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Prepared Statement of the Federal Trade Commission

**Market Forces, Anticompetitive Activity, and Gasoline Prices:
FTC Initiatives to Protect Competitive Markets**

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Committee on Energy and Commerce
United States House of Representatives**

Hearing on Status of U.S. Refining Industry

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I. Introduction

Mr. Chairman and members of the Subcommittee, I am Bill Kovacic, General Counsel of the Federal Trade Commission. I am pleased to appear before you to present the Commission's testimony on FTC initiatives to protect competitive markets in the production, distribution and sale of gasoline.¹

The petroleum industry plays a crucial role in our economy. Not only do changes in gasoline prices affect consumers directly, but the price and availability of gasoline also influence many other economic sectors. No other industry's performance is more visibly or deeply felt.

The FTC's petroleum industry activities today reflect the sector's importance. The Commission fully exercises every tool at its disposal – including the prosecution of cases, the preparation of studies, and advocacy before other government bodies – to protect consumers from anticompetitive conduct and from unfair or deceptive acts or practices. In doing so, the FTC has built an unequaled base of competition and consumer protection experience and expertise in matters affecting the production and distribution of gasoline.

The Commission's testimony today addresses the Subcommittee's inquiries in two parts. It first reviews the basic tools that the Commission uses to promote competition in the petroleum industry: challenges to potentially anticompetitive mergers, prosecution of nonmerger antitrust violations, monitoring industry behavior to detect anticompetitive conduct, and research to understand petroleum sector developments. This segment of the testimony highlights what we believe to be some of the flaws of a recent Government Accountability Office ("GAO," formerly

¹ This written statement represents the views of the Federal Trade Commission. My oral presentation and responses to questions are my own and do not necessarily represent the views of the Commission or any individual Commissioner.

known as the “General Accounting Office”) report analyzing the effects of various petroleum industry mergers completed from 1997 through 2000. The review of the Commission’s petroleum industry agenda highlights how the FTC is contributing to efforts to maintain and promote competition in the industry.

The second part of this testimony reviews learning the Commission has derived from its review of recent gasoline price changes. Among other findings, this discussion highlights the paramount role that crude oil prices play in determining both the level and movement of gasoline prices in the United States. Changes in crude oil prices account for approximately 85 percent of the variability of gasoline prices.² When crude oil prices rise, so do gasoline prices. Crude oil prices are determined by supply and demand conditions worldwide, most notably by production levels set by members of the Organization of Petroleum Exporting Countries (“OPEC”). As Figure 1 illustrates, changes in gasoline prices historically have tracked changes in the price of

² A simple regression of the monthly average national price of gasoline on the monthly average price of West Texas Intermediate crude oil shows that the variation in the price of crude oil explains approximately 85 percent of the variation in the price of gasoline. Data for the period January 1984 to October 2003 were used. This is similar to the range of effects given in United States Department of Energy/Energy Information Administration, *Price Changes in the Gasoline Market: Are Midwestern Gasoline Prices Downward Sticky?*, DOE/EIA-0626 (Feb. 1999). More complex regression analysis and more disaggregated data may give somewhat different estimates, but the latter estimates are likely to be of the same general magnitude.

This percentage may vary across states or regions. See Prepared Statement of Justine Hastings before the Committee on the Judiciary, Subcommittee on Antitrust, Competition Policy and Consumer Rights, U.S. Senate, *Crude Oil: The Source of Higher Gas Prices* (Apr. 7, 2004). Dr. Hastings found a range of approximately 70 percent for California and 91 percent for South Carolina. South Carolina uses only conventional gasoline and is supplied largely by major product pipelines that pass through the state on their way north from the large refinery centers on the Gulf. California, with its unique fuel specifications and its relative isolation from refinery centers in other parts of the United States, historically has been more susceptible to supply disruptions that can cause major gasoline price changes, independent of crude oil price changes.

crude oil.³ With crude oil prices in the range of \$40 per barrel, it is not surprising that we are seeing higher gasoline prices nationwide.⁴

As a whole, the Commission's testimony develops two themes. First, the Commission places a premium on careful research, industry monitoring, and investigations to understand current petroleum industry developments and to identify accurately obstacles to competition, whether arising from private behavior or from public policies. The petroleum industry's performance is shaped by the interaction of extraordinarily complex, fast-changing commercial arrangements and an elaborate set of public regulatory commands. A well-informed understanding of these factors is essential if FTC actions are to benefit consumers.

Second, the Commission is, and will continue to be, vigilant in challenging anticompetitive mergers and nonmerger antitrust violations in the petroleum industry and in urging other government bodies to adopt procompetitive policies for this sector. We will not hesitate to suggest to Congress how the existing framework of laws might be improved to facilitate Commission intervention that will improve consumer well-being. This testimony, at Section III, identifies various laws and regulations that increase the cost of producing gasoline

³ Figure 1 (covering the period 1949 through 2002) also illustrates that the real price of gasoline has fallen dramatically since its historic high in the early 1980s. The difference between the price of crude oil (per gallon of gasoline) and the price of a gallon of gasoline has remained fairly constant for the same time period, generally around \$.80 per gallon. (All figures are in 2002 dollars.) This is dramatically lower than the difference for the years preceding 1980.

⁴ Crude oil prices have fallen from a high of approximately \$42 per barrel (May 24 and June 1) to approximately \$38 per barrel (July 2); this is a drop of approximately 9.5 cents per gallon. The price of gasoline has dropped from a national average of \$2.05 per gallon (May 27) to \$1.91 per gallon (July 2). See Energy Information Administration ("EIA"), *Weekly Petroleum Status Report*; national average retail price of gasoline obtained from Oil Price Information Service.

and the price of gasoline.

II. FTC Activities to Maintain and Promote Competition in the Petroleum Industry

A. Merger Enforcement in the Petroleum Industry

The Commission has gained much of its antitrust enforcement experience in the petroleum industry by analyzing proposed mergers and challenging transactions that likely would reduce competition, result in higher prices, or otherwise injure the economy.⁵ Since 1981, the Commission has taken enforcement action against 15 major petroleum mergers.⁶ Four of the mergers were either abandoned or blocked as a result of Commission or court action. In the other 11 cases, the Commission required the merging companies to divest substantial assets in the markets where competitive harm was likely to occur.⁷

In all 15 cases, the agency sought to maintain the pre-merger levels of concentration in the relevant markets in which there was found to be a sufficient likelihood that the merger would have an anticompetitive effect. The Commission recently released data on all horizontal merger investigations and enforcement actions from 1996 to 2003. These data show that the Commission has brought more merger cases at lower levels of concentration in the petroleum industry than in other industries. Unlike in other industries, the Commission has obtained merger

⁵ Section 7 of the Clayton Act prohibits acquisitions where the anticompetitive effects may occur in “any line of commerce in any section of the country.” 15 U.S.C. § 18.

⁶ Figure 2 provides detailed information on all 15 of these Commission merger enforcement actions.

⁷ In a number of other instances, the parties to a merger abandoned their transaction after the FTC opened an investigation into the transaction, but before formal Commission action.

relief in moderately concentrated petroleum markets.⁸

1. Recent FTC Merger Investigations

Three recent merger investigations illustrate the FTC's approach to merger analysis in the petroleum industry. The first is the merger of Chevron and Texaco,⁹ which combined assets located throughout the United States. Following an investigation in which 12 states participated, the Commission issued a consent order against the merging parties requiring numerous divestitures to maintain competition in particular relevant markets, primarily in the western and southern United States. Among other requirements, the consent order compelled Texaco to: (a) divest to Shell and/or Saudi Refining, Inc. all of its interests in two joint ventures – Equilon¹⁰ and Motiva¹¹ – through which Texaco had been competing with Chevron in gasoline marketing in the western and southern United States; (b) divest the refining, bulk supply, and marketing of gasoline satisfying California's environmental quality standards; (c) divest the refining and bulk supply of gasoline and jet fuel in the Pacific Northwest; and (d) divest the pipeline transportation of crude oil from the San Joaquin Valley of California.

⁸ Federal Trade Commission Horizontal Merger Investigation Data, Fiscal Years 1996-2003 (Feb. 2, 2004), Table 3.1, et seq.; FTC Horizontal Merger Investigations Post Merger HHI and Change in HHI for Oil Markets, FY 1996 through FY 2003 (May 27, 2004), available at <http://www.ftc.gov/opa/2004/05/040527petrolactionsHHIdeltachart.pdf>.

⁹ *Chevron Corp.*, Docket No. C-4023 (Dec. 18, 2001) (Consent Order).

¹⁰ Shell and Texaco jointly controlled the Equilon venture, whose major assets included full or partial ownership in four refineries, about 65 terminals, and various pipelines. Equilon marketed gasoline through approximately 9,700 branded gas stations nationwide.

¹¹ Motiva, jointly controlled by Texaco, Shell, and Saudi Refining, consisted of their eastern and Gulf Coast refining and marketing businesses. Its major assets included full or partial ownership in four refineries and about 50 terminals, with the companies' products marketed through about 14,000 branded gas stations nationwide.

A second important oil merger that the Commission recently challenged was the \$6 billion merger between Valero Energy Corp. (“Valero”) and Ultramar Diamond Shamrock Corp. (“Ultramar”).¹² Both Valero and Ultramar were leading refiners and marketers of gasoline that met the specifications of the California Air Resources Board (“CARB gasoline”) and were the only significant suppliers to independent stations in California. The Commission’s complaint alleged competitive concerns in both the refining and bulk supply of CARB gasoline in California, and the Commission contended that the merger could raise the cost to California consumers by at least \$150 million annually for every one-cent-per-gallon price increase at retail.¹³ To remedy the Commission’s competitive concerns, the consent order settling the case required Valero to divest: (a) an Ultramar refinery in Avon, California; (b) all bulk gasoline supply contracts associated with that refinery; and (c) 70 Ultramar retail stations in Northern California.

