deduction and credit are reduced by 75% percent for vehicles placed in service in 2006 and are not available for vehicles placed in service after December 31, 2006.

[22] Non-business customers can exclude from gross income the subsidies that they receive from public utilities for expenditures on energy conservation measures.

Table 8-2
Estimated Tax Expenditures as Reported by the Joint Committee on Taxation
Corporate Taxpayers Only (in Millions of Dollars)

Category	Fiscal Year 2003[23]	Fiscal Year 2004[24]
Expensing of exploration and development costs, fuels	600	500 [400]
Excess of percentage over cost depletion, fuels	400	400 [400]
Alternative fuel production credit	800	500 [500]
Exception from passive loss limitation for working interests in oil and gas properties	.....	.....
Capital gains treatment of royalties on coal	.....	.....
Exclusion of interest on energy facility bonds	<50	<50 [<50]
Enhanced oil recovery credit	200	200 [200]
New technology credit	<100	200 [<100]
Alcohol fuel credits	<50	<50 [<50]
Tax credit and deduction for clean-fuel burning vehicles	NR	<50 [NR]
Exclusion of conservation subsidies provided by public utilities	.....	.....

[23] STAFF OF JOINT COMM. ON TAX'N, JCS-5-02, ESTIMATES OF FED. TAX EXPENDITURES FOR FISCAL YEARS 2003-2007 at 18 tbl.1 (Joint Comm. Print 2002) (reporting only corporations figures) ("JOINT COMM. ESTIMATES 2003-2007"), *available at* http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=2002_joint_committee_on_taxation&docid=f:83132.pdf. The Joint Committee report presents data in billions. Commission staff presents the data in millions for ease of comparability with OMB data. The reader should note that the range for a number rounded to $0.6 billion in the Joint Committee on Taxation report could fall anywhere between $550 million and $649 million.

[24] STAFF OF JOINT COMM. ON TAX'N, JCS-8-03, ESTIMATES OF FED. TAX EXPENDITURES FOR FISCAL YEARS 2004-2008 at 20 tbl.1 (Joint Comm. Print 2003) (reporting only corporations figures) , *available at* http://www.house.gov/jct/s-8-03.pdf. Numbers reported in brackets are from JOINT COMM. ESTIMATES 2003-2007. Again, although the Joint Committee report presents data in billions of dollars, we present the data in millions for ease of comparability. Also again, the range for a number rounded to $0.6 billion could fall between $550 million and $649 million.

II. Tax Expenditures Reported to the FTC

To gather the information presented below, the Commission issued CIDs to the largest wholesale and retail petroleum companies,[25] seeking information for tax years 2003 and 2004.[26] In early February 2006, the Commission issued a second round of requests for tax expenditure and profitability data to a group of 99 retailers that were accused of violating state price-gouging statutes.[27]

The mechanics of calculating tax expenditures are complex and beyond the expertise of FTC staff. Similarly, the companies from which we sought data have no greater expertise or ability to calculate tax expenditures as defined in the Budget Act. The expertise in estimating tax expenditures resides in the Treasury Department and the Joint Committee on Taxation. Therefore, in order to fulfill our data requests, the companies reported to the FTC the numbers that they are able to calculate – tax deductions and tax credits, based on their 2003 and 2004 tax filings – which are not necessarily coextensive with the technical definition of "tax expenditures" used by the Treasury and the Joint Committee. Subject to the cautions described below, Table 8-3 presents the information received from the companies in summary form.

[25] The Commission issued eighty-four CIDs seeking tax expenditure information from companies that staff identified as having calendar year 2004 wholesale gasoline and petroleum distillate revenues greater than $500 million. Fifty of those eighty-four CID recipients ultimately demonstrated wholesale petroleum product revenues greater than $500 million, and only sixteen of those firms – all refiners – claimed any tax expenditure items.

[26] Due to income tax filing deadlines, 2005 tax data were largely unavailable to the CID recipients at the time of the Commission's investigation. Commission staff thus sought 2003 and 2004 data for this Report.

[27] As discussed below, in general the eleven categories of tax expenditures are available only to refiners and oil and gas producers. Only two of the ninety-nine retailers served with these data requests had information available pertaining to tax expenditures; their data related to the alcohol fuels credit.

Table 8-3
Tax Expenditures as Reported by Respondents to Federal Trade Commission Staff (in Millions of Dollars)

Category	Fiscal Year 2003	Fiscal Year 2004
Expensing of exploration and development costs, fuels	5,569	5,308
Excess of percentage over cost depletion, fuels	20	29
Alternative fuel production credit	10	6
Exception from passive loss limitation for working interests in oil and gas properties		
Capital gains treatment of royalties on coal	2	6
Exclusion of interest on energy facility bonds		
Enhanced oil recovery credit	353	384
New technology credit	14	19
Alcohol fuel credits	5	7
Tax credit and deduction for clean-fuel burning vehicles		
Exclusion of conservation subsidies provided by public utilities		

The figures reported in Table 8-3 are a simple aggregation of the line item responses provided by the companies. Although their technical interpretation does not lie within the expertise of the Commission, nevertheless we can offer several points about the data presented above.

First, consistent with the discussion immediately preceding Table 8-3, the summary tax expenditure data presented in Table 8-3 do not represent a one-for-one picture of "tax expenditures" (*i.e.*, of revenue sources lost to the Federal Treasury). A firm that loses the benefit of a special tax deduction will take a normal deduction allowed for that activity. Thus, the tax expenditure to the government is the difference, if any, between the special tax deduction and the normal tax deduction.

Second, both OMB and the Joint Committee caution that, for various reasons (including changed economic incentives and interdependent tax items), the estimates provided in the budget analysis "do not necessarily equal the increase in Federal revenues (or the change in the budget balance) that would result from repealing these special provisions."[28] Each expenditure item is

[28] 2006 ANALYTICAL PERSPECTIVES at 316; *see also* JOINT COMM. ESTIMATES 2005-2009 at 26.

calculated on the assumption that other parts of the tax code remain unchanged.[29] Moreover, the estimates do not take into account behavioral changes that might occur if a specific tax provision were eliminated. What this all means is that, unless taxpayer activity otherwise remained unchanged, government revenues would not necessarily benefit on a dollar-for-dollar basis if a subsidy were eliminated.

Finally, for some categories, the sum of the figures reported to the Commission exceeds the total reported in the Budget Analysis for all companies estimated by Treasury. Staff did not attempt to adjust for the tax rates of the responding companies. Thus, whereas a deduction from income will result in a savings to the corporation of only that company's tax rate times the deduction amount, a tax credit is taken against taxes due, which ordinarily could reflect the actual tax effect of that item, all other things being equal. One company noted, however, that other parts of the tax code may prevent a firm from taking the full tax credit to the extent of other reductions or tax disallowances. Furthermore, each reporting company potentially has a different marginal tax rate. This makes it impossible for staff to calculate accurately the amount of the potential disallowance. For these reasons, FTC staff provides the full value of deductions or credits reported, without considering the tax implications for any individual company or for the government.

[29] 2006 ANALYTICAL PERSPECTIVES at 315; *see also* JOINT COMM. ESTIMATES 2005-2009 at 26.

Chapter 9

The Impact of Post-Katrina Gasoline Prices on Consumer Purchasing Power and Economic Activity

As directed by Section 632, this chapter evaluates the impact of the higher, hurricane-related gasoline prices on consumer purchasing power, both nationally and for regions that were declared disaster areas. The chapter also addresses the impact of higher gasoline prices on overall U.S. economic activity.

I. Impacts on Consumers' Purchasing Power and Household Expenditures

Higher gasoline prices associated with the hurricanes affected consumers' purchasing power and household budgets. One common measure of purchasing power – the ("CPI") calculated by the Bureau of Labor Statistics ("BLS") – tracks how much income is required to purchase a given basket of goods and services over time. If the price of a particular good in the basket increases, then the amount of income needed to purchase the basket also will increase. The ratio of the income needed after the price change to the income needed before the price change provides an index for the change in the cost of living due to the price change.

To estimate the impact of higher gasoline prices on consumer purchasing power, we use a framework very similar to the CPI.[1] We use the Consumer Expenditure ("CE") Survey administered by the BLS to obtain a "typical basket" of goods and services. Then, assuming the only change in the basket is the price of gasoline, we compare how many typical baskets can be purchased per dollar before and after the hurricanes.

To determine how much the hurricanes affected gasoline prices, we compare actual gasoline prices after the hurricanes to *what gasoline prices would have been but for the hurricanes*. As a benchmark of gasoline prices from September through the end of December 2005 in this hypothetically hurricane-free ("but-for") world, we use EIA's forecasted gasoline prices as reported in EIA's August 2005 *Short-Term Energy Outlook*,[2] which was released on August 9, 2005 – several weeks before the hurricanes. Table 9-1 below summarizes the forecasted and actual national average retail gasoline prices.

[1] We describe this framework in full in the Appendix to this Chapter.

[2] *See* ENERGY INFO. ADMIN., DOE, U.S. DEP'T OF ENERGY, AUGUST 2005 SHORT-TERM ENERGY OUTLOOK, at 16 tbl.4, *available at* http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/aug05.pdf. The EIA forecasts are quarterly. In order to create a monthly series, we calculated the past five-year average month-to-month change in prices. We combined these percentages with the EIA's quarterly forecast to infer the monthly forecast.

Table 9-1

Forecasted and Actual Gasoline Prices from September to December 2005 (Cents per Gallon)

Month	EIA Forecast	Actual	Actual over Forecast	% Actual over Forecast
Sept	245	295.1	50.1	20.4%
Oct	243	276.5	33.5	13.8%
Nov	235	230.3	-4.7	-2.0%
Dec	224	222.9	-1.1	-0.5%

Source: Energy Information Administration (EIA)

In September and October, the post-hurricane prices were 20.4% and 13.8% higher, respectively, than the pre-hurricane predicted prices. Subsequently, in November and December, the actual prices were slightly lower than the forecasted prices. In other words, the price increase due to the hurricanes lasted only around two months, after which prices returned to predicted levels before the hurricanes.

CE data for 2004 indicate that the average American household devoted 3.68% of its total budget expenditures to gasoline and motor oil.[3] We use this figure, together with the September and October price increases shown in Table 9-1, to estimate the impact of the hurricane-induced price increases on household purchasing power, which we define as the number of typical baskets a household can purchase per dollar.[4] As detailed in the Appendix to this chapter, we

[3] With regard to income brackets, the lowest 20% of households, in terms of before-tax income, spent 4.09% of their budget expenditures on gasoline and motor oil; the second 20% spent 4.22%; the third 20% spent 4.27%; the fourth 20% spent 3.96%; and the highest 20% spent 2.99%. *See* U.S. DEP'T OF LABOR, BUREAU OF LABOR STATISTICS, TABLE 1. QUINTILES OF INCOME BEFORE TAXES: AVERAGE ANNUAL EXPENDITURES AND CHARACTERISTICS, CONSUMER EXPENDITURE SURVEY, 2004, *available at* ftp://ftp.bls.gov/pub/special.requests/ce/standard/2004/quintile.txt. The regional percentages for gasoline spending are as follows: Northeast, 3.01%; Midwest, 3.74%; South, 4.08%; and West, 3.66%. *See* U.S. DEP'T OF LABOR, BUREAU OF LABOR STATISTICS, TABLE 8. REGION OF RESIDENCE: AVERAGE ANNUAL EXPENDITURES AND CHARACTERISTICS, CONSUMER EXPENDITURE SURVEY, 2004, *available at* ftp://ftp.bls.gov/pub/special.requests/ce/standard/2004/region.txt. Across all product categories, the typical household spent in the following manner: food, 13.32%; housing, 32.07%; transportation (including gasoline and motor oil), 17.98%; health care, 5.93%; entertainment, 5.11%; apparel and services, 4.19%; and miscellaneous (including education and personal insurance and pensions), 21.40%. *See* U.S. DEP'T OF LABOR, BUREAU OF LABOR STATISTICS, TABLE 2. INCOME BEFORE TAXES: AVERAGE ANNUAL EXPENDITURES AND CHARACTERISTICS, CONSUMER EXPENDITURE SURVEY, 2004, *available at* ftp://ftp.bls.gov/pub/special.requests/ce/standard/2004/income.txt.

[4] This is a standard use of the term "purchasing power." *See* U.S. DEP'T OF LABOR, BUREAU OF LABOR STATISTICS, QUESTION: HOW IS THE CONSUMER PRICE INDEX (CPI) USED?, *available at*

calculate that for September and October 2005, respectively, household purchasing power declined by 0.75% and 0.51%. In other words, after the hurricanes, the amount of goods and services an average household was able to purchase per dollar declined by less than a percentage point for each of those two months.

This result stems from the relatively small contribution of gasoline to the total expenditures of a typical household. Some households, of course, spent more of their income on gasoline than the average household and were more adversely affected by the price increases, while other households spent less of their income on gasoline than the average household and experienced a smaller impact on their purchasing power. Moreover, it is important to note that this estimate of the effect on purchasing power underestimates the total effect on consumers to the extent that increased gasoline prices indirectly affected the prices of other goods and services (the most likely of which are those for which gasoline is an important cost component).

There is another way to quantify the effect of higher gasoline prices on consumers: to estimate the increase in average household expenditures attributable to the price increases.[5] According to the U.S. Census Bureau's 2004 American Community Survey, there were approximately 123 million households in the U.S. in 2004. Based on Table 9-1, we calculate that consumers spent $0.50 and $0.34 more per gallon of gasoline in September and October 2005, respectively, because of the hurricanes. Combining these values with actual September and October gasoline quantity data, we estimate that U.S. households spent, on average, $45 more in September and $31 more in October for gasoline – a total of $76 over the two months. Table 9-2 presents the estimated increase in average household spending on gasoline by state and by Petroleum Administration for Defense District ("PADD").[6]

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http://www.bls.gov/dolfaq/bls_ques1.htm.

[5] For a similar approach, *see* Jeremy I. Bulow et al., *U.S. Midwest Gasoline Pricing and the Spring 2000 Price Spike*, 24 ENERGY J. 121 (2003).

[6] The state-level estimates were calculated similarly to the U.S.-level estimate. The EIA, however, does not publish state-specific forecasted prices. Therefore, to estimate the state forecasts, we adjusted the U.S. forecasted price up or down based on the previous year's differential between the state price and the U.S. price. For example, if a state's price was $0.10 higher than the U.S. price in September 2004, then we assumed that the forecasted state price for September 2005 was $2.55 – in other words, $2.45 (the U.S. forecast) plus the $0.10 differential. Note that, because the underlying methodology that the EIA uses to collect the state price data differs from the methodology used to collect the U.S. price series used above, an average of the state estimates in Table 9-2 will be close but not equal to the U.S. estimate.

Table 9-2
Estimated Per-Gallon Gasoline Price Increase, Average Household Consumption of Gasoline in Gallons, and Increase in Average Household Spending on Gasoline by State & PADD
Part I of II

	Per Gallon Gas Price Increase		Average Household Consumption of Gas in Gallons		Increase in Average Household Spending on Gas		
PADD	Sep-05	Oct-05	Sep-05	Oct-05	Sep-05	Oct-05	Total
PADD IA	$0.54	$0.24	85	88	$46	$21	$67
Connecticut	$0.47	$0.19	91	97	$43	$18	$61
Maine	$0.47	$0.19	87	89	$40	$17	$57
Massachusetts	$0.60	$0.26	82	83	$49	$22	$71
New Hampshire	$0.53	$0.27	94	97	$50	$26	$76
Rhode Island	$0.56	$0.22	80	85	$45	$19	$64
Vermont	$0.54	$0.27	85	87	$46	$23	$69
PADD IB	$0.53	$0.25	76	79	$41	$20	$61
Delaware	$0.55	$0.29	93	93	$51	$27	$78
DC	$0.45	$0.16	30	31	$13	$5	$18
Maryland	$0.57	$0.33	88	91	$50	$30	$80
New Jersey	$0.65	$0.34	109	110	$71	$37	$108
New York	$0.48	$0.26	57	59	$28	$15	$43
Pennsylvania	$0.50	$0.18	79	84	$39	$15	$54
PADD IC	$0.52	$0.42	90	93	$47	$39	$86
Florida	$0.45	$0.41	84	86	$38	$35	$73
Georgia	$0.55	$0.43	101	108	$56	$46	$102
North Carolina	$0.56	$0.48	86	90	$48	$43	$91
South Carolina	$0.60	$0.46	98	103	$58	$47	$105
Virginia	$0.54	$0.36	97	99	$53	$36	$89
West Virginia	$0.44	$0.28	73	73	$32	$21	$53
PADD II	$0.43	$0.24	89	94	$39	$22	$61
Illinois	$0.45	$0.27	82	86	$36	$23	$59
Indiana	$0.43	$0.23	92	96	$39	$22	$61
Iowa	$0.48	$0.23	98	106	$47	$24	$71
Kansas	$0.43	$0.15	99	101	$42	$15	$57
Kentucky	$0.42	$0.25	92	95	$39	$24	$63
Michigan	$0.41	$0.24	85	88	$35	$21	$56
Minnesota	$0.34	$0.11	96	101	$33	$11	$44
Missouri	$0.47	$0.27	94	100	$44	$27	$71
Nebraska	$0.45	$0.17	89	95	$40	$16	$56
North Dakota	$0.43	$0.20	89	93	$39	$19	$58
Ohio	$0.42	$0.20	82	87	$35	$17	$52
Oklahoma	$0.42	$0.17	104	106	$43	$18	$61
South Dakota	$0.41	$0.21	102	108	$42	$23	$65
Tennessee	$0.54	$0.41	102	106	$54	$44	$98
Wisconsin	$0.40	$0.20	78	82	$31	$16	$47

Source: Energy Information Administration (EIA), Bureau of Labor Statistics

Table 9-2
Estimated Per-Gallon Gasoline Price Increase, Average Household Consumption of Gasoline in Gallons, and Increase in Average Household Spending on Gasoline by State & PADD
Part II of II

	Per Gallon Gas Price Increase		Average Household Consumption of Gas in Gallons		Increase in Average Household Spending on Gas		
PADD	Sep-05	Oct-05	Sep-05	Oct-05	Sep-05	Oct-05	Total
PADD III	$0.44	$0.39	107	113	$47	$45	$92
Alabama	$0.46	$0.40	96	98	$44	$39	$83
Arkansas	$0.44	$0.36	93	98	$41	$35	$76
Louisiana	$0.37	$0.45	96	101	$36	$45	$81
Mississippi	$0.35	$0.34	112	117	$40	$39	$79
New Mexico	$0.45	$0.37	94	99	$42	$37	$79
Texas	$0.47	$0.39	115	123	$54	$48	$102
PADD IV	$0.43	$0.36	93	91	$40	$32	$72
Colorado	$0.45	$0.35	83	82	$37	$29	$66
Idaho	$0.42	$0.37	89	88	$37	$33	$70
Montana	$0.30	$0.30	99	97	$30	$29	$59
Utah	$0.46	$0.37	109	106	$50	$40	$90
Wyoming	$0.43	$0.40	121	114	$52	$46	$98
PADD V	$0.33	$0.17	96	97	$32	$17	$49
Alaska	$0.14	$0.23	101	85	$14	$19	$33
Arizona	$0.46	$0.28	86	82	$39	$23	$62
California	$0.32	$0.12	102	105	$33	$12	$45
Hawaii	$0.46	$0.42	86	87	$40	$36	$76
Nevada	$0.29	$0.09	81	80	$24	$7	$31
Oregon	$0.26	$0.22	82	87	$21	$19	$40
Washington	$0.32	$0.29	90	88	$29	$25	$54

Source: Energy Information Administration (EIA), Bureau of Labor Statistics

Two factors can cause the estimated effect on household spending summarized in Table 9-2 to differ significantly from state to state (even for states in the same PADD): (1) the state's hurricane-induced price increase and (2) the average amount of gasoline consumed per household in the state.

The household effect in the states with disaster areas – Alabama, Florida, Louisiana, Mississippi, and Texas – was greater than in other states. This was most notable in Texas, where the average household spent $102 more on gasoline due to the hurricanes. This relatively large amount was driven principally by Texas's higher per-household consumption of gasoline (rather than by anything unusual about the price increase in Texas).

In terms of PADDs, households on the Gulf Coast (PADD III) and in the Lower Atlantic states (PADD IC) were hit the hardest over September and October 2005. One reason for this differential is that the other parts of the country – unlike those in PADDs III and IC – experienced a smaller effect on spending in October than in September. As described in Chapters 1 and 2, Hurricane Katrina's effect on gasoline prices occurred largely in September, while Hurricane Rita's effect on gasoline prices – smaller and geographically more limited than Katrina's – was felt largely in October.[7]

To provide some estimate of the cost to consumers from practices by individual gas stations that some might consider to have engaged in price gouging behavior, staff performed a case study of Georgia. We examined data on retailers targeted by the State of Georgia for price gouging after the hurricanes.[8] Based on information regarding these stations' sales prices, gasoline costs, and volumes, we estimated how much revenue they may have received from possible price gouging behavior.[9] From this estimation we find that the alleged price gouging behavior by these stations caused Georgia households to spend approximately $313,254 more for their gasoline purchases – in other words, $0.09 per household – over September and October 2005.[10]

What if one were to suppose that the number of targeted gas stations in Georgia dramatically understates the actual number of potential price gougers during this period? In light of this possibility, let us assume that every gallon of gasoline sold in September and October 2005 in Georgia had a price gouging "premium."[11] In this circumstance, Georgia households would have spent approximately $147.5 million more for gasoline – or approximately $40 more

[7] Of course, the two hurricanes had some cumulative effects, both because some refineries damaged by Katrina were not repaired when Rita hit and because gasoline inventories were at relatively low levels after Katrina and had not been replenished prior to Rita.