As a third example, the Commission challenged the merger of Phillips Petroleum Company and Conoco Inc., alleging that the transaction would harm competition in the Midwest and Rocky Mountain region of the United States. To resolve that challenge, the Commission required the divestiture of: (a) the Phillips refinery in Woods Cross, Utah, and all of the Phillips-related marketing assets served by that refinery; (b) Conoco's refinery in Commerce City, Colorado (near Denver), and all of the Phillips marketing assets in Eastern Colorado; and (c) the

¹² *Valero Energy Corp.*, Docket No. C-4031 (Feb. 22, 2002) (Consent Order).

¹³ The Commission also alleged competitive concerns in the refining and bulk supply of CARB gasoline for sale in Northern California, contending that a price increase of one cent per gallon would increase costs to consumers in that area by approximately \$60 million per year.

Phillips light petroleum products terminal in Spokane, Washington.¹⁴

2. The GAO Report

In May of this year, the GAO released a report that sought to analyze how eight petroleum industry mergers or joint ventures carried out during the mid- to late 1990s affected gasoline prices.¹⁵ The GAO reported that six of the eight transactions it examined caused gasoline prices to rise, while the other two transactions caused prices to fall.

The Commission reviewed a draft of the GAO report last summer.¹⁶ Although GAO

¹⁴ *Conoco Inc. and Phillips Petroleum Corp.*, Docket No. C-4058 (Aug. 30, 2002) (Analysis of Proposed Consent Order to Aid Public Comment). Not all oil industry merger activity raises competitive concerns. For example, late last year, the Commission closed its investigation of Sunoco's acquisition of the Coastal Eagle Point refinery in the Philadelphia area without requiring relief. The Commission noted that the acquisition would have no anticompetitive effects and seemed likely to yield substantial efficiencies. *Sunoco Inc./Coastal Eagle Point Oil Co.*, FTC File No. 031-0139 (Dec. 29, 2003) (Statement of the Commission). The FTC also considered the likely competitive effects of Phillips Petroleum's proposed acquisition of Tosco. After careful scrutiny, the Commission by a 5-0 vote declined to challenge the acquisition. The FTC statement closing the investigation set forth its reasoning in detail. *Phillips Petroleum Corp.*, FTC File No. 001-0095 (Sept. 17, 2001) (Statement of the Commission).

Acquisitions of firms operating mainly in oil or natural gas exploration and production are unlikely to raise antitrust concerns, as that segment of the industry is generally unconcentrated. Acquisitions involving firms with de minimis market shares or production capacity or operations that do not overlap geographically are also unlikely to raise antitrust concerns. For example, the mere fact that a transaction involves a firm that meets the Energy Information Administration's financial reporting system threshold of "1% or more of the US reserves, production or refining capacity" or the *Oil and Gas Journal's* listing of the 200 largest publicly traded oil and gas corporations does not imply that the transaction raises competitive concerns.

¹⁵ U.S. General Accounting Office, *Energy Markets: Effects of Mergers and Market Concentration in the U.S. Petroleum Industry* (May 2004) (hereinafter "GAO report").

¹⁶ See Timothy J. Muris, Chairman, Federal Trade Commission, Letter to James E. Wells, Director, Natural Resources and Environment, U.S. General Accounting Office (Aug. 25, 2003), available at <http://www.ftc.gov/opa/2004/05/040527petrolactionsFTCresponse.pdf>. The letter of August 25 was approved by a 5-0 vote of the Commission.

subsequently made some changes in its methodology, the basic criticisms we made of the draft report apply equally to the GAO's final report. The GAO report still contains major methodological mistakes that make its quantitative analyses wholly unreliable. It relies on critical factual assumptions that are both unstated and unjustified, and it presents conclusions that lack a quantitative foundation. Simply stated, the GAO report is fundamentally flawed.¹⁷

The Commission appends to today's testimony a detailed FTC staff analysis of the GAO report. That analysis highlights the GAO report's many flaws. Three particularly significant problems are noted here.¹⁸ First, the GAO's models do not properly control for the numerous factors that cause gasoline prices to increase or decrease, and this failure to control for relevant variables significantly undermines any results of the GAO study. We cannot determine with precision the effects of this inadequate control on GAO's results, because GAO has refused to share with us the methodology and documentation (including data) to allow us to do so. Nevertheless, our Bureau of Economics has demonstrated that the GAO report did not account for several factors that affect gasoline prices, including changes in gasoline formulation and seasonal changes in demand. To the extent that these omitted variables are correlated with concentration or mergers or other variables, these omissions bias the GAO's estimates of the effects of concentration and mergers on wholesale gasoline prices.

A second problem is that any reliable price-concentration study must be based on one or

¹⁷ The criticisms discussed here and in the detailed staff appendix have taken into account the explanations GAO has provided in response to the concerns the FTC had earlier raised.

¹⁸ The Appendix explains in detail the additional analysis that our staff performed.

more properly defined geographic markets. If a merger affects competition, it does so in the particular geographic market in which that competition occurs. Unless the affected geographic area is correctly delineated, the researcher cannot have confidence that his results have anything to do with measured changes in concentration. If the market is defined too broadly or too narrowly, the researcher cannot accurately represent that any change in prices may have been caused by the change in measured concentration.

Through decades of experience, the Commission has developed substantial expertise in defining relevant geographic markets in which to measure concentration and competitive effects. Neither the draft GAO report nor the final report measures concentration in *any* properly defined geographic market. This problem is sufficient to deny the GAO report any validity in assessing the effect of concentration on prices.

Third, the GAO report fails to consider critical facts about the individual mergers it studied – omissions that render its results particularly suspect. For example, the relatively large and statistically significant price increases that the GAO report associates with the Exxon/Mobil merger appear implausible on their face, when considered in conjunction with the extensive restructuring effectuated by the Commission's consent order. Among other remedial measures, as a condition for allowing the transaction to proceed, the FTC required large-scale divestitures of Exxon and Mobil assets (including 1,740 retail outlets in the Northeast and Mid-Atlantic states, pipeline interests, terminals, jobber supply contracts, and brand rights) in the regions in which the GAO identified merger-related price increases. The divestitures essentially eliminated the competitive overlap between Exxon and Mobil in gasoline marketing in New England and the mid-Atlantic states south to Virginia (all in PADD I) and also eliminated marketing overlaps

in parts of Texas (PADD III). Particularly with respect to branded prices, therefore, we strongly suspect that the merger cannot explain the GAO report's finding of higher wholesale prices following the Exxon/Mobil merger.

Despite these and other criticisms, we applaud the goal of the GAO inquiry – to evaluate the consequences of past decisions of the federal antitrust agencies. The Commission regards evaluations of past enforcement decisions as valuable elements of responsible antitrust policymaking. We welcome sound research to test our theoretical assumptions and analytical techniques. In the past the Commission has sponsored retrospective assessments of its work and has published the results, favorable and unflattering alike, because we believe such inquiries can improve our future competition policy programs. Over the past decade, we have sought the views of outsiders about how to strengthen this dimension of policymaking,¹⁹ and we have increased our attention to retrospectives as a result.²⁰

¹⁹ The value of *ex post* evaluations was an important theme of the hearings convened by the FTC in the mid-1990s on innovation and globalization. See William E. Kovacic, *Evaluating Antitrust Experiments: Using Ex Post Assessments of Government Enforcement Decisions to Inform Competition Policy*, 9 GEO. MASON L. REV. 843, 855 & n. 50 (2001). The benefits of increased efforts to analyze enforcement outcomes were emphasized in a roundtable of prominent industrial organization economists hosted by the FTC in 2001. See Federal Trade Commission, *Empirical Industrial Organization Roundtable* (Sept. 11, 2001), available at <http://www.ftc.gov/be/empiricaliorroundtabletranscript.pdf>.

²⁰ See e.g., Federal Trade Commission, *Fulfilling the Original Vision: The FTC at 90*, at 29 (Apr. 2004) (describing FTC retrospective studies of hospital mergers and petroleum mergers), available at <http://www.ftc.gov/os/2004/04/040402abafinal.pdf>; Harold Saltzman, Roy Levy & John C. Hilke, *Transformation and Continuity: The U.S. Carbonated Soft Drink Bottling Industry and Antitrust Policy Since 1980* (Bureau of Economics Staff Report, Federal Trade Commission, Nov. 1999) (discussing impact of FTC merger enforcement involving soft drink bottlers), available at <http://www.ftc.gov/reports/softdrink/softdrink.pdf>; Staff of the Bureau of Competition of the Federal Trade Commission, *A Study of the Commission's Divestiture Process* (1999) (examining implementation of selected FTC merger consent orders), available at <http://www.ftc.gov/os/1999/9908/divestiture.pdf>.

B. Nonmerger Investigations into Gasoline Pricing

In addition to scrutinizing mergers, the Commission aggressively polices anticompetitive nonmerger activity. When it appears that higher prices might result from collusive activity or from anticompetitive unilateral activity by a firm with market power, the agency investigates to determine whether unfair methods of competition have been used. If the facts warrant it, the Commission challenges the anticompetitive behavior, usually by issuing an administrative complaint.