[8] *See* Chapter 7, Section IV, for details.

[9] We made the calculation by first estimating each targeted gas station's "normal" margin (*i.e.*, the difference between its retail price and its cost per gallon over a one-year period). We then calculated how much each station's margins in September and October 2005 were above the normal margin. We attributed the entire differential to price gouging and ignored the extent to which a retailer's prices might be consistent with market trends. We then multiplied the differential by the quantity of gasoline sold to determine how much revenue the gas station received from possible price gouging behavior.

[10] Although it is almost certainly true that the cost of possible price gouging behavior was not shared equally across all households in Georgia, it provides a useful scale for the estimated monetary amount.

[11] This is equal to the average of the margin increase for the targeted retailers, as defined above.

per household – during last September and October combined due to potential price gouging behavior. It should be noted, of course, that to the extent Georgia retailers were charging prices substantially in line with market trends, and thus might not satisfy the definition of price gougers, the implied impact on household gasoline expenditures from gouging would be lower.

II. Impact of Higher Gasoline Prices on Overall Economic Activity

In addition to affecting consumers' purchasing power, the higher gasoline prices associated with the hurricanes had an effect on overall U.S. economic activity. A frequently used measure of economic activity is gross domestic product ("GDP"), which is the dollar value of all goods and services produced in the economy over a period of time. The cost of hurricane-related higher gasoline prices on the economy is measured as the reduction in GDP directly attributable to the higher gasoline prices.

The ideal method for estimating this effect would be to develop a macroeconomic model designed for this purpose. The Commission's expertise is primarily in microeconomics and we could not develop such a model because of the limited time allowed for this investigation.[12] We can provide some insights on this issue, however, through the use of estimates published by the Congressional Budget Office ("CBO")[13] which predicted that the higher energy prices induced by Hurricanes Katrina and Rita would reduce annual GDP by between $6 billion and $10 billion. In percentage terms, $6 billion to $10 billion represents 0.05% to 0.08% of GDP in 2005.[14]

[12] In addition, it would be a particularly daunting econometric exercise to try to isolate reliably the macroeconomic effects of inappropriately high pricing by certain sellers of gasoline. Among other things, this analysis would have to estimate how consumer expenditures across sellers would have been different in the hypothetical, but-for world without excessively high pricing by some firms. As previous chapters in this Report have concluded, however, there appears to have been a very small amount of clearly excessive pricing after Katrina. In such circumstances, the macroeconomic implication of such behavior would be trivial.

[13] U.S. Cong. Budget Off., *Macroeconomic and Budgetary Effects of Hurricanes Katrina and Rita*, Oct. 2005, (statement by Douglas Holtz-Eakin before the Committee on the Budget, U.S. House of Representatives).

[14] Because higher energy prices include effects not only on gasoline but also on diesel fuel, home heating oil, natural gas, and other energy products, the CBO's estimate overstates the effect of higher gasoline prices alone. Conversely, this estimate also might understate the effect of higher energy prices on real GDP because it covers only the effect on non-energy consumption. (Non-energy consumption excludes the consumption of goods such as gasoline, fuel oil, electricity, and natural gas.) On the other hand, this possible understatement may be small because, according to one leading economic expert in this field, the evidence from recent energy price increases is consistent with the idea that the key mechanism by which higher energy prices affect economic activity is through its effects on non-energy consumption. *See* James D. Hamilton, *Oil and the Macroeconomy*, Working Paper for the Palgrave Dictionary of Economics, August 2005.

Appendix

We assume that a typical household purchases a given set of goods and services in various categories specified in the CE Survey administered by the BLS. We can represent the bundle with the following equation:

$$\overline{B} = \overline{B_1} + \overline{B_2} + ... + \overline{B_n}\,, \tag{1}$$

where $\overline{B}$ is the invariant quantity of all the goods and services in the basket; n is the total types of goods and services in the basket; and $\overline{B_1}$ is the quantity of gasoline purchased. Since the Bs are quantities, to find the total expenditure needed to purchase the basket, we can rewrite (1) as

$$M_0 = P_1\overline{B_1} + P_2\overline{B_2} + ... + P_n\overline{B_n}\,, \tag{2}$$

where M_0 represents the income required to purchase the bundle $\overline{B}$ with a given set of market prices. The share of expenditures a typical household will spend on gasoline, s_1, can be represented as

$$s_1 = \left(P_1\overline{B_1}\right)\Big/M_0\,. \tag{3}$$

Suppose the price of gasoline, P_1, increases by i to $(1+i)P_1$. How does this affect purchasing power? Since purchasing power is commonly viewed as a measure of how much a given dollar can buy, it is important to clarify the unit of measure for M_0 in equation (2). M_0 is measured in dollars per basket. A more appropriate measure for purchasing power, however, is $1/M_0$, where the unit of measure is baskets per dollar. Therefore, if we define the new income after the price increase as

$$M_1 = (1+i)P_1\overline{B_1} + P_2\overline{B_2} + ... + P_n\overline{B_n}\,, \tag{4}$$

then the percentage change in a typical household's purchasing power can be represented as

$$\alpha = \frac{\left(1/M_1\right) - \left(1/M_0\right)}{\left(1/M_0\right)}\,. \tag{5}$$

Hence, the change in purchasing power is a function of the percentage increase in gasoline prices and the relative importance of gasoline expenditures to total expenditures. As an example, if a typical household spends 5% of its income on gasoline, then a 10% increase in the price of gasoline will result in a change in the household's purchasing power by $\alpha = -0.5\,\%$. However, if the household spends 25% of its income on gasoline, then the same 10% increase will change purchasing power by $\alpha = -2.44\,\%$ instead.[15] Note that for relatively small values of i and s_1, the percentage change in purchasing power can be approximated by multiplying i and s_1.

[15] For illustrative purposes, suppose that a household spends 100% of its income on gasoline. In that case, a 100% price increase in the price of gasoline would reduce purchasing power by 50% because, after the price increase, the household can afford only one-half of the bundle – in this case, gallons of gasoline – that it used to purchase.

We use equation (5) to estimate the impact of the hurricane-induced price increase on consumers' purchasing power. According to the CE in 2004, a typical household spent 3.68% of its total expenditures on gasoline and motor oil. We use this percentage for s_1. For *i*, we use the estimated hurricane-induced price increases for September (20.4%) and October (13.8%) presented in Table 9-1. Therefore, for the months of September and October 2005, household purchasing power declined by 0.75% and 0.51%, respectively.

Part III

Policy Implications and Recommendations

At the heart of the Congressional mandates is an inquiry into the prices for gasoline and all other refined petroleum products, which have risen substantially in the past two years. Higher gasoline prices cause substantial economic hardship for consumers. Sharing a profound interest in protecting consumers, both Congress and the Commission naturally are focused on this issue.

Section 632 of the Science, State, Justice, Commerce, and Related Agencies Appropriations Act of 2006 directs the Commission to investigate price gouging in the aftermath of Hurricane Katrina and, based on the agency's findings, to recommend possible legislation that might be needed to protect consumers from price gouging. Section 1809 of the Energy Policy Act of 2005 also requires that the Commission submit any recommendations along with its investigational findings. The Commission investigated the higher prices that occurred after the hurricanes and has considered the experience of several states that sought to enforce their price gouging statutes during this emergency period.

The challenge in crafting a price gouging statute is the ability to distinguish "gougers" from those who are reacting in an economically rational manner to the temporary shortages resulting from the emergency. This is more than just a problem for legislators and prosecutors. Gasoline suppliers may react to this difficulty in distinguishing gougers by keeping their prices lower than they rationally would. Consumers, in turn, may have no incentive to curb their demand as they would in response to a higher price. Other suppliers may have no incentive to send new supplies to the affected area, as they would if the price increased. The possible result may be long gasoline lines and shortages. In short, any decision to enact federal price gouging legislation should be made with full awareness of both sides of the possible tradeoff.

I. The Critical Role of Prices

Consumers might be better off in the short run if they did not have to pay higher prices for the same quantity of goods; in the long run, however, distortions caused by controls on prices would be harmful to consumers' economic well-being. Prices serve a crucial function in market-based economies. They are signals to producers and consumers that tell how to value one commodity against another, and where to put scarce resources in order to produce or purchase more or fewer goods. If these price signals are distorted by price controls, consumers ultimately might be worse off because producers may manufacture and distribute an inefficient amount of goods and services, and consumers may lack the information necessary to properly value one product against another. Moreover, even in periods of severe supply shock, such as a major reduction in production or distribution caused by a natural disaster like the 2005 hurricanes, higher prices signal consumers to conserve and producers to reconfigure operations to better prepare for the next supply shock. Thus, if there is a "right" price for a commodity, it is not necessarily the low price; rather, it is the competitively determined market price. Relative to past prices, a competitive market price may sometimes be low, and it may sometimes be high; but it will send an accurate signal to producers to manufacture a sufficient amount of goods and services that consumers want to buy at that price, and an accurate signal to consumers to reallocate purchase decisions.

If prices are constrained at an artificial level for any reason, then the economy will work inefficiently and consumers will suffer. Economists have known for years that price controls are bad for consumers, and the deleterious effect extends far beyond strictly fixed prices.[1] The constraint need not be total or permanent to have adverse effects. "Soft" price caps that allow for some recovery of price increases, or a price gouging statute that temporarily constrains prices during periods of emergency, still may have the effect of misallocating resources by reducing the incentives to produce more and consume less.[2] Thus, any type of price cap, including a constraint on raising prices in any emergency, risks discouraging the kind of behavior necessary to alleviate the imbalance of supply and demand in the marketplace that led to the higher prices in the first place. A temporary price cap may have an especially adverse effect on incentives as producers withhold supply in order to wait out the capped period.

An artificially low price may cause producers to shift their fungible resources (of which capital is the most fungible) to other markets. Sooner or later, the result may be shortages, and the relatively scarce goods may be allocated by some method other than a market-clearing price. Experience with past markets in which prices have been held artificially low through price controls has included such results as consumers waiting in lines (and often burning scarce fuel while waiting), a politically designed allocation system, or an illegal "black market" in which the market price is charged.

II. The Important Role of the Antitrust Laws

The antitrust laws are designed to protect consumers by ensuring that they are offered competitive market prices. The antitrust laws seek to protect consumers against high prices that result from price fixing and from other market distortions that almost inevitably lead to higher prices. The Commission, along with the U.S. Department of Justice, is charged with protecting consumers by maintaining competitive markets, to make sure that the prices charged in markets are not artificially fixed or manipulated by private interests. The Commission's work in the petroleum industry over many years conforms to this mandate. The agency protects consumers by ensuring that markets remain competitive, and that the price charged in each market is free from collusion or the exercise of market power.

Congress determined long ago that the nation's economy should largely be free from government regulation and that the national common market should be governed by the principles of competition.[3] In enacting the antitrust laws, however, Congress also recognized

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[1] *See* WILLIAM J. BAUMOL & ALAN S. BLINDER, ECONOMICS: PRINCIPLES AND POLICY 53 (2d ed. 1982) ("The consequences [of price controls] usually are quite unfortunate, exacting heavy costs from the general public and often aggravating the problem the legislation was intended to cure.").

[2] For information on Hawaii's recent decision to suspend the wholesale gasoline price cap that had been in effect since September 1, 2005, *see* Office of Governor Linda Lingle, *Governor Approves Gas Cap Repeal*, May 5, 2006, *available at* http://www.hawaii.gov/gov/news/releases/2006/News_Item.2006-05-05.5815.

[3] Over the years, Congress has passed a number of industry-specific statutes imposing regulation, including price regulation. Prices have been fixed through regulation in airlines, trucking, and other industries originally deemed ill-suited for market-based price competition. Regulations also have been passed to meet goals other than competition, and although these regulations have price impacts, a policy decision has been made that control of prices can be tolerated in order to achieve other goals such as health care and safety. At certain times, Congress has even placed general price controls on all industries. The price of gasoline was strictly regulated during World War II, and the market was cleared through a system of ration coupons.

that markets can be distorted by concentrations of market power. The antitrust laws are not designed to prevent prices from increasing; rather, they are designed to prevent firms from using market power to raise prices artificially.

The antitrust laws cover three primary areas – collusion among competitors (including price fixing), anticompetitive mergers, and monopolistic and other exclusionary unilateral practices. The Commission has been active in each area in the petroleum industry.

A. Collusive Behavior

The antitrust laws condemn certain conduct among competitors, such as agreements to fix prices. When competitors secretly agree to charge identical prices (or to set a floor on prices), consumers have no alternatives to which to turn in order to find a market price. The Commission's investigations of petroleum industry mergers and nonmerger practices always include a search for collusive or coordinated behavior.

The Commission has conducted several major investigations of allegedly collusive behavior in the petroleum industry. In 1998, the Commission launched a three-year investigation of the major oil refiners' marketing and distribution practices in Arizona, California, Nevada, Oregon, and Washington (the "Western States investigation").[4] In another investigation of alleged collusive behavior, the Commission issued a report in 2001 on its nine-month investigation into the causes of gasoline price spikes in local markets in the Midwest in the spring and early summer of 2000.[5] Neither investigation detected evidence of a horizontal agreement on price or output, or the adoption of illegal vertical distribution practices at varying levels of supply. More recent investigations examined allegations of collusive behavior in gasoline markets in Arizona, the Atlanta area, and the Mid-Atlantic region. These investigations did not detect illegal activity.

There is one example of horizontal collusive activity in the petroleum industry. The Organization of Petroleum Exporting Countries ("OPEC") sets production quotas for many of the world's leading petroleum producing countries. OPEC is a functioning cartel whose activities would be illegal if undertaken by private companies.[6] Several private antitrust lawsuits have been filed against OPEC in U.S. courts, but those suits were unsuccessful due to the application

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A general consensus has emerged, however, that in most markets competition is more effective than any form of price control in ensuring that consumers get the full benefits of innovation and productive and distributive efficiencies. Numerous formerly regulated industries have been substantially deregulated. Consumers are best protected when markets are kept free and open. These benefits to consumers depend, of course, on law enforcement agencies that can keep markets competitive and free from distortion and manipulation. This is the role of the Federal Trade Commission.

[4] *See* Western States Gasoline Pricing, FTC File No. 981-0187 (May 7, 2001), *available at* http://www.ftc.gov/opa/2001/05/westerngas.htm.

[5] *See* FEDERAL TRADE COMM'N, FINAL REPORT OF THE FEDERAL TRADE COMMISSION: MIDWEST GASOLINE PRICE INVESTIGATION (2001), *available at* http://www.ftc.gov/os/2001/03/mwgasrpt.htm.

[6] It also would be illegal for U.S. companies to enter into an agreement with OPEC or any OPEC nation for the purposes of restricting output. We are aware of no evidence that U.S. companies have entered such an agreement, or that (except for certain exploration and production activities in some OPEC nations) they function as anything other than purchasers of OPEC crude oil at prices set by the selling nation.

of certain legal doctrines, including the act of state and foreign sovereign immunity doctrines,[7] and the difficulty in serving process on OPEC.[8]

B. Mergers

The Commission's investigation and analysis of proposed mergers in the petroleum industry accounts for much of its antitrust enforcement experience in these markets. In 2004, the Commission released data on all horizontal merger investigations and enforcement actions from 1996 to 2003.[9] These data show that the Commission has brought more merger cases at lower levels of concentration in the petroleum industry than in other industries. The Commission has obtained merger relief in moderately concentrated petroleum markets when the evidence showed that those markets would not be competitive at such concentration levels.

The Commission has investigated every major merger in the petroleum industry over the past 25 years. Although many transactions (particularly many of the smaller ones) raised no competitive concerns and required no enforcement intervention, the Commission analyzed each transaction before allowing it to proceed, so as to ensure that adequate remedies were obtained when necessary.

Since 1981, the Commission has filed or issued complaints against twenty large petroleum mergers that – if allowed to proceed as originally proposed – could have caused significant reductions in competition, with significant harm to consumers as a consequence.[10] Thirteen of those cases resulted in divestitures; four of the complaints resulted in the abandonment of the transaction by the parties; one complaint resulted in a consent order requiring the acquiring firm to provide the Commission with advance notice of its intent to acquire or merge with another entity; another complaint was resolved through imposition of a consent order mandating relinquishment of rights to certain intellectual property; and the seventh complaint was dismissed based on changed circumstances that restored allegedly threatened competition.

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[7] *See* Int'l Ass'n of Machinists v. OPEC, 477 F. Supp. 553 (C.D. Cal. 1979) (foreign sovereign immunity), *aff'd*, 649 F.2d 1354 (9th Cir. 1981) (act of state).

[8] *See* Prewitt Enterprises, Inc. v. OPEC, 353 F.3d 916, 919 (11th Cir. 2003) ("[T]here are no means available for service upon OPEC under the Federal Rules of Civil Procedure."), *cert. denied*, 543 U.S. 814 (2004).

[9] *See* FEDERAL TRADE COMM'N, HORIZONTAL MERGER INVESTIGATION DATA, FISCAL YEARS 1996-2003 11 (revised Aug. 31, 2004), *available at* http://www.ftc.gov/os/2004/08/040831horizmergersdata96-03.pdf. Table 3.3 of the Commission's HORIZONTAL MERGER INVESTIGATION DATA provides specific concentration data for petroleum actions.

[10] These twenty matters are FTC v. Aloha Petroleum, Ltd., FTC File No. 051-0131 (Sept. 6, 2005) (press release announcing resolution of the case); Chevron Corp., FTC File No. 051-0125 and FTC Dkt. No. C-4144 (Jul. 27, 2005); Valero L.P., FTC Dkt. No. C-4141 (July 22, 2005); Buckeye Partners, L.P., FTC Dkt. No. C-4127 (Dec. 17, 2004); Magellan Midstream Partners, L.P., FTC Dkt. No. C-4122 (Nov. 23, 2004); Shell Oil Co., FTC Dkt. No. C-4059 (Nov. 18, 2002); Phillips Petroleum Co., FTC Dkt. No. C-4058 (Feb. 7, 2003); Valero Energy Corp., FTC Dkt. No. C-4031 (Feb. 19, 2002); Chevron Corp., FTC Dkt. No. C-4023 (Jan. 2, 2002); Exxon Corp., FTC Dkt. No. C-3907 (Jan. 26, 2001); BP Amoco p.l.c., FTC Dkt. No. C-3938 (Aug. 25, 2000); The British Petroleum Co. p.l.c., 127 F.T.C. 515 (1999); Shell Oil Co., 125 F.T.C. 769 (1998); Sun Co., Inc., 111 F.T.C. 570 (1989); Pacific Resources, Inc., 111 F.T.C. 322 (1988); Conoco Inc., FTC File No. 871-0008 (Dec. 30, 1986) (approval of filing of complaint); Chevron Corp. and Gulf Corp., 104 F.T.C. 597 (1984); Texaco Inc. and Getty Oil Co., 104 F.T.C. 241 (1984); Gulf Oil Corp., FTC File No. 821-0110 (July 28, 1982); and FTC v. Mobil Corp., No. C81-2473 (N.D. Ohio 1981).

The Commission focused on downstream activities (*i.e.*, refining, refined products pipelines, terminals, and marketing) in many of these petroleum industry mergers. Generally, the competitive concern was that the merger would enable the merged firm to raise prices, through either unilateral or coordinated behavior, in a market for products that it sells downstream (*e.g.*, refined products sold to wholesalers, or wholesale products sold to retailers). Some enforcement actions were based on a potential competition theory; some on competitive problems involving market power held by a buyer or a group of buyers; and some on vertical concerns relating to the ability of a single firm or a coordinating group of firms to raise the costs of other firms in the industry, to the injury of consumers.

Several recent investigations illustrate the Commission's approach to merger analysis in the petroleum industry. One recent example is the Commission's recent decision to challenge certain aspects of Chevron's acquisition of Unocal. At the time of the merger, the Commission and Unocal were engaged in antitrust litigation over allegations that Unocal had deceived the California Air Resources Board ("CARB") in connection with regulatory proceedings to develop the reformulated gasoline ("RFG") standards that CARB adopted. The complaint charged that Unocal had illegally acquired monopoly power in the technology market for producing the new CARB-compliant summertime RFG, thus undermining competition and harming consumers in the downstream product market for CARB-compliant summertime RFG in California. The Commission estimated that Unocal's enforcement of its patents could potentially result in over $500 million of additional consumer costs each year.

The proposed merger between Chevron and Unocal raised the concern that, by unconditionally inheriting Unocal's patents through the acquisition, Chevron would have been in a position to obtain sensitive information and to claim royalties from its own horizontal downstream competitors. Chevron could have used this information and this power to facilitate coordinated interaction and detect any deviations. The Commission settled both the merger and the monopolization matters with separate consent orders that compelled Chevron to forgo enforcement of the Unocal patents, thus preserving competition in all relevant merger markets and securing complete relief on the monopolization claim.[11]

The acquisition of Kaneb Services and Kaneb Pipe Line Partners (companies that engaged in petroleum transportation and terminaling in a number of markets) by Valero L.P. was another recent merger case that resulted in a divestiture. The Commission's complaint in this case alleged that the acquisition had the potential to increase prices in bulk gasoline and diesel markets. The Commission's divestiture order sought to maintain import possibilities for wholesale customers in Northern California, Denver, and greater Philadelphia and to protect consumers from anticompetitive price increases.[12]

Most recently, the Commission filed a complaint on July 27, 2005, in federal district court in Hawaii, alleging that Aloha Petroleum's then-proposed acquisition of Trustreet Properties' half interest in an import-capable terminal and retail gasoline assets on the island of Oahu would have substantially reduced the number of gasoline marketers and could have led to

[11] Chevron Corp., FTC Dkt. No. C-4144 (Jul. 27, 2005) (consent order), *at* http://www.ftc.gov/os/caselist/0510125/050802do0510125.pdf; Union Oil of California, FTC Dkt. No. 9305 (Aug. 2, 2005) (consent order), at http://www.ftc.gov/os/adjpro/d9305/050802do.pdf.