Several recent petroleum investigations deserve discussion. On March 4, 2003, the Commission issued an administrative complaint, stating that it had reason to believe that the Union Oil Company of California (“Unocal”) had violated Section 5 of the FTC Act. The Commission alleged that Unocal deceived the California Air Resources Board in connection with regulatory proceedings to develop the reformulated gasoline (“RFG”) standards that CARB adopted. Unocal allegedly misrepresented that certain technology was non-proprietary and in the public domain, while at the same time it pursued patents that would enable it to charge substantial royalties if CARB mandated Unocal’s technology in the refining of CARB-compliant summer RFG. As a result of Unocal’s activities, the Commission alleged, Unocal illegally acquired monopoly power in the technology market for producing the new CARB-compliant summer RFG. The Commission also alleged that Unocal undermined competition and harmed consumers in the downstream product market for CARB-compliant summer RFG in California.

The Commission’s complaint further charged that these activities, unless enjoined, could cost California’s consumers hundreds of millions of dollars per year. The complaint cited

testimony of Unocal's expert, who estimated that 90 percent of any royalty paid to Unocal for its technology would be passed on to drivers in the form of higher gasoline prices. This case was originally dismissed by an Administrative Law Judge, but the Commission has reversed the decision, reinstated the complaint, and remanded the case for a full trial.²¹

Another major nonmerger investigation occurred during 1998-2001, when the FTC conducted a substantial investigation of the major oil refiners' marketing and distribution practices in Arizona, California, Nevada, Oregon, and Washington (the "Western States" investigation). The agency initiated the Western States investigation out of concern that differences in gasoline prices in Los Angeles, San Francisco, and San Diego might be due partly to anticompetitive activities. The Commission's staff examined over 300 boxes of documents, conducted 100 interviews, held over 30 investigational hearings, and analyzed a substantial amount of pricing data. The investigation uncovered no basis to allege an antitrust violation. Specifically, the investigation detected no evidence of a horizontal agreement on price or output or the adoption of any illegal vertical distribution practice at any level of supply. The investigation also found no evidence that any refiner had the unilateral ability to raise prices profitably in any market or reduce output at the wholesale level. Accordingly, the Commission closed the investigation in May 2001.²²

²¹ Union Oil Company of California, Docket No. 9305 (Opinion of the Commission) (July 6, 2004), available at <http://www.ftc.gov/os/adjpro/d9305/040706commissionopinion.pdf>.

²² FTC Press Release, *FTC Closes Western States Gasoline Investigation* (May 7, 2001), available at <http://www.ftc.gov/opa/2001/05/westerngas.htm>. In part, this investigation focused on "zone pricing" and "redlining." See *Statement of Commissioners Sheila F. Anthony, Orson Swindle and Thomas B. Leary*, available at <http://www.ftc.gov/os/2001/05/wsgpiswindle.htm>, and *Statement of Commissioner Mozelle W.*

In performing these and other inquiries, the Commission distinguishes between short-term and long-term effects. While a refinery outage on the West Coast could significantly affect prices, the FTC did not find that it would be profitable in the long run for a refiner to restrict its output to raise the level of prices in the market. For example, absent planned maintenance or unplanned outages, refineries on the West Coast (and in the rest of the country) generally run at close to or full capacity. If gasoline is in short supply in a locality due to refinery or pipeline outages, and there are no immediate alternatives, a market participant may find that it can profitably increase prices by reducing its refinery output – generally for a short time only until the outage is fixed or alternative supply becomes available. This transient power over price – which occurs infrequently and lasts only as long as the shortage – should not be confused with the sustained power over price that is the hallmark of market power in antitrust law."

In addition to the Unocal and the West Coast pricing investigations, the Commission in 2001 issued a report 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 2000.²³ The Commission found that a variety of factors contributed in different degrees to the price spikes. Primary factors

Thompson, available at <http://www.ftc.gov/os/2001/05/wsgpithompson.htm>, for a more detailed discussion of these practices and the Commission's findings. See also Cary A. Deck & Bart J. Wilson, *Experimental Gasoline Markets*, Federal Trade Commission, Bureau of Economics Working Paper (Aug. 2003), available at <http://www.ftc.gov/be/workpapers/wp263.pdf>, and David W. Meyer & Jeffrey H. Fischer, *The Economics of Price Zones and Territorial Restrictions in Gasoline Marketing*, Federal Trade Commission, Bureau of Economics Working Paper (Mar. 2004), available at <http://www.ftc.gov/be/workpapers/wp271.pdf>.

²³ Midwest Gasoline Price Investigation, Final Report of the Federal Trade Commission (Mar. 29, 2001), available at <http://www.ftc.gov/os/2001/03/mwgasrpt.htm>; see also Remarks of Jeremy Bulow, Director, Bureau of Economics, *The Midwest Gasoline Investigation*, available at <http://www.ftc.gov/speeches/other/midwestgas.htm>.

included refinery production problems (*e.g.*, refinery breakdowns and unexpected difficulties in producing the new summer-grade RFG gasoline required for use in Chicago and Milwaukee), pipeline disruptions, and low inventories. Secondary factors included high crude oil prices that contributed to low inventory levels, the unavailability of substitutes for certain environmentally required gasoline formulations, increased demand for gasoline in the Midwest, and, in certain states, *ad valorem* taxes. Importantly, the industry responded quickly to the price spike. Within three or four weeks, an increased supply of product had been delivered to the Midwest areas suffering from the supply disruption. By mid-July 2000, prices had receded to pre-spike or even lower levels.

The Commission's merger investigations also are relevant to the detection of nonmerger antitrust violations. FTC merger investigations since the mid-1990s uniformly have been major undertakings that have reviewed all pertinent facets of the relevant petroleum markets. These investigations have involved the review of thousands of boxes of documents in discovery, examination of witnesses under oath, and exhaustive questioning of outside experts. During these investigations, Commission staff have not only analyzed traditional merger issues but have also looked for evidence of potential anticompetitive effects related to unilateral market power, collusion, and ongoing illegal conduct.

The discussion above covers but a few of the gasoline pricing investigations to which the Commission has devoted substantial time and resources. To date, we have identified no instances of collusion among petroleum companies or of illegal unilateral firm conduct. Of course, that does not mean that anticompetitive acts cannot occur, which is why the agency continues to be vigilant in pursuing its enforcement mission.

C. Recent Commission Research on Factors That Can Affect Prices of Refined Petroleum Products

Prices of any commodity may fluctuate dramatically for reasons unrelated to antitrust violations. A sudden surge in demand or an unexpected problem in the supply chain can cause prices to spike quickly. A change in the price of a necessary input, such as crude oil, also can affect the price of the final good dramatically.

Such price changes are disruptive to both consumers and businesses but are not by themselves evidence of anticompetitive activity. They can occur in some regional gasoline markets because of a unique combination of short-run supply and demand conditions. The amount of gasoline that can be supplied to a particular region may be inflexible in the short run because of various limitations on refining and transportation capabilities or product requirements unique to that region. The demand for gasoline is inelastic.²⁴ Therefore, in the short run, changes in price do not heavily influence the amount of gasoline purchased by consumers. Under these conditions, when a sudden supply shortage jolts the market, perhaps due to a refinery fire or a pipeline rupture, the normal consequence of even a relatively small shortage of supply is a sharp increase in price until the supply of the product desired can be increased.

1. Gasoline Monitoring and Investigation Initiative

The Commission actively monitors wholesale and retail prices of gasoline. Two years ago, the FTC launched an initiative to monitor gasoline prices to identify “unusual” movements

²⁴ Individual firms may have little or no market power even if industry demand is inelastic. It is a mistake to equate low demand elasticity with the ability of a firm to exercise market power. Elasticity is a measure of the percentage change in one variable (*e.g.*, quantity demanded) brought about by a one percent change in some other variable (*e.g.*, price). *See* WALTER NICHOLSON, *MICROECONOMIC THEORY: BASIC PRINCIPLES AND EXTENSIONS* 187-209 (4th ed. 1989).

in prices²⁵ and then examine whether any such movements might result from anticompetitive conduct that violates Section 5 of the FTC Act. FTC economists developed a statistical model for identifying such movements. The agency's economists scrutinize price movements in 20 wholesale and over 350 retail markets across the country. A map of these markets is attached at Figure 3.

Our gasoline monitoring and investigation initiative focuses on the timely identification of unusual movements in gasoline prices (compared to historical trends) to determine if a law enforcement investigation is warranted. If the FTC staff detects unusual price movements in an area, it researches the possible causes, including, if appropriate, consulting with the state Attorneys General, state energy agencies, and the Department of Energy's ("DOE") Energy Information Administration. The FTC staff also monitors DOE's gasoline price "hotline" complaints. If the staff concludes that the unusual price movement likely results from a "natural" cause (*i.e.*, a cause unrelated to anticompetitive conduct), it does not investigate further.²⁶ The Commission's experience from its past investigations and the current monitoring initiative indicates that unusual movements in gasoline prices typically have a natural cause. FTC staff further investigates unusual price movements that do not appear to be explained by "natural" causes to determine whether anticompetitive conduct may be a cause. Cooperation with state law enforcement officials is an important element of such investigations.

²⁵ An "unusual" price movement in a given area is a price that is significantly out of line with the historical relationship between the price of gasoline in that area and the gasoline prices prevailing in other areas.

²⁶ Natural causes include movements in crude oil prices, supply outages (*e.g.*, from refinery fires or pipeline disruptions), or changes in and/or transitions to new fuel requirements imposed by air quality standards.

Regional price spikes for gasoline have occurred in various parts of the country, and many areas have experienced substantial price increases for gasoline in recent months. As noted above, the FTC is monitoring wholesale and retail gasoline prices in cities throughout the country and will continue to analyze these data to seek explanations for pricing anomalies. A look at some recent price spikes illustrates the kinds of factors, other than crude oil prices, that affect retail price levels.

a. ARIZONA

In August 2003, gasoline prices rose sharply in Arizona. The average price of a gallon of regular gasoline in Phoenix rose from \$1.52 during the first week in August to a peak of \$2.11 in late August. Several sources caused these price movements. Most gasoline sold in Phoenix comes from West Coast refineries. A pipeline from Texas also brings gasoline to the Phoenix area, but it usually operates at capacity. The marginal supply comes from the West Coast.²⁷

Product supplies on the West Coast were already becoming tight in early August, following a number of unplanned refinery interruptions in California and an unplanned shutdown at a refinery in Washington. This placed upward pressure on prices on the West Coast and in Arizona. On July 30, 2003, Kinder Morgan's El Paso-to-Phoenix pipeline ruptured between Tucson and Phoenix. On August 8, Kinder Morgan shut down the pipeline, after its efforts to repair the rupture failed. This disruption immediately reduced the volume of gasoline delivered to Phoenix by 30 percent, and most of Arizona immediately became much more dependent on

²⁷ Marginal supply is the last product brought into a market and effectively sets the equilibrium price. It is also the increment of product that can adjust in the short run to market conditions and thus ameliorate price spikes.

shipments from California for its gasoline supplies.

Retail prices in Phoenix increased during the week immediately following the August 8 pipeline shutdown (the week ending August 16) to levels higher than predicted by historical relationships.²⁸ As California refineries increased supply shipments to Arizona (displacing refining capacity that could otherwise serve California markets), retail prices in Los Angeles increased above the predicted level during the week ending August 23. On August 24, Kinder Morgan opened a temporary by-pass of the pipeline section affected by the rupture, and prices quickly fell. The average price of regular gasoline began to drop immediately. By the end of August, gasoline prices in the Phoenix area were falling. They continued to drop through September and October.²⁹ (See Figure 4.)

Marked price increases in the wake of a sudden, severe drop in supply are a normal market reaction. Because gasoline is so important to consumers, a large price increase may be required to reduce quantity demanded so that it is equal to available supply. Price increases in turn attract additional supplies, which should then cause prices to decline. This response occurred in the Kinder Morgan rupture.

b. ATLANTA

²⁸ Price increases in Phoenix were not large enough to equate short-run supply and demand. Gasoline was effectively rationed by queuing – long lines of motorists – and many stations ran out of gasoline. *See Phoenix Gas Crisis Worsens*, MSNBC News (Aug. 21, 2003) (only 45 percent of retail stations had product to sell), available at <http://www.msnbc.com/local/AZSTAR/A1061452904.asp?0cv=BB10>; *Phoenix Gas Stations Running Dry After Pipeline Shut Down*, Associated Press (Aug. 18, 2003), available at <http://www.cnn.com/2003/US/Southwest/08/18/phoenix.gas.crunch.ap/>.

²⁹ In examining this pricing anomaly, the FTC staff consulted with the Attorney General offices in Arizona and California.

Another recent price anomaly picked up by the monitoring project occurred in Atlanta, Georgia, and surrounding counties. This anomaly is not the traditional price spike that attracts the public's attention. Instead, it took the form of a small, sustained increase. Atlanta and its surrounding counties have experienced gasoline formulation changes in the past few years that have differentiated it from the rest of the Southeast. On April 1, 2003, an interim low-sulfur standard of 90 parts per million ("ppm") took effect. Soon thereafter, Georgia required the 45-county area surrounding Atlanta to introduce a new 30 ppm low-sulfur gasoline by September 16. These formulation changes increased the cost of producing gasoline. After the 90 ppm standard was implemented, gasoline prices in Atlanta increased.

After the 90 ppm standard was instituted in April, and even more frequently after the 30 ppm standard was instituted in September, the Commission's monitoring project picked up small anomalies in Atlanta gasoline pricing. Atlanta and the surrounding area have experienced slightly higher prices relative to historical levels because of the greater costs of making low-sulfur gasoline. This increase is illustrated at Figure 5.

c. MID-ATLANTIC AREA

A third pricing anomaly occurred in September and October of last year. Gasoline prices were generally falling nationwide at that time. The price of reformulated gasoline in the New York, New Jersey, Connecticut, and Philadelphia areas, however, declined more slowly than the price of gasoline in the rest of the country. The FTC monitoring model showed the price of gasoline in this region was unusually high even though prices were decreasing elsewhere. (See Figure 6.)

The FTC staff's examination of this anomaly, which included consultation with each

affected state's Attorney General, ultimately concluded that the elevated price in this area stemmed from a number of factors. In late August 2003, the Northeast was hit particularly hard by an increase in demand that drew down gasoline stocks in all regions of the United States.³⁰ The August 14 blackout further affected the Northeast, temporarily shutting down seven refineries. While the blackout appeared to have little immediate impact on U.S. retail gasoline prices, the reduction in supply from four refineries in Ontario, Canada, whose operations were hampered by the power outage, significantly affected the price of gasoline in Ontario. Typically, the Northeastern states receive significant gasoline imports from Canada. Throughout much of August, however, wholesale prices in Toronto exceeded wholesale prices in Buffalo by approximately 25 cents per gallon, a sign that Canada was shipping less product into the Northeast. FTC staff confirmed a sizeable drop in exports of gasoline from Canada to the Northeast in August 2003.³¹ By the end of September, rack prices in Toronto and Buffalo had returned to rough equality, and imports from Canada returned to their usual level.

On top of the low inventories, both the switch from summer to winter grade gasoline and the switch in New York and Connecticut from MTBE-blended³² reformulated gasoline to ethanol RFG caused a disincentive to build inventories in August and September. While refineries in the Northeast increased production during this period, important additional supply to this area comes by pipeline from the Gulf and imports from abroad. Both of these sources of supply require

³⁰ DOE, *Inquiry into August 2003 Gasoline Price Spike*, at 35-42 (Nov. 2003).

³¹ FTC staff compiled the import data from tariff and trade data from the U.S. Department of Commerce, the U.S. Department of the Treasury, and the U.S. International Trade Commission.

³² "MTBE" is Methyl Tertiary-Butyl Ether.

significant response times, however. Given the shipping lags and the impending switches in formulation, there was limited time – as well as a disincentive – to ship additional summer specification RFG to the Northeast.

d. WESTERN STATES

FTC staff identified a pricing anomaly involving the Western United States during February and March 2004. Figures 7 through 10 show the actual and predicted bounds of the price of retail gasoline in Las Vegas and Reno, Nevada, and Los Angeles and San Francisco, California. Figures 11 and 12 show the actual and predicted range of the wholesale price of gasoline in Los Angeles and San Francisco, respectively.³³

As shown on the graphs, the wholesale (rack) price of gasoline in California increased beginning in mid-February. By the third week in February, the wholesale prices were outside the predicted bounds. The retail prices in Nevada and California followed a similar path, but the daily data showed a more lagged response. As part of the monitoring and investigation initiative, FTC staff discussed the anomalies with the California Energy Commission, DOE's Energy Information Administration, the California Attorney General's Office and the Nevada Attorney General's Office. The FTC also examined additional sources of data.

FTC staff found that a number of factors caused the price spike. Unanticipated refinery outages took place at a time when there were also relatively low levels of inventory. Some outages resulted when maintenance lasted longer than expected, while one outage resulted from

³³ Information for the wholesale price of gasoline is provided because Nevada receives its gasoline by pipeline from both Los Angeles and San Francisco.

a power failure. January through March is the normal time for refinery maintenance, when firms are preparing for the summer gasoline season. California refineries operate at near capacity most of the year but perform maintenance during the winter, during the downturn in demand.³⁴

Examining the gasoline inventory and production levels in California, as well as the prices in California relative to the Gulf Coast, illuminates the relevant sequence of events. Figure 13 shows (a) weekly gasoline production at the California refineries as a percentage of the previous year's gasoline production, (b) gasoline and blending stock inventories as a percentage of the previous year's inventories, (c) the Los Angeles and Houston rack (price) differential as a percentage, and (d) the average Los Angeles to Houston rack (price) differential as a percentage.³⁵

Figure 13 shows that in the first few weeks of January, gasoline production in California was 10 to 20 percent higher than in January 2003, leading to higher inventories.³⁶ As production dropped in late January because of scheduled maintenance, inventories were drawn down. During January the rack price of gasoline in Los Angeles was below the normal Houston-Los Angeles differential, indicating lower relative prices in Los Angeles than in Houston, due to this

³⁴ Testimony of Pat Perez, California Energy Commission, before the California Attorney General's Task Force on Gasoline Prices (Mar.11, 2004), *available at* http://www.energy.ca.gov/papers/2004-03-11_PAT_PEREZ.PDF.

³⁵ Houston is a major refining area. The price comparison is between the current price difference between Los Angeles and Houston and the historical difference. When the price differential between Los Angeles and Houston increases above the historical difference, it is important to research the cause of the deviation.

³⁶ It is not unusual for annual "week to week" comparisons to show such differences. Data on weekly refinery production and output are available from the California Energy Commission, Weekly Fuels Watch Report Database, *available at* <http://www.energy.ca.gov/database/fore/index.html>.

increased production. As inventories dropped in early February, the rack price in Los Angeles began to increase, relative to Houston. In mid-February, the Tesoro refinery in San Francisco had a power outage that shut the refinery for a week,³⁷ and Valero announced that restarting a refinery that had been undergoing maintenance would take an extra week. There were additional refinery outages as well.³⁸ The combined effect of the decreased production and lower-than-expected inventories was that the Los Angeles rack price rose substantially relative to Houston, and Los Angeles retail prices also rose beyond what would be expected at a time of dramatically increasing crude oil prices. As the refineries were brought back online, the relative wholesale price of gasoline in California fell, and retail prices moved more in line with prices nationwide (a relative decrease, compared to the rest of the country).