[12] Valero L.P., FTC Dkt. No. C-4141 (July 22, 2005) (consent order), *at* http://www.ftc.gov/os/caselist/0510022/050726do0510022.pdf.

higher gasoline prices for Hawaii consumers.[13] To resolve this complaint, the parties executed a 20-year throughput agreement with a third party, thereby preserving competition allegedly threatened by the acquisition.[14]

Mergers are governed by Section 7 of the Clayton Act, which prohibits acquisitions that "may . . . substantially . . . lessen competition, or . . . tend to create a monopoly."[15] This standard of proof has served consumers well. It is sufficiently flexible to reach mergers in highly concentrated industries and in retail markets that are much less concentrated. This flexibility has allowed the interpretation and application of the standard to evolve over time with developing economic principles, to the point where today it blocks potentially anticompetitive mergers but allows efficiency-enhancing and cost-reducing acquisitions to go forward.

There have been some legislative proposals designed to change the applicable standard for Section 7 challenges to mergers and acquisitions in the petroleum industry. The current language of Section 7 of the Clayton Act, however, has generally prohibited mergers that have likely anticompetitive effects while allowing efficiency-enhancing transactions to proceed. An industry-specific standard could prohibit mergers that would benefit consumers, and could result in a confused jurisprudence and a loss of predictability in merger enforcement.[16] Changing the longstanding Clayton Act standard for the petroleum industry also could lead other industries to seek their own particular merger standards, which could balkanize merger enforcement to the detriment of the economy as a whole. The Commission recommends that the existing Clayton Act standard of proof remain the sole and uniform merger standard for federal antitrust enforcement.

C. Unilateral Behavior

The antitrust laws also protect consumers from abuse by single-firm conduct such as the illegal maintenance or acquisition of monopoly power. Generally, unilateral conduct violates the antitrust laws only if a firm has sufficient market power that its actions could not be counteracted by its competitors or by new entry. Few firms have such individual market power, and the Commission's long history of investigating and studying the petroleum industry suggests that that is the case in petroleum markets.[17] A challenge in enforcing the antitrust laws in these cases

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[13] Aloha Petroleum Ltd., FTC File No. 051 0131 (July 27, 2005) (complaint), *at* http://www.ftc.gov/os/caselist/1510131/050728comp1510131.pdf.

[14] FTC Press Release, *FTC Resolves Aloha Petroleum Litigation* (Sept. 6, 2005), *available at* http://www.ftc.gov/opa/2005/09/alohapetrol.htm.

[15] 15 U.S.C. § 18. The Commission also may bring a merger case under Section 5 of the FTC Act, which prohibits "unfair methods of competition." 15 U.S.C. § 45.

[16] *See* American Bar Assn, Comments of the ABA Section of Antitrust Law Regarding The Oil and Gas Industry Antitrust Act of 2006 (Apr. 2006), pp. 8-9.

[17] Some observers have compared the petroleum refining market to the market for electricity generation, which has had well-publicized examples of individual firms, such as Enron, manipulating the market by withholding capacity at times of peak demand, thereby causing prices to rise. *See, e.g.*, Richard J. Pierce, Jr., *Completing the Process of Restructuring the Electricity Market*, 40 Wake Forest L. Rev. 451, 473 (2005). However, this comparison overlooks critical differences between electricity and petroleum markets. A single firm that withholds electricity generating capacity may reduce overall product supplied because electricity cannot be stored. This ability to reduce capacity is reinforced by constraints on the electricity grid that limit the amount of electricity that more distant firms can supply to an area during times of crisis. In contrast, refined petroleum products can be (and are) stored, and temporary reductions in refinery output can be mitigated by releasing product from storage. This makes

is that anticompetitive conduct may closely resemble fair but aggressive business behavior, and enforcement policy must distinguish between them to avoid stifling commercial practices that may benefit consumers.

If the burden of proof is set too high, conduct that should be illegal will go unpunished. If the burden is set too low, there is a risk that the innocent will be punished and socially desirable conduct will be deterred. Because it is difficult to differentiate every instance of anticompetitive conduct from the type of aggressively procompetitive conduct that the law encourages, antitrust enforcers avoid enforcement actions that may chill competitive unilateral conduct – in other words, to keep from reducing incentives for firms (even firms with large market shares) to compete vigorously in their markets.

Of course, just as a high market share is not by itself an indicator of a competitive problem, a low market share does not necessarily preclude the anticompetitive application of unilateral market power. For example, as noted above in the discussion of the Chevron/Unocal merger, the Commission successfully prosecuted a unilateral case in the petroleum industry that involved the acquisition of market power through manipulation of a standard-setting process. The Commission issued an administrative complaint, alleging that Unocal had deceived the California Air Resources Board ("CARB") in connection with regulatory proceedings to develop the RFG standards that CARB adopted.[18] The consent order settling this case saved California's gasoline consumers from paying higher prices due to the unilateral exercise of market power.[19]

Calls for antitrust enforcement against price gouging are in essence a call for action against unilateral pricing behavior. Collusive action to charge higher prices may be prosecuted under existing antitrust laws, whether the action occurred during a period of emergency or not, and collusion's susceptibility to challenge does not depend on how high the price was raised.[20] The substantial price increases widely characterized as price gouging in the wake of Hurricanes Katrina and Rita were instances of unilateral conduct by selected retailers. None of these price increases, however, appears to have violated the federal antitrust laws' prohibitions against conduct by a single firm with market power. Nonetheless, the Commission's investigation evaluated the higher prices after the hurricanes, consistent with the mandate of Section 632.

III. Price Gouging – State and Federal Perspectives

There is no federal statute that prohibits price gouging. Twenty-nine states and the District of Columbia, however, have laws that prohibit the excessive pricing of motor fuels and other commodities during periods of abnormal supply disruption (normally triggered by a declaration of emergency by the President, the governor, or local officials).[21] These laws

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the short-run supply of refined products much more responsive to prices than the supply of electricity.

[18] *See* Union Oil Co., FTC Dkt. No. 9305 (Mar. 4, 2003) (administrative complaint), *available at* http://www.ftc.gov/os/2003/03/unocalcmp.htm.

[19] *See* Statement of the Federal Trade Commission, Union Oil Co., FTC Dkt. No. 9305 and Chevron Corp., FTC File No. C-4144 (Jul. 27, 2005), *available at* http://www.ftc.gov/os/adjpro/d9305/050802statement.pdf.

[20] As stated earlier, the Commission's analysis of the increased retail price dispersion following the hurricanes did not disclose evidence of any market-wide collusion.

[21] *See* National Conf. of State Legislatures, *State Laws and Regulations: Price Gouging* (Oct. 8, 2004), *available at* http://www.ncsl.org/programs/energy/lawsgouging.htm.

provide for civil penalties, criminal penalties, or both. Commission staff looked at the experience of the states in enforcing their price gouging statutes as information relevant to the enactment and enforcement of a possible federal statute.[22]

A. State Price Gouging Laws and Enforcement

It is difficult to generalize about state price gouging laws because states use a variety of terms to describe, proscribe, and regulate the conduct. Most, but not all, require a state of emergency before their price gouging laws may be enforced. The states define the pre-emergency price in various ways: some use the average retail price over a specified period,[23] others use the price immediately prior to the emergency declaration,[24] and still others do not define the pre-emergency price at all.

Despite the variations among them, however, state price gouging laws appear to fall into three categories: (1) four states limit retail price increases to increases in wholesale costs (Georgia, Hawaii, Louisiana, and Mississippi permit retailers to pass along wholesale price increases to their customers but do not allow increased margins compared to the pre-emergency period[25]); (2) six states (Arkansas, California, New Jersey, Oklahoma, Utah, and West Virginia) and the District of Columbia cap price increases during an emergency to a specified percentage;[26] and (3) the remaining nineteen state price gouging laws prohibit unconscionable or excessive price increases during an emergency.[27] Those nineteen statutes use a variety of terms

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[22] Several states and the Canadian Competition Bureau investigated post-hurricane high gasoline prices and potential price gouging and concluded, largely consistent with this Report, that market forces were for the most part responsible for the higher prices. *See* David R. Baker, *Anti-Gouging Laws Don't Cut Gas Prices: State Probed 50 Potential Cases; No Charges*, SAN FRAN. CHRONICLE, May 6, 2006, at A1, *available at* http://www.sfgate.com/cgi-bin/article.cgi?file=/c/a/2006/05/10/MNGQHIOUJP1.DTL (California Attorney General investigates 50 of more than 1,150 complaints, finds no evidence of price gouging); Press Release, Attorney General Rob McKenna, *McKenna Encourages Conservation, Reports No Evidence of Price-Fixing So Far*, Apr. 26, 2006, *available at* http://www.atg.wa.gov/releases/2006/rel_No_evidence_Of_Price_Fixing_042606.html; Office of the Attorney General, State of Arizona, Consumer Protection Section, 2005 Gasoline Report Hurricane Katrina, Apr. 26, 2006 (Arizona "investigation did not uncover any illegal conduct"), *available at* http://www.azag.gov/consumer/gasoline/PublicGasReport2005.pdf; Canadian Competition Bureau, *Competition Bureau Concludes Gasoline Pricing Examinations*, Mar. 30, 2006 (finding "no evidence of a national conspiracy to fix gasoline prices"), *at* http://www.competitionbureau.gc.ca/internet/index.cfm?itemid=2046&lg=e.

[23] *See, e.g.*, FLA. STAT. ch. 501.160 (2005); S.C. CODE ANN. § 39-5-145 (2005). Both of these statutes compare the post-emergency price to a 30-day pre-emergency average.

[24] *See, e.g.*, CONN. GEN. STAT. ANN. § 42.320 (2004); TENN. CODE. ANN. § 47-18-5103 (2005); W. VA. CODE § 46A-6J (2006).

[25] *See* GA. CODE ANN. § 10-1-393.4 (1995); HAW. REV. SAT. § 209-9 (1994); LA. REV. STAT. ANN. 29:732 (2005); MISS. CODE ANN. § 75-24-25 (2003).

[26] *See* ARK. CODE ANN. § 4-88-303 (2006); CAL. PENAL CODE § 396 (2006); D.C. CODE § 28-4101 (2006); N.J. STAT. ANN. § 56:8-109 (2006); OKLA. STAT. ANN. tit. 15 § 777.1 (2005); UTAH CODE ANN. § 13-41 (2005); W. VA. CODE § 46A-6J (2006).

[27] *See* ALA. CODE § 8-31 (2005); CONN. GEN. STAT. ANN. § 42.320 (2004); FLA. STAT. ch. 501.160 (2005); IDAHO CODE § 48-603(c)(2005); ILL. ADMIN. CODE tit. 14 § 465.10 (2005); IND. CODE § 4-6-9.1 (2005); IOWA ADMIN. CODE r. 61-31.1(714) (2006); KAN. STAT. ANN. § 50-6, 106 (2005); KY. REV. STAT. ANN. § 367.374 (2004); ME. REV. STAT. ANN. tit. 10, § 1105 (2005); MASS. REGS. CODE tit. 940, § 3.18 (2006); MICH. COMP. LAWS § 445.903 (2005); MO. CODE REGS. ANN. tit. 15, § 60-8.030 (2006); N.Y. GEN. BUS. LAW § 396-r (2006); N.C. GEN. STAT. § 75-38 (2005); S.C. CODE ANN. § 39-5-145 (2005); TENN. CODE. ANN. § 47-18-5103 (2005); TEX. BUS. & COM. CODE § 17.46 (2005); VA. CODE ANN. § 59.1-527 (2006).

to do so, including "unconscionably excessive," "exorbitant," "unjustified," and "grossly excessive."[28] Each of these laws allows an increase in the seller's increased costs to justify an increase in the prices that the seller charges.[29]

All state price gouging laws provide for civil penalties, including, at times, restitution for the excess price charged over what the state determines would have been a normal return. At least eight state laws also provide for criminal penalties.[30] All but four states require a declared state of emergency or other triggering event in order to prosecute price gouging.[31]

1. Defining Price Gouging. Although some state laws, such as New Mexico's proposed statute, define price gouging with specificity,[32] most invoke terms such as "excessive," "exorbitant," "unreasonable," or "unconscionable." Such terms may require subjective interpretation that increases the difficulty of both compliance and enforcement. On the infrequent occasions when the question of defining unconscionability has been presented in court, judges typically have based decisions on a case-by-case factual analysis, and those decisions have not been particularly consistent.[33] We have been able to identify only five

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[28] At the time of this Report, at least six states (Arizona, Maryland, New Mexico, Ohio, Vermont, and Washington) have introduced pending price gouging legislation. *See* H.B. 2827, 47th Leg., 2d Reg. Sess. (Ariz. 2006); S.B. 320, 2006 Leg., 421st Sess. (Md. 2006) (failed to pass by close of legislative session); S.B. 3, 47th Leg., 1st Spec. Sess. (N.M. 2005); S.B. 181, 126th Gen. Assem., Reg. Sess. (Ohio 2006); S.B. 228, 2005-2006 Leg. Sess. (Vt. 2006); H.R. 2722, 59th Leg., Reg. Sess. (Wash. 2006). Other states may propose modifying existing price gouging laws to provide greater clarity. *See, e.g.*, Office of the N.Y. State Att'y Gen., *Spitzer Authors Bill to Strengthen Price Gouging Law*, Jan. 10, 2006, *at* http://www.oag.state.ny.us/press/2006/jan/jan10a_06.html.

[29] Some laws use a percentage price increase to define a prima facie case of an unreasonably excessive price. *See* KAN. STAT. ANN. § 50-6, 106 (2005) (Kansas). Other states apply a percentage price increase. In neither of these circumstances did Commission staff assume smaller increases would not be prosecuted by a state as price gouging.

[30] *See* ARK. CODE ANN. § 4-88-303 (2006) (Arkansas); CAL. PENAL CODE § 396 (2006) (California); LA. REV. STAT. ANN. 29:732 (2005) (Louisiana); ME. REV. STAT. ANN. tit. 10, § 1105 (2005) (Maine); MISS. CODE ANN. § 75-24-25 (2003) (Mississippi); MO. CODE REGS. ANN. tit. 15, § 60-8.030 (2006) (Missouri); OKLA. STAT. ANN. tit. 15 § 777.1 (2005) (Oklahoma); W. VA. CODE § 46A-6J (2006) (West Virginia).

[31] Relevant statutes in those four states are ME. REV. STAT. ANN. tit. 10, § 1105 (2005); MASS. REGS. CODE tit. 940, § 3.18 (2006); MICH. COMP. LAWS § 445.903 (2005); N.Y. GEN. BUS. LAW § 396-r (2006).

[32] *See* Section 2(a)(3), H.B. 392, 47th Leg., 2d Sess. (N.M. 2006). The proposed statute considers, in part:

(a) whether the price charged by the alleged profiteer during the time of a state of emergency or disaster grossly exceeded the average price charged by the alleged profiteer for similar property or services at the same location during the twenty days prior to the state of emergency or disaster, and an increase of more than twenty percent shall be prima facie evidence of gross excess;

. . . .

(c) whether the increase in the amount charged by the alleged profiteer during the time of a state of emergency or disaster was attributable to additional costs incurred by the alleged profiteer in connection with the sale of the product or service, and proof the alleged profiteer incurred such additional costs shall be prima facie evidence that the price increase was justified when such additional costs were actually incurred by the alleged profiteer during the period in which the substantially increased price was being charged; [and]

(d) whether the price sought by the alleged profiteer would have resulted in a profit margin greater than the alleged profiteer's usual and customary profit margin . . . .

[33] Unconscionability cases have been particularly difficult for courts to analyze because there are no clear criteria as to when a price term is unconscionable. Unconscionability provides an uncertain basis for relief because

decisions addressing such language in any price gouging statute, none of them involving gasoline.[34] Given the uncertainty about what constitutes an unconscionable, excessive, or exorbitant price, and the paucity of decisions on the issue, statutes based on any of these terms are likely to be difficult to enforce.

Some states seek to lend greater specificity to their statutes by defining unconscionability in terms of a specific percentage increase above pre-emergency prices. For example, the Kansas statute states that "an increase of more than 25% shall be prima facie evidence of gross excess," unless the price increase is related to increased costs actually incurred by the seller.[35] Similarly, the Attorney General of New York has proposed a bill that would modify existing state law to presume price gouging for any price increase greater than 25% after an emergency declaration.[36] Such provisions essentially institute a cap on prices with a pass-through for out-of-pocket costs.

2. State Enforcement of Price Gouging Laws Regarding Gasoline. From information on state web sites, Commission staff identified at least forty-two states that announced independent investigations or participated in a multi-state working group to investigate pricing shortly after Hurricane Katrina.[37] Of the twenty-nine states (plus the District of Columbia) with price gouging laws, eight (Alabama, Connecticut, Florida, Georgia, Missouri, New York, Tennessee, and Virginia) charged retailers with price gouging after Hurricane Katrina. In addition, although Illinois has no statute specifically addressing price gouging, it charged retailers with price gouging under its Unfair Competition and Deceptive Practices Act.[38] To date, these nine states have reached out-of-court settlements with a total of just over 100 retail stations charged with price gouging, representing 0.06% of the total number of stations in the U.S. For example,

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the term "unconscionability itself is incapable of precise definition." E. ALLAN FARNSWORTH, CONTRACTS § 4.28, at 310 (1982). The Uniform Commercial Code tried to clear up the confusion regarding the unconscionability doctrine in official commentary to Section 2-302, where it stated the basic test for unconscionability as "whether, in the light of the general commercial background and the commercial needs of the particular trade or case, the clauses involved are so one-sided as to be unconscionable under the circumstances at the time of the making of the contract." U.C.C. § 2-302 cmt. 1 (1998). This commentary did little to clear up the confusion, and courts and others have described the UCC commentary formulation as "unintelligible or abstract," Sitogum Holdings, Inc. v. Ropes, 800 A.2d 915, 919 (N.J. Super. 2002) (quoting Arthur A. Leff, *Unconscionability and the Code: The Emperor's New Clause*, 115 U. PA. L. REV. 485, 488-89 (1967)), and "an amorphous concept," Kugler v. Romain, 58 N.J. 522, 543-44 (1971).

[34] State v. Strong Oil Co., 433 N.Y.S.2d 435 (Sup. Ct. 1980), *rev'd on other grounds*, 451 N.Y.S.2d 437 (N.Y. App. Div. 1982); People v. Two Wheel Corp., 525 N.E.2d 692 (N.Y. Ct. App. 1988); People v. Chazy Hardware, Inc., 675 N.Y.S.2d 770 (Sup. Ct. 1998); People v. Beach Boys Equipt. Co., 709 N.Y.S.2d 72 (2000); People v. Dame, 734 N.Y.S.2d 789 (Sup. Ct. 2001).

[35] KAN. STAT. ANN. § 50-6, 106 (2005).

[36] Office of the N.Y. State Att'y Gen., *Spitzer Authors Bill to Strengthen Price Gouging Law* (Jan. 10, 2006), *available at* http://www.oag.state.ny.us/press/2006/jan/jan10a_06.html. The proposed New York bill would penalize sellers up to three times total profits from a single violation, as well as continuing to impose the existing fine of $500 per violation.

[37] The states are Alabama, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Vermont, Virginia, Washington, and Wisconsin.

[38] *See* ILL. CODE ANN. tit. 14 § 465.30 (2006).

Florida's Attorney General's Office, which received more than 5,260 complaints about gas prices following Hurricanes Katrina and Rita, ultimately filed price gouging lawsuits against two of the 9,215 stations located in the state.[39] At the other end of the spectrum, Georgia, with 7,995 retail stations,[40] obtained settlements for alleged price gouging with sixty-six retail stations.[41]

In almost all these cases, the retailers settled the charges prior to any court ruling.[42] Although specific terms of these settlements vary, they generally required retailers to pay a fine and occasionally provide restitution to consumers who bought gasoline at the high prices.[43] In Georgia, for example, the settlements provided for restitution to consumers, fines ranging from $200 to $10,000, or both.[44] Missouri settled with nine stations for fines ranging from $500 to $2,500, with the proceeds paid to local schools.[45]

Some investigating states did not charge any retailers with price gouging.[46] For example, Nebraska recently completed its own investigation and found no evidence of retail price gouging in violation of that state's applicable statute.[47] As noted, staff has identified no reported judicial

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[39] *See* Office of the Fla. Att'y Gen., *Crist Files Second Gas Price Gouging Lawsuit* (Oct. 3, 2005), *available at* http://myfloridalegal.com/newsrel.nsf/newsreleases/5D411A9ADFAE5A238525708F005353DB.

[40] *See Retail Market*, NATIONAL PETROLEUM NEWS 92 (July 15, 2005).