Restarting a refinery is a lengthy process that can take a week or more, and the loss of output from a refinery outage can be sizeable. Refiners have contractual obligations to supply branded stations, and a refinery with a major outage may have to purchase gasoline from its competitors at the current price. During the incident discussed above, three of the California refineries that experienced difficulties in restarting were forced to make unplanned purchases totaling a million barrels of gasoline on the spot market.³⁹

2. Conferences and Staff Reports Identifying Factors Affecting the Price of Gasoline

Because of increased public concern about the level and volatility of gasoline prices, the

³⁷ OIL & GAS JOURNAL (Mar. 1, 2004).

³⁸ Testimony of Pat Perez, *supra* note 34; *see also* California Energy Commission, Questions & Answers: California Gasoline Price Increases, *available at* http://www.energy.ca.gov/gasoline/gasoline_q-and-a.html.

³⁹ California Energy Commission, *supra* note 38.

Commission constantly studies factors that can affect refined petroleum product prices. The Commission held public conferences in 2001 and 2002⁴⁰ that made important contributions to our knowledge about the factors that affect gasoline prices. The Commission is preparing a report on the proceedings of these conferences and related work.

The Commission also is updating its 1982 and 1989 petroleum merger reports to focus on mergers and structural change in the oil industry since 1985. In March, Commission staff economists released a retrospective study of the effects of the Marathon-Ashland joint venture in Kentucky.⁴¹ This paper examines the price effects of the Marathon-Ashland joint venture by comparing the wholesale and retail prices of gasoline in a number of regions unaffected by the merger to prices of gasoline in Louisville, Kentucky. The transaction does not seem to have affected the relative price of gasoline in Louisville.

III. Factors Affecting Gasoline Prices

Through its merger and nonmerger enforcement activity, and through its conferences, studies, and advocacy work, the FTC has examined in detail the central factors that may affect the level and volatility of refined petroleum product prices. Below we review just a few of those factors.

The most important factor affecting both the level and movement of gasoline prices in the

⁴⁰ FTC Press Release, *FTC to Hold Second Public Conference on the U.S. Oil and Gasoline Industry in May 2002* (Dec. 21, 2001), available at <http://www.ftc.gov/opa/2001/12/gasconf.htm>.

⁴¹ 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*, Federal Trade Commission, Bureau of Economics Working Paper (Mar. 2004), available at <http://www.ftc.gov/bc/workpapers/wp270.pdf>.

United States is the price of crude oil.⁴² Changes in crude oil prices account for approximately 85 percent of the variability of gasoline prices.⁴³ When crude oil prices rise, gasoline prices rise. (See Figure 1.) Crude oil prices are determined by supply and demand conditions worldwide, most notably by production levels set by OPEC countries.⁴⁴ Other factors that affect the supply of and demand for crude oil, such as the fast-growing demand for petroleum in China, also influence the price of gasoline in the United States.

Inventories of both crude oil and refined products also have an important effect on retail

⁴² While the impact of crude oil prices on gasoline prices is widely recognized, it is often alleged that gasoline prices are “sticky downward” – that is, gas prices go up like “rockets” and come down like “feathers” in response to changes in oil prices. For a review of the empirical literature testing this hypothesis, see John Gewecke, *Issues in the “Rockets and Feathers” Gasoline Price Literature*, submitted in conjunction with the Federal Trade Commission Conference, *Factors That Affect the Price of Refined Petroleum Products II* (May 8, 2002), available at <http://www.ftc.gov/bc/gasconf/comments2/gewecke2.pdf>. This paper indicates there are serious and sometimes fundamental flaws with the papers showing asymmetric response.

⁴³ See note 2, *supra*.

⁴⁴ OPEC members today account for 40 percent of world crude oil production and 80 percent of world crude oil reserves. As a substantive matter, competitor cartels that limit supply or fix prices are illegal under U.S. antitrust laws. However, the U.S. antitrust agencies must account for considerations beyond the substantive merits of a case before bringing such a lawsuit. See Federal Trade Commission, Prepared Statement, *Competitive Problems in the Oil Industry*, Before the Committee on the Judiciary, United States House of Representatives (Mar. 29, 2000).

The share of world crude oil production accounted for by U.S.-based companies declined from 10.8 percent in 1990 to 8.5 percent in 2003; the share of these firms is similarly low for world crude oil reserves. Recent large mergers among major oil companies have had little impact on concentration in world crude oil production and reserves. For example, Exxon and Mobil, which merged in 1999, had worldwide shares of crude oil production in 1998 of 2.1 percent and 1.3 percent, respectively; in 2001, the combined firm’s share was 3.4 percent. The BP/Amoco merger combined firms with world crude oil reserves of 0.7 percent and 0.2 percent in 1997; the combined firm’s world crude oil reserve share in 2001, which reflects the acquisition of ARCO in 2000 and the divestiture of ARCO’s Alaska North Slope crude oil to Phillips, was 0.8 percent.

gasoline prices. At our August 2001 conference,⁴⁵ a representative of the Energy Information Administration reported that “OPEC [production] cuts and high crude prices affect gasoline prices directly through the feedstock cost but also indirectly by reducing gasoline inventories.”⁴⁶ Participants also commented that average inventories for refined products have declined over time,⁴⁷ contributing to price spikes as additional supply is less available quickly to meet demand. Lower inventory costs decrease the average cost of producing gasoline, to the benefit of consumers.⁴⁸

Participants in the FTC conference also noted that refineries and the pipelines used to transport gasoline to the pump are typically highly utilized. The annual average domestic refinery atmospheric distillation capacity utilization rate reached record levels in 1997 (95.2

⁴⁵ Transcripts of the conference and papers submitted to the *Federal Trade Commission Public Conference: Factors that Affect Prices of Refined Petroleum Products*, are available at <http://www.ftc.gov/bc/gasconf/index.htm>. The dates of the conferences were August 2, 2001, and May 8 and May 9, 2002.

⁴⁶ John Cook (EIA), Aug. 2 tr. at 52.

⁴⁷ Thomas Greene (California Attorney General Office), Aug. 2. tr. at 11 (“[i]n the 1990's, reserves and inventories [in California] have declined roughly 20-plus percent”); Rothschild (Podesta/Mattoon), Aug. 2 tr. at 82 (consistently below an average of 5 days of gasoline inventory); Mark Cooper (Cons. Fed. of Am.), written statement at 21.

⁴⁸ In a recent study of the petroleum inventory system, the National Petroleum Council concluded that the trend toward lower product inventories was “the result of improved operating efficiencies partially offset by operational requirements for an increased number of product formulations to comply with environmental regulations,” noting also that “[s]ince holding inventory is a cost, there is an underlying continuous pressure to eliminate that which is not needed to meet customer demand or cannot return a profit to the holder.” National Petroleum Council, *U.S. Petroleum Product Supply–Inventory Dynamics*, at 11 (Dec. 1998). The National Petroleum Council study also concluded that “[c]ompetition has resulted in the consumer realizing essentially all of the cost reductions achieved in the downstream petroleum industry.” *Id.* at 22.

percent) and 1998 (95.6 percent) after rising fairly steadily since the early 1980s.⁴⁹ In more recent years, annual average distillation capacity utilization has eased somewhat, falling to 92.5 percent for 2003. However, refinery distillation capacity utilization for the four-week period ending June 18, 2004 (the most recent period for which data are available) was 95.7 percent.⁵⁰

Although it is efficient to run these capital-intensive facilities at high rates of capacity utilization, supply disruptions from unexpected refinery outages or pipeline failures may not be easily or immediately compensated for by other supply sources due to capacity limitations, resulting in substantial market price effects in some cases.

Total refinery distillation capacity has been increasing in recent years, however. Total distillation capacity was 15.43 million barrels per day (“MMBD”) in 1995.⁵¹ As of June 2004, industry distillation capacity was 16.89 MMBD.⁵² While no new U.S. refineries were built during this period, the increase of over 1.4 MMBD of industry capacity at existing facilities represents a 9.5 percent increase since 1995. This is equivalent to adding more than 12 average-sized refineries to industry supply.⁵³ Over time, there has been a noticeable shift toward running larger refineries.⁵⁴ While some refineries have closed since 1995, these mainly were small, older

⁴⁹ EIA, *Annual Energy Review 2002*, Table 5.9.

⁵⁰ EIA, *Weekly Petroleum Status Report*, June 23, 2004, Table 2. Annual capacity utilization for 2003 is based on average of reported monthly capacity utilization rates.

⁵¹ EIA, *Annual Energy Review 2002*, Table 5.9.

⁵² EIA, *Weekly Petroleum Status Report*, June 23, 2004, Table 2.

⁵³ The average size of a refinery in 2003 was 112.5 thousand barrels per day (“MBD”). The average size of a refinery in 1995 was 88.2 MBD.

⁵⁴ See Figure 14, Size Distribution of Operating Refineries 1986 and 2003.

refineries with limited gasoline production capacity.⁵⁵ Despite these closures, refining capacity in each PADD has increased since 1995.⁵⁶

Pipeline capacity also is stretched in some regions of the country for at least parts of the year, although various pipeline expansion projects now underway may relieve some pressure. In addition to capacity increases and upgrades at the refinery level, there have been increases in product pipeline capacities in recent years.⁵⁷

Conference participants indicated that the interaction of environmental quality requirements and gasoline supplies may also affect gasoline prices. It is clear that environmental regulations have yielded substantial air quality benefits. Since 1970, emissions of the six principal air pollutants – nitrogen dioxide, ozone, sulfur dioxide, particulate matter, carbon monoxide, and lead – have been cut by 25 percent, even as vehicle miles increased by 149 percent.⁵⁸ These regulations add to the cost of refining crude oil, and thus to gasoline prices.