[41] *See* Governor's Office of Consumer Affairs, *Governor's Office of Consumer Affairs Continues Its Prosecutions of Price Gougers: 51 Additional Settlements* (Jan. 24, 2006), *available at* http://consumer.georgia.gov/00/article/0,2086,5426814_38709348_48319210,00.html.

[42] *See* Governor's Office of Consumer Affairs, *Governor's Office of Consumer Affairs Continues Its Prosecutions of Price Gougers: 51 Additional Settlements* (Jan. 24, 2006), *available at* http://consumer.georgia.gov/00/article/0,2086,5426814_38709348_48319210,00.html; Office of the Illinois Att'y Gen., *Madigan: 18 Gas Stations to Settle, Make Payments to Charity in Wake of Gas Price Investigation* (Jan. 13, 2006), *available at* http://illinoisattorneygeneral.gov/pressroom/2006_01/20060113b.html; Missouri Att'y Gen. Office, *Nixon Investigation Into Post-Katrina Gas Pricing Leads to Legal Action Against 10 Gas Stations* (Sept. 28, 2005), *available at* http://www.ago.mo.gov/newsreleases/2005/092805.htm; Office of Virginia Att'y Gen., *Attorney General Jagdmann Announces Price Gouging Settlement* (Jan. 4, 2006), *available at* http://www.oag.state.va.us/media%20center/Current%20AG%20News%20Releases/010406_Attorney_General_Jagdmann_Announces_Price_Gouging_Agreement.htm.

[43] One Virginia settlement included a $2,000 fine, a $1,500 contribution to the American Red Cross Hurricane Katrina Relief Fund, and customer restitution. *See* Office of Virginia Att'y Gen., *Attorney General Jagdmann Announces Price Gouging Settlement* (Jan. 4, 2006), *available at* http://www.oag.state.va.us/media%20center/Current%20AG%20News%20Releases/010406_Attorney_General_Jagdmann_Announces_Price_Gouging_Agreement.htm.

[44] *See* Governor's Office of Consumer Affairs, *Governor's Office of Consumer Affairs Continues Its Prosecutions of Price Gougers: 51 Additional Settlements* (Jan. 24, 2006), *available at* http://consumer.georgia.gov/00/article/0,2086,5426814_38709348_48319210,00.html.

[45] *See* Missouri Att'y Gen. Office, *Nixon Investigation Into Post-Katrina Gas Pricing Leads to Legal Action Against 10 Gas Stations* (Sept. 28, 2005), *available at* http://www.ago.mo.gov/newsreleases/2005/092805.htm.

[46] The Maryland Attorney General announced that Maryland gas stations earned record profits in the days after the storms, but chose not to file lawsuits because the gas station owners' actions did not amount to a violation of Maryland's applicable statute. *See* Julie Scharper, *Post-Katrina Gas Profits a Record*, BALTIMORE SUN (Mar. 25, 2006), at 5B.

[47] *See* ERNEST P. GOSS, REPORT OF THE ATTORNEY GENERAL'S TASK FORCE ON MOTOR FUEL PRICING IN NEBRASKA 13-14 (2006), *available at* http://www.ago.state.ne.us/content/gas_gouging.pdf.

decisions involving allegations of price gouging stemming from hurricane-related gasoline price increases.

Although most states targeted retail gasoline stations in their gasoline price investigations, a few states also investigated wholesalers. North Carolina's attorney general filed a lawsuit against a gasoline distributor that allegedly tried to raise prices.[48] Wisconsin's attorney general requested information from thirteen large oil companies in the belief that high prices at the pump may have resulted from increases in wholesale prices.[49] Several other states, including Alabama, Florida, and Illinois, are continuing investigations into wholesale pricing immediately following the hurricanes.[50]

3. Effect of State Price Gouging Laws on Retailers. Commission staff interviewed retailers that had been charged with price gouging to understand better their business structure, operating costs, methods of setting prices, pre- and post-hurricane experiences, and reactions to price gouging legislation.[51] Almost all retailers stated that gasoline profit margins are small, and those with convenience stores stated that they make most of their profit from non-gasoline sales (and that in many cases, gasoline sales are used to increase traffic into the convenience stores).[52]

The retailers stated that competition largely determines retail prices.[53] As a result, station owners generally must keep their prices close to the prices of surrounding stations. Retailers' margins generally range from 3 to 5 cents per gallon, with state and local taxes adding roughly 20 to 25 cents per gallon above their costs.[54] It is our current understanding that few retailers set prices based on a specific margin goal. Retailers stated that they take replacement costs into account and attempt to recoup these costs in pricing, but sometimes they are not able to do so because of the limitations that competition imposes on their pricing discretion.[55]

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[48] *See* North Carolina Att'y Gen. Office, *A.G. Cooper Takes Action on Gas Prices* (Oct. 10, 2005), *available at* http://www.ncdoj.com/DocumentStreamerClient?directory=PressReleases/&file=McLeodOilCompany3.pdf.

[49] *See* State of Wisc. Dep't of Justice, *Demand Issued for Documents on High Gasoline Prices* (Oct. 10, 2005), *available at* http://www.doj.state.wi.us/news/nr101005_PL.asp.

[50] *See* Office of the Ala. Att'y Gen., *A.G. King Sues Gas Stations for Price Gouging* (Jan. 4, 2006), *available at* http://www.ago.state.al.us/news_template.cfm?Item=949; Office of the Fla. Att'y Gen., *Crist Files Second Gas Price Gouging Lawsuit* (Oct. 3, 2005), *available at* http://myfloridalegal.com/newsrel.nsf/newsreleases/5D411A9ADFAE5A238525708F005353DB; Office of the Illinois Att'y Gen., *Madigan: 18 Gas Stations to Settle, Make Payments to Charity in Wake of Gas Price Investigation* (Jan. 13, 2006), *available at* http://illinoisattorneygeneral.gov/pressroom/2006_01/20060113b.html.

[51] Settling retailers for the most part were small businesses – frequently operators of just one or two stations.

[52] [Confidential material redacted.]

[53] [Confidential material redacted.]

[54] [Confidential material redacted.]

[55] Some retailers refer to the industry as a "penny business" – that is, that customers without brand loyalty will drive to another gas station for savings as little as one cent per gallon. Other expenses increase as retail gasoline prices increase to cover wholesale costs. For example, credit card merchant service fees account for two to three percent of the retail price. As retail prices increase, more customers pay with credit cards, and these increase accordingly. [Confidential material redacted.]

Pricing decisions occur at the corporate level of some of the larger retail chains.[56] Station managers report local pricing information, and corporate employees set prices based on that information. One large retail chain told our staff that it sets prices according to a marketing strategy that emphasizes a low-cost brand image.[57] Another large retail chain identified competition as the most important factor in its setting of day-to-day prices, but stated that it considers cost factors for purposes of long-range planning.[58]

As Part II of this Report discusses in detail, prices increased sharply and rapidly during and immediately after Hurricanes Katrina and Rita. Supply was limited in most areas and, even where there were no immediate supply disruptions, there were rampant fears of supply shortages. The consumer panic buying observed immediately prior to and following Hurricane Katrina affected wholesale suppliers as well. For example, one terminal operator warned a retailer of an imminent supply disruption and, although no supply disruption actually took place, the retailer increased its prices based on the warning to avoid running out of supply.[59] Retailers with supply agreements and branded contracts generally were able to obtain supply, but sometimes they were put on allocation. Unbranded retailers without supply agreements had difficulty obtaining supply, and the supply that they did receive came at a high price.

During the supply disruptions caused by the hurricanes, the wholesale costs of gasoline spiked sharply due to the severe shortages, so that retailers anticipated paying substantially more for their next shipment of gasoline. Thus, even though retailers were selling gasoline that already was in their tanks (and already paid for), they increased their retail prices significantly to cover the anticipated higher cost of the next shipment. Some gas station owners stated that they were charged under state price gouging statutes for raising prices based on anticipated higher replacement costs.[60] Other station owners, however, stated their belief that they would run out of gasoline quickly if they did not raise their prices when their retail competitors did.[61]

According to the retailers interviewed during this investigation, in part because of uncertain supply conditions during hurricane periods, retail price policies varied greatly. Generally, retailers said they used the same factors in setting prices as they would under normal conditions. Only one retailer acknowledged obtaining much higher margins.[62] With limited supply available, however, retailers had to choose either to run out of product or to raise prices. Some used price to allocate their supply. Others elected to maintain prices and run out of product because of their concern that buying product at the higher wholesale price would be risky if supply became available again and wholesale prices declined. Still other retailers were committed to keeping and supplying their customers, even if that meant losing money.[63] The

[56] [Confidential material redacted.]

[57] [Confidential material redacted.]

[58] Wholesalers also use a multitude of factors when setting the prices they charge to their dealers. These include terminal price surveys, competitors' locations, asset quality, size, the number of gasoline dispensers, credit card capabilities, proximity, and brand strength. [Confidential material redacted.]

[59] [Confidential material redacted.]

[60] [Confidential material redacted.]

[61] [Confidential material redacted.]

[62] [Confidential material redacted.]

[63] One retailer resorted to selling premium gasoline out of regular gasoline tanks at the lower price it

Commission found no evidence that retailers agreed among themselves on what strategy to pursue.

B. Federal Price Gouging Legislation

Consumers understandably are upset when they face dramatic price increases within very short periods of time, especially during a disaster. In a period of shortage, however – particularly with a product, like gasoline, that can be sold in many markets around the world – higher prices create incentives for suppliers to send more product into the market, while also creating incentives for consumers to use less of the product. Higher gasoline prices in the United States after Hurricanes Katrina and Rita resulted in the shipment of substantial additional supplies of gasoline to the United States from foreign locations.[64]

If pricing signals are not present or are distorted by legislative or regulatory command, markets may not function efficiently and consumers may be worse off. Accordingly, our competition-based economy generally allows a seller, acting independently in its own business interests, to set prices as it chooses, and relies on market forces – rather than government intervention – to determine the prices a seller can seek.

In addition, it can be very difficult to determine the extent to which price increases are greater than "necessary." Our examination of the federal gasoline price gouging legislation that has been introduced and of state price gouging statutes and enforcement efforts indicates that the offense of price gouging is difficult to define. Moreover, throughout antitrust jurisprudence, one area into which the courts have refused to tread is the question of what constitutes a "reasonable price." Ultimately, the lack of consensus on which conduct should be prohibited could yield a federal statute that would leave businesses with little guidance on how to comply and would run counter to consumers' best interest.

For all of these reasons, the Commission cannot say that federal price gouging legislation would produce a net benefit for consumers. If Congress nevertheless proceeds with passing federal price gouging legislation, several factors should be considered in order to enact a statute that will be most likely to attack gouging while having the smallest adverse impact on rational price incentives. First, any price gouging statute should define the offense clearly. A primary goal of a statute should be for businesses to know what is prohibited. An ambiguous standard would only confuse consumers and businesses and would make enforcement difficult and arbitrary.

A price gouging bill also should account for increased costs, including anticipated costs, that businesses face in the marketplace. Enterprises that do not recover their costs cannot long remain in business, and exiting businesses would only exacerbate the supply problem. Furthermore, cost increases should not be limited to historic costs, because such a limitation could make retailers unable to purchase new product at the higher wholesale prices.

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charged for regular gasoline. [Confidential material redacted.]

[64] Total gasoline imports into the United States for September and the first three weeks of October 2005 were approximately 34% higher than imports over this period in 2004. *See* Energy Info. Admin., U.S. Dep't of Energy, *Petroleum Navigator: Weekly Imports & Exports* (shows receipts of crude oil and petroleum products into the 50 States and the District of Columbia from foreign countries, Puerto Rico, the Virgin Islands, and other U.S. possessions and territories), *available at* http://tonto.eia.doe.gov/dnav/pet/pet_move_wkly_dc_NUS-Z00_mbblpd_w.htm (last updated May 3, 2006).

The statute also should provide for consideration of local, national, and international market conditions that may be a factor in the tight supply situation. International conditions that increase the price of crude oil naturally will have a downstream effect on retail gasoline prices. Local businesses should not be penalized for factors beyond their control.

Finally, any price gouging statute should attempt to account for the market-clearing price. Holding prices too low for too long in the face of temporary supply problems risks distorting the price signal that ultimately will ameliorate the problem. If supply responses and the market-clearing price are not considered, wholesalers and retailers will run out of gasoline and consumers will be worse off.

IV. Conclusion

Under existing antitrust laws, the Commission has a strong role to play in this area. As noted above, enforcing the antitrust laws strictly to prohibit business behavior that has anticompetitive effects will have a major impact in keeping markets free so that prices are set by competitive forces, not by manipulation or "gouging." Beyond that, the Commission will continue to remain vigilant about any distortions that may harm competition and consumers in petroleum markets. Moreover, the Commission will vigorously implement and enforce any additional legislation that is enacted.

On April 25, 2006, the President directed the Department of Justice to work with the Commission and the Department of Energy to conduct an inquiry into current gasoline prices and the reasons for their more recent increases.[65] The makeup of this investigating group presents the opportunity to examine a range of issues and conduct by market participants potentially affecting the underlying supply and demand factors that ultimately shape prices in the long run. In the context of this directive, the Commission is considering also whether to conduct further inquiry into other topics – for example, oil company profitability – and is working to identify any other aspects of the petroleum industry that may warrant further economic examination. The Commission also will continue to evaluate and upgrade its gasoline and diesel price monitoring project. This is an ongoing process to ensure that our detection efforts are as robust as possible. In addition, we will continue with consumer education projects to help consumers make informed decisions in the energy marketplace.

The legal and industry enforcement expertise of the Commission, bolstered by the Justice Department's long history of aggressive enforcement against criminal cartels, should enable this investigation to determine whether any petroleum companies have engaged in conduct that would violate the antitrust laws to the detriment of consumers. If any illegal activity is uncovered, it will be prosecuted by the appropriate agency.

The addition of the Department of Energy to the investigating group brings an added level of expertise in energy markets. The Department's long experience in data collection across all energy markets will provide the information necessary to study and make recommendations

[65] A number of Members of Congress also have requested that the Commission investigate recent increases in gasoline prices. *See, e.g.*, letter of April 24, 2006, from Speaker of the House Dennis Hastert and Senate Majority Leader Bill Frist to President Bush; letter of April 28, 2006, from Senators Mike DeWine and Herb Kohl to FTC Chairman Majoras and Attorney General Gonzales.

about macroeconomic trends in energy use, imports, alternative fuels, and other issues that go far beyond traditional law enforcement.

The Commission also is working with many state attorneys general to add to our understanding of their laws, to continue to refine our analysis of petroleum industry issues, and to improve our working relationships. We will conduct a seminar on petroleum matters with state attorneys general and their staffs in September 2006.

Past Commission law enforcement investigations in petroleum industries have concluded that supply and demand forces are the ultimate drivers of prices to consumers. The Commission, however, will continue to monitor this industry closely and investigate any potential illegal activity. Further, that does not, and should not, end the debate about appropriate government energy policy. Consumers understandably are frustrated to be told that no laws are being broken even as prices increase substantially. It is important that they gain a better understanding of the working of energy markets. Gasoline prices – and energy prices in general – depend on the actions of all consumers and producers, and those actions can be changed. They can be modified over time by policies designed to make supply more responsive to high prices or to shift demand toward alternative energy sources. There are numerous initiatives that would have the effect of holding down future increases in gasoline prices. These actions do not relate directly to antitrust enforcement, but any policy that increases the supply of products at competitive prices may increase consumer welfare, as long as the costs of that policy decision do not outweigh the benefits.

A fresh examination of the costs and benefits of all regulation – federal, state, and local – that impact the supply of gasoline may be warranted. Further, policies that influence demand also should be considered. A constructive debate among policymakers is what is needed, and the FTC stands ready to participate and add our expertise where appropriate.

Concurring Statement of Commissioner Jon Leibowitz
Regarding the Commission's Report, "Investigation of Gasoline Price Manipulation and Post-Katrina Gasoline Price Increases"
File No. 051-0243

The Federal Trade Commission has been studying anticompetitive practices in the petroleum industry literally since our creation in 1914,[1] and this Report offers valuable insights into factors and practices that affect the price of gasoline. Commission staff should be commended for producing a thorough analysis that deepens our understanding of the oil industry. As the Report demonstrates, price gouging is a phenomenon that is hard to nail down. Indeed, price gouging is the obscenity of antitrust law: difficult to define in theory but easily recognized at the pump. Nonetheless, it is worth noting that using the Congressionally mandated definition,[2] the Commission found price gouging at multiple levels of the petroleum industry.

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[1] The Commission has had a long history with the petroleum industry. In fact, ten percent of the Commission's budget for its first two years was devoted to a Congressionally-requested investigation of Oklahoma pipelines. In the first decade of its existence, the Commission issued several reports concerning the petroleum industry, including one focused on pricing issues. *See, e.g.*, Federal Trade Commission, *Advance in the Price of Petroleum Products: Report in Response to House Resolution No. 501* (June 1, 1920); Federal Trade Commission, *Report on the Pacific Coast Petroleum Industry, Parts, I and II* (Apr. 7, 1921 and Nov. 28, 1921); Federal Trade Commission, *Report on Foreign Ownership in the Petroleum Industry*, (Feb. 12, 1923). The Commission released additional Reports analyzing gasoline pricing in 2001, 2005, and 2006. *See* Federal Trade Commission, *Midwest Gasoline Pricing Investigation*, (March 29, 2001), Federal Trade Commission, *Gasoline Price Changes: the Dynamics of Supply, Demand, and Competition* (June 2005), Federal Trade Commission, *Federal Trade Commission Interim Report on Gasoline Pricing: A Report to Congress* (March 2006). *See also* Federal Trade Commission, *FTC Petroleum Industry Investigation* [1969-1983 Transfer Binder] Trade Reg. Rep. (CCH) ¶ 50,179. (July 23, 1973)

[2] The definition of price gouging for purposes of this Report is set forth in Section 632 of the Science, State, Commerce, Justice and Related Agencies Appropriations Act 2006. (H.R. 2862 at 55). Different definitions of price gouging are proposed, for example, in the "Federal Energy Price Protection Act of 2006" (H.R. 5253, authored by Ms. Wilson and Mr. Barton, passed by the House on May 3, 2006), and an amendment, proposed by Senator Cantwell, to the Budget Reconciliation Bill (S. 2020, November 18, 2005).

In particular, among refiners, the Report found price gouging: a handful more than doubled their operating margins in ways not attributable to increased costs following the hurricanes. It is equally troubling, however, that most other refiners, who did not technically meet the price gouging test, enjoyed markups of similar magnitude.[3]

In the wake of Katrina and Rita, the vast majority of retailers raised prices based on what they paid for supply or in anticipation of increased replacement costs. Some retail stations, however, actually raised their prices significantly without satisfactory cost or adequate market-based explanations. Not surprisingly, thousands of complaints have been received at the local level and dozens of cases brought under state laws prohibiting price-gouging.[4] These statutes, which almost invariably require a declared state of emergency or other triggering event, may serve a salutary purpose: discouraging outliers from profiteering in the aftermath of a disaster.

If there is any villain in the long lasting saga of high oil prices, though, it is OPEC. For the past 30-plus years, this cartel has caused massive transfers of wealth from the United States to oil-exporting nations. The conduct of its members would be criminal if undertaken by private companies. OPEC is not the only reason for this year's steep climb in prices: other contributing factors to the current rise in gasoline prices include increased demand in China and India,

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[3] Other sources report that twelve of the U.S. oil companies that list on the S&P 500 reported an average 48% increase in earnings for the fourth quarter of 2005. *See* CNN Money.com *Exxon Mobil Sets Profit Record*, (January 30, 2006) http://money.cnn.com/2006/01/30/news/companies/exxon_earns/ (May 18, 2006). Industry profits for 2005 totaled almost $140 billion. Congressional Research Service, *Oil Industry Profit Review 2005* (April 18, 2006). Moreover, the combined first-quarter 2006 revenue of Exxon, Chevron and ConocoPhillips totaled $191.5 billion. This is more than the individual gross domestic products of 189 different countries -- Chile, Denmark, Peru and Venezuela among them. *See* Washington Post, *Oil Industry Unapologetic for High Profits*, (April 20, 2006) (citing statistics compiled by the Central Intelligence Agency.)

Of course, there are petroleum companies that did make community-based relief efforts. For example, one small refiner, recognizing the hardships inflicted on consumers in the wake of Hurricane Rita, apparently offered FEMA all the free heating oil it could 'cart away.' FEMA, however, failed to take the company up on its offer.

[4] As noted in the Report, twenty-nine states and the District of Columbia have price gouging laws that provide for either civil or criminal penalties and, in some situations, both. Six of these states and the District of Columbia expressly are permitted by their statutes to cap prices increases during an emergency. Though many complaints about retailer pricing were received and investigated at the state level in the wake of Hurricanes Katrina and Rita, charges were brought only against a select few. In other words, current state price gouging laws appear to have been used judiciously post disaster in a manner entirely unthreatening to the operation of the free market.

complicated environmental requirements, and American over-dependence on both foreign oil sources and fuel-inefficient automobiles. But OPEC's permissible price fixing will surely continue to bedevil American businesses and consumers well into the future.

In sum, petroleum industry pricing and gas price manipulation are enormously complicated matters – ones not subject to simple explanation, even absent the disruptive effects of a major natural disaster. Still, the behavior of many market participants, on balance, leaves much to be desired. Our Report sheds some light on market practices after the hurricanes and, hopefully, it will be put to good use.