⁵⁵ See Figure 15, Refinery Closures, 1995 to 2003, showing crude oil distillation capacity of closed refineries.

⁵⁶ See EIA, *Petroleum Supply Annual 1996* (Table 36); EIA, *Weekly Petroleum Status Report*, Table 2, U.S. Petroleum Activity, January 2003 to present.

⁵⁷ For example, the FTC examined bulk product supply conditions affecting the Midwest in its investigation of price spikes affecting that area in the spring of 2000. Since that time product pipeline capacity from the Gulf to the Midwest has increased significantly. The Centennial pipeline, with a capacity of 210 MBD, opened in 2002. See Marathon Oil Company, *Marathon Ashland Petroleum, LLC*, available at http://www.marathon.com/Our_Business/Marathon_Ashland_Petroleum_LLC/. Explorer, another major pipeline bringing refined products from the Gulf to the Midwest, added 110 MBD of capacity in an expansion project that was completed in 2003. See Willbros Group Inc., *Explorer Mainline Expansion*, available at <http://www.willbros.com/pdf/0277.pdf>.

⁵⁸ Environmental Protection Agency, *Air Quality and Emissions Trends Report* (2002).

The Environmental Protection Agency estimates that the cost of producing a gallon of reformulated gasoline is 4 to 8 cents per gallon more than the cost of producing conventional gasoline.⁵⁹ These costs may be even higher during supply disruptions, when significant marginal costs are incurred as firms attempt quickly to alter previously determined production runs.

In addition, several participants at the FTC conferences reported that the proliferation of different environmentally mandated gasoline blends has reduced the ability of firms to ship gasoline from one region to another in response to supply disruptions.⁶⁰ (Figure 16 illustrates the different fuel blends required in the United States.⁶¹) The FTC staff's analysis of pricing anomalies, discussed earlier, provides support for these concerns. As part of its work to improve public understanding of the possible role of environmentally mandated fuels in contributing to price volatility and price spikes, Commission staff provided comments to the EPA in connection with that agency's preparation of the EPA Staff White Paper, a response to

⁵⁹ Robert Larson (EPA), May 8 tr. at 74.

⁶⁰ *E.g.*, John Felmy (American Petroleum Institute), Aug. 2 tr. at 26; Benjamin Cooper (Ass'n of Oil Pipe Lines), Aug. 2 tr. at 102. According to one participant, "[t]ight specifications for reformulated gasoline sold in [California] and limited pipeline interconnections . . . isolate the California gasoline market from gasoline markets in the rest of the country," thus contributing to higher prices in the state. Richard Gilbert (U. Cal. Berkeley), written statement at 3-4.

⁶¹ A number of different fuel blend requirements have been introduced since passage of the Clean Air Act of 1990. For example, regulations governing fuel blends in California have been introduced and implemented in 1992, 1996 and 2003 (CARB I, II, and III). Additionally, RFG Phase 1 (1995) and RFG Phase 2 (2000) affect various other states. Tier 2 low-sulfur gasoline regulations are being phased in now. Additionally, various regional specifications have been phased in over the last decade.

the President's National Energy Report (May 2001). The President's Report directed the EPA Administrator to "study opportunities to maintain or improve the environmental benefits of state and local 'boutique' fuels programs, while exploring ways to increase the flexibility of the fuels distribution infrastructure, improve fungibility, and provide added gasoline market liquidity."⁶² The FTC staff commented that the EPA might find it beneficial to use a framework similar to the one the FTC uses to analyze mergers, to determine the competitive effects likely to result from changes in fuel mandates in particular relevant markets.⁶³ The FTC staff offered suggestions to the EPA concerning how it might perform such an analysis.

Other federal and state laws and regulations were identified by conference participants as affecting gasoline prices. For example, a federal statute known as the Jones Act⁶⁴ increases the cost of transporting petroleum products by requiring that any product transported by vessel between U.S. ports be carried in domestically-built ships staffed by U.S. crews, which is more expensive than carriage by foreign-built, foreign-staffed ships. A recent government estimate of the total welfare cost of the Jones Act for all tanker shipping is \$656 million per year, based on

⁶² *Study of Unique Gasoline Fuel Blends ("Boutique Fuels"), Effects on Fuel Supply and Distribution and Potential Improvements*, EPA Staff White Paper at 1-2.

⁶³ The FTC's experience shows that economically relevant gasoline markets are regional for refining and transportation, and local for gasoline distribution or retail sales. For example, a refinery that does not – or cannot in the short run – produce the type of gasoline currently in short supply in a certain region cannot be considered to be in that market for purposes of resolving short-run price spikes. FTC Staff Comments, *Study of Unique Gasoline Fuel Blends ("Boutique Fuels"), Effects on Fuel Supply and Distribution and Potential Improvements*, Dkt. No. A-2001-20, Before the Environmental Protection Agency at 4 (Jan. 30, 2002).

⁶⁴ Sec. 27 of the Merchant Marine Act of 1920, as amended, 46 App. U.S.C. §883; *see also* 19 C.F.R. §§4.80, 4.80b.

the assumption that a foreign ship has operating costs of only 59 percent of a Jones Act ship.⁶⁵ The observed cost of transportation of refined petroleum products from the Gulf Coast to the West Coast, 10-25 cents per gallon,⁶⁶ implies that the Jones Act imposes an additional cost of at least 4 cents per gallon when it is necessary to transport gasoline using Jones Act ships.

A number of states have also adopted statutes or regulations that substantially influence gasoline prices. Several states have divorcement statutes that require the unbundling of retail sales from upstream refining operations. Careful economic analyses of divorcement statutes have concluded that such statutes can increase consumer prices.⁶⁷ Other regulatory statutes that appear to have increased gasoline prices include bans on self-service sales⁶⁸ and restrictions on below-cost sales,⁶⁹ which appear simply to protect retailers from competition from more efficient

⁶⁵ The Economic Effects of Significant U.S. Import Restraints, U.S. International Trade Commission, Pub. No. 3519 (June 2002).

⁶⁶ California Energy Commission, Gulf Coast to California Pipeline Feasibility Study (Aug. 2003).

⁶⁷ See Michael G. Vita, *Regulatory Restrictions on Vertical Integration and Control: The Competitive Impact of Gasoline Divorcement Policies*, 18 J. REG. ECON. 217 (2000) (finding that retail gasoline prices are two to three cents per gallon higher in states with divorcement laws); Asher A. Blass & Dennis W. Carlton, *The Choice of Organizational Form in Gasoline Retailing and the Cost of Laws that Limit that Choice*, 44 J. L. & ECON. 511 (2001) (estimating that divorcement increases costs of operation by about three to four cents per gallon)

⁶⁸ See Vita, *supra* note 67 (noting that in 1993 – at that time the last year for which data were available – the price of regular unleaded gasoline in those states that banned self-service was three cents per gallon higher than in states that allowed self-service); see also R. Johnson & C. Romeo, *The Impact of Self-Service Bans in the Retail Gasoline Market*, 82 REV. ECON & STAT. 625 (2000) (finding the cost of self-service bans to be three to five cents per gallon).

⁶⁹ The Minnesota Department of Commerce recently ordered Kwik Trip, Inc., and Murphy Oil USA Inc. to “cease and desist” from selling gasoline at too low a price. The

competitors.⁷⁰ The FTC staff has provided numerous comments on specific sales-below-cost legislation, noting that (a) economic studies, legal studies, and court decisions indicate that below-cost pricing that leads to monopoly or anticompetitive harm occurs infrequently; (b) below-cost sales of motor fuel that lead to monopoly or anticompetitive harm are especially unlikely; and (c) alleged instances of anticompetitive below-cost sales are best addressed by federal statutes against anticompetitive conduct to avoid chilling procompetitive and pro-consumer conduct.⁷¹

allegation in both cases was that the respondent had “engaged in the offer and sale of gasoline below the minimum allowable price.” Minnesota Department of Commerce, *Enforcement Actions May 2004*, available at [http://www.state.mn.us/mn/externalDocs/Commerce/Enforcement Actions May 2004 0507041 20541 EnfAct053104.htm](http://www.state.mn.us/mn/externalDocs/Commerce/Enforcement%20Actions%20May%202004%20050704120541%20EnfAct053104.htm); see also Mark Brunswick, *Selling Gas For Too Little Can Be Costly; State Regulations Are Penalizing Some Retailers Who Don't Charge Enough For Fuel*, MINNEAPOLIS STAR-TRIBUNE, at 1B (June 2, 2004).

⁷⁰ See, e.g., *Star Fuels Mart, LLC v. Sam's East, Inc.*, 2004 U.S. App. LEXIS 5215, at *17 n.3 (10th Cir. Mar. 19, 2004) (despite no evidence of harm to competition under a Sherman Act standard, upholding temporary injunction granted under the Oklahoma Unfair Sales Act forbidding defendant from selling fuel below cost because “[t]he purpose of the OUSA, . . . is simply to prevent loss leader selling and to protect small businesses”).

Hypermarkets are transforming gasoline retailing. Hypermarkets, which are high-volume retail outlets mostly owned by or leased from grocery stores, mass merchandise retailers, large convenience stores, or membership clubs, have substantial economies of scale that enable them to sell at low prices. They may pump up to one million gallons of fuel a month. Some hypermarkets can reduce their costs further by doing their own wholesaling, and some already buy their gasoline directly from refineries through long-term contracts. As of the fourth quarter of 2002, the national market share for hypermarkets was approximately six percent. See Energy Analysts International, *Evolution of the High Volume Gasoline Retailer* (Feb. 13, 2003).

⁷¹ See Letter from Susan Creighton, Director, FTC Bureau of Competition, et al., to Michigan State Representative Gene DeRossett (June 17, 2004), available at <http://www.ftc.gov/os/2004/06/040618staffcommentsmichiganpetrol.pdf>; Letter from Susan Creighton, Director, FTC Bureau of Competition, et al., to Kansas State Sen. Les Donovan (Mar. 12, 2004), available at <http://www.ftc.gov/be/v040009.pdf>; Letter from Susan Creighton, Director, FTC Bureau of Competition, et al., to Demetrius Newton, Speaker Pro Tempore of the

IV. Conclusion

Competition policy helps ensure that the petroleum industry is, and remains, competitive. The FTC has expended substantial effort and resources to enforce the antitrust laws and to scrutinize behavior in this industry. We will continue to do so in the future. Higher prices for petroleum products deeply affect the quality of life in the United States and strongly influence the Nation's economic performance. Understanding and publicizing developments in this sector, and attacking conduct that violates the antitrust laws, are competition policy priorities second to none for the Federal Trade Commission.

I would be pleased to answer your questions.

Alabama House of Representatives (Mar. 12, 2004), *available at* <http://www.ftc.gov/be/v040005.htm>; Letter from Susan Creighton, Director, FTC Bureau of Competition, et al., to Wisconsin State Rep. Shirley Krug (Oct. 15, 2003), *available at* <http://www.ftc.gov/be/v030015.htm>; Letter from Joseph J. Simons, Director, FTC Bureau of Competition, et al., to Eliot Spitzer, Attorney General of New York (July 24, 2003), *available at* <http://www.ftc.gov/be/nymfmpa.pdf>; Letter from Joseph J. Simons, Director, FTC Bureau of Competition, et al., to Roy Cooper, Attorney General of North Carolina (May 19, 2003), *available at* <http://www.ftc.gov/os/2003/05/ncclattorneygeneralcooper.pdf>; *Competition and the Effects of Price Controls in Hawaii's Gasoline Market: Before the State of Hawaii, J. Hearing House Comm. On Energy and Environmental Protection et al.* (Jan. 28, 2003) (testimony of Jerry Ellig, Deputy Director, FTC Office of Policy Planning), *available at* <http://www.ftc.gov/be/v030005.htm>; Letter from Joseph J. Simons, Director, FTC Bureau of Competition, et al., to Gov. George E. Pataki of New York (Aug. 8, 2002), *available at* <http://www.ftc.gov/be/v020019.pdf>; Letter from Joseph J. Simons, Director, FTC Bureau of Competition, and R. Ted Cruz to Hon. Robert F. McDonnell, Commonwealth of Virginia House of Delegates (Feb. 15, 2002), *available at* <http://www.ftc.gov/be/V020011.htm>.

Figure 1

United States Average Real Price of Crude Oil and Gasoline

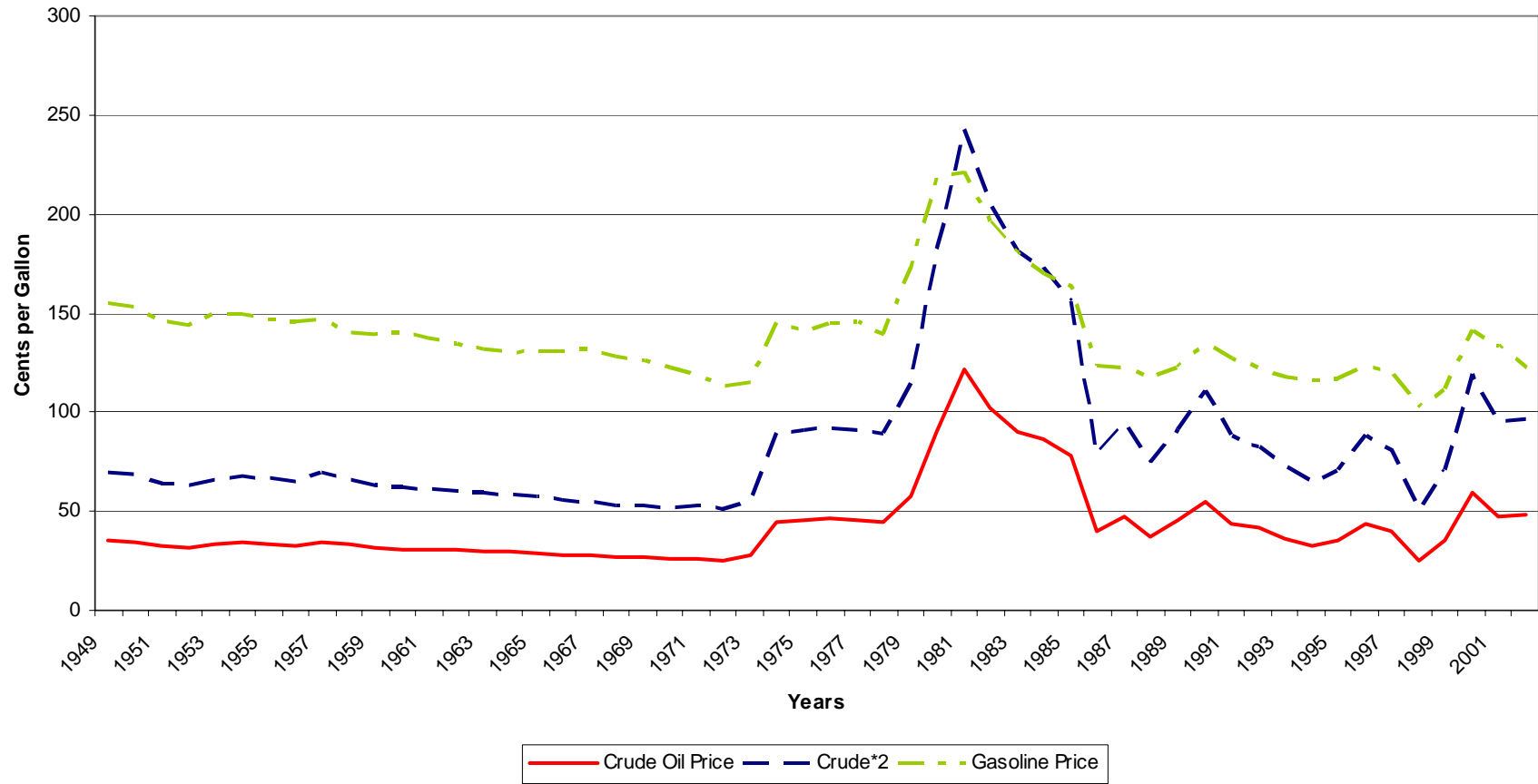


Figure 2
FTC Merger Enforcement Actions in the Petroleum Industry, 1981-2003

Firms (Year)*	Markets Affected	Theory of Anti-competitive Effects	Concentration (HHI)	FTC Enforcement Action
Mobil/ Marathon ¹ (1981)	Wholesale marketing of gasoline and middle distillates in various markets in the Great Lakes area	Unilateral / Coordinated ²	Not publicly available ³	FTC sought preliminary injunction, but before hearings were held Mobil withdrew tender offer as a result of injunction in a separate, private litigation
Gulf/Cities Service ⁴ (1982)	1. Wholesale distribution of gasoline in various areas in the East and Southeast	Coordinated	Not publicly available	Gulf withdrew its tender offer after the FTC obtained a temporary restraining order prior to a preliminary injunction hearing
	2. Manufacture and sale of kerosene jet fuel in PADDs I and III and parts thereof	Coordinated	Not publicly available	As above
	3. Pipeline transportation of refined products into the Mid Atlantic and Northeast	Unilateral ⁵	Not publicly available	As above
Texaco/Getty ⁶ (1984)	1. Refining of light products in the Northeast ⁷	Unilateral	Not publicly available	Divestiture of Texaco refinery at Westville, NJ
	2. Pipeline transportation of light products into the Northeast	Unilateral / Coordinated ⁸	Not publicly available	Texaco required to support all Colonial pipeline expansions for ten years
	3. Pipeline transportation of light products into Colorado	Unilateral / Coordinated ⁹	Not publicly available	Divestiture of either Texaco pipeline interest or Getty refining interests
	4. Wholesale distribution of gasoline and middle distillates in various parts of the Northeast	Coordinated	Not publicly available	Divestiture of Getty marketing assets in the Northeast, and a Texaco terminal in Maryland
	5. Sale and transport of heavy crude oil in California	Unilateral ¹⁰	Not publicly available	Texaco required to supply crude oil and crude pipeline access to former Getty customers under specified terms
Chevron/ Gulf ¹¹ (1984)	1. Bulk supply of kerosene jet fuel in parts of PADDs I and III and the West Indies and Caribbean islands	Coordinated	Not publicly available	Divestiture of one of two specified Gulf refineries in Texas and Louisiana.

Figure 2 (continued)

Firms (Year)*	Markets Affected	Theory of Anti-competitive Effects	Concentration (HHI)	FTC Enforcement Action
	2. Transport of light products to the inland Southeast	Coordinated ¹²	Not publicly available	Divestiture of Gulf's interest in the Colonial Pipeline
	3. Wholesale distribution of gasoline and middle distillates in numerous markets in West Virginia and the South	Coordinated	Not publicly available	Divestiture of all Gulf marketing assets in six states and parts of South Carolina
	4. Transport of crude oil from West Texas/New Mexico	Unilateral / Coordinated ¹³	Not publicly available	Divestiture of Gulf interests in specified crude oil pipelines, including 51% of Gulf's interest in the West Texas Gulf Pipeline Company
Conoco/Asamera ¹⁴ (1986)	1. Bulk supply (from refineries and pipelines) of gasoline and other light products to eastern Colorado	Unilateral ¹⁵ / Coordinated	Not publicly available	FTC voted to seek preliminary injunction; parties abandoned the transaction
	2. Purchasing of crude oil in the Denver-Julesberg Basin of northeastern Colorado	Unilateral	Not publicly available	As above
PRI/Shell ¹⁶ (1987)	1. Terminaling and marketing of light petroleum products on the individual island of Oahu, HI	Unilateral / Coordinated	Not publicly available	FTC won preliminary injunction in U.S. District Court; prior approval required for future acquisitions
	2. Terminaling and marketing of light petroleum products on the individual islands of Maui, Hawaii, and Kauai in the state of Hawaii (potential competition)	Unilateral / Coordinated	Not publicly available	As above
Sun/Atlantic ¹⁷ (1988)	Terminaling and marketing of light products in Williamsport, PA and Binghamton, NY	Coordinated	Not publicly available	Divestiture of terminal and associated owned retail outlets in each area
Shell/Texaco ¹⁸ (1997)	1a. Refining of gasoline for the Puget Sound area	Unilateral / Coordinated	Post-merger 3812 Change 1318	Divestiture of Shell refinery at Anacortes, WA; Shell jobbers and dealers given option to contract with purchaser
	1b. Refining of jet fuel for the Puget Sound area	Unilateral / Coordinated	Post-merger 5248 Change 481	As above

Figure 2 (continued)

Firms (Year)*	Markets Affected	Theory of Anti-competitive Effects	Concentration (HHI)	FTC Enforcement Action
	2a. Refining of gasoline for the Pacific Northwest	Unilateral / Coordinated	Post-merger 2896 Change 561	As above
	2b. Refining of jet fuel for the Pacific Northwest	Unilateral / Coordinated	Post-merger 2503 Change 258	As above
	3. Refining of "CARB" gasoline for California	Unilateral / Coordinated	Post-merger 1635 Change 154	As above
	4. Transportation of undiluted heavy crude oil to San Francisco Bay area for refining of asphalt	Unilateral ¹⁹	Not applicable	Ten year extension of crude oil supply agreement.
	5. Pipeline transportation of refined light products to the inland Southeast U.S.	Coordinated ²⁰	Pre-merger >1800	Divestiture of either party's pipeline interest
	6. CARB gasoline marketing in San Diego County, California	Coordinated	Post-merger 1815 Change 250	Divestiture to a single entity of retail outlets with specified individual and combined volume
	7. Terminating and marketing of gasoline and diesel fuel on the island of Oahu, Hawaii	Coordinated	Post-merger 2160 Change 267	Divestiture of either Shell's or Texaco's terminal and associated retail outlets
BP/ Amoco ²¹ (1998)	1. Terminating of gasoline and other light products in nine separate metropolitan areas, mostly in the Southeast U.S.	Coordinated	Post-merger range >1500 - >3600 Change >100	Divestiture of a terminal in each geographic market
	2. Wholesale sale of gasoline in thirty cities or metropolitan areas in the Southeast U.S. and parts of Ohio and Pennsylvania	Coordinated	Post-merger range >1400->1800 Change >100	Divestiture of BP's or Amoco's owned retail outlets in eight geographic areas; in all 30 areas jobbers and open dealers given option to cancel without penalty
Exxon/ Mobil ²² (1999)	1. Gasoline marketing in at least 39 metro areas in the Northeast (Maine to New York) and Mid-Atlantic (New Jersey to Virginia) regions of the U.S.	Unilateral / Coordinated	Post-merger range from 1000-1800 Change >100 to Post-merger >1800 Change >50 (all inferred)	Divestiture of all Exxon (Mobil) owned outlets and assignment of agreements in the Northeast (Mid-Atlantic) region

Figure 2 (continued)

Firms (Year)*	Markets Affected	Theory of Anti-competitive Effects	Concentration (HHI)	FTC Enforcement Action
	2. Gasoline marketing in five metro areas of Texas	Unilateral / Coordinated	Post-merger range from 1000-1800 Change >100 to Post-merger >1800 Change >50 (all inferred)	Divestiture of Mobil's retail outlets and supply agreements
	3. Gasoline marketing in Arizona (potential competition)	Coordinated	Not applicable	Termination of Exxon's option to repurchase retail outlets previously sold to Tosco
	4. Refining and marketing of "CARB" gasoline in California	Unilateral / Coordinated	Post-merger 1699 Change 171 (measured by refining capacity)	Divestiture of Exxon's refinery at Benicia, CA, and all of Exxon's marketing assets in CA, including assignment to the refinery buyer of supply agreements for 275 outlets
	5. Refining of Navy jet fuel on the west coast	Unilateral / Coordinated	Post merger >1800 (inferred) Change >50 (inferred)	As above
	6. Terminaling of light products in Boston, MA and Washington, DC areas	Unilateral / Coordinated	Post merger >1800 (inferred) Change >50 (inferred)	Divestiture of a Mobil terminal in each area
	7. Terminaling of light products in Norfolk, VA area.	Unilateral / Coordinated	Post merger >1800 (inferred)	Continuation of competitor access to wharf
	8. Transportation of light products to the Inland Southeast	Coordinated ²³	Post-merger >1800 (inferred)	Divestiture of either party's pipeline interest
	9. Transportation of Crude Oil from the Alaska North Slope	Coordinated ²⁴	Post-merger >1800 (inferred) Change >50 (inferred)	Divestiture of Mobil's 3% interest in TAPS
	10. Terminaling and gasoline marketing assets on Guam	Unilateral / Coordinated	Post-merger 7400 Change 2800	Divestiture of Exxon's terminal and retail assets on the island

Figure 2 (continued)

Firms (Year)*	Markets Affected	Theory of Anti-competitive Effects	Concentration (HHI)	FTC Enforcement Action
	11. Paraffinic base oil refining and marketing in the U.S. and Canada	Unilateral / Coordinated	Post-merger range 1000 to 1800 (inferred) Change >100 (inferred)	Relinquishment of contractual control over Valero's base oil production; long term supply agreements at formula prices for volume of base oil equal to Mobil's U.S. production
	12. Refining and marketing of jet turbine oil worldwide	Unilateral ²⁵	Pre-merger >5625	Divestiture of Exxon jet turbine oil manufacturing facility at Bayway, NJ, with related patent licenses and intellectual property
BP/ARCO ²⁶ (2000)	1. Production and sale of Alaska North Slope ("ANS") crude oil	Unilateral ²⁷	Post-merger >5476 Change 2640	FTC filed in federal District Court, then reached consent; divestiture of all of ARCO's Alaska assets ²⁸
	2. Bidding for ANS crude oil exploration rights in Alaska	Unilateral ²⁹	Post-merger >1800 (inferred) Change >50 (inferred)	As above
	3. Transportation of ANS crude oil on the Trans-Alaska Pipeline System	Unilateral / Coordinated ³⁰	Post-merger >5600 Change 2200	As above
	4. Future commercialization of ANS natural gas (potential competition)	Unilateral / Coordinated ³¹	Not applicable	As above
	5. Crude oil transportation and storage services at Cushing, Oklahoma	Unilateral ³²	Post-merger >1849 for storage >2401 for pipelines >9025 for trading services Changes >50 (inferred)	Divestiture of all of ARCO's pipeline interests and storage assets related to Cushing
Chevron/Texaco ³³ (2001)	1. Gasoline marketing in numerous separate markets in 23 western and southern states	Coordinated	Post-merger range from 1000-1800 Change >100 to Post merger >1800 Change >50 (all inferred)	Divestiture (to Shell, the other owner of Equilon) of Texaco's interests in the Equilon and Motiva joint ventures (including Equilon's interests in the Explorer and Delta Pipelines)
	2. Marketing of CARB gasoline in California	Unilateral / Coordinated	Post-merger range >2000 Change >50	As above

Figure 2 (continued)

Firms (Year)*	Markets Affected	Theory of Anti-competitive Effects	Concentration (HHI)	FTC Enforcement Action
	3. Refining and bulk supply of CARB gasoline for California	Unilateral / Coordinated	Post-merger 2000 Change 500	As above
	4. Refining and bulk supply of gasoline and jet fuel in the Pacific Northwest	Coordinated	Post-merger > 2000 Change > 600	As above
	5. Refining and bulk supply of RFG II gasoline for the St. Louis metropolitan area	Coordinated ³⁴	Post-merger > 5000 Change > 1600	As above
	6. Terminaling of gasoline and other light products in various geographic markets in California, Arizona, Hawaii, Mississippi, and Texas	Unilateral / Coordinated	Post-merger range >2000 Change >300	As above
	7. Crude oil transportation via pipeline from California's San Joaquin Valley	Coordinated	Post-merger > 3300 Change >800	As above
	8. Crude oil transportation from the offshore Eastern Gulf of Mexico	Unilateral ³⁵	Post-merger >1800 (inferred) Change >50 (inferred)	As above
	9. Natural gas transportation from certain parts of the Central Gulf of Mexico offshore area	Unilateral / Coordinated ³⁶	Post-merger >1800 (inferred) Change >50 (inferred)	Divestiture of Texaco's 33% interest in the Discovery Gas Transmission System
	10. Fractionation of natural gas liquids at Mont Belvieu, Texas	Unilateral / Coordinated ³⁷	Not publicly available	Divestiture of Texaco's minority interest in the Enterprise fractionator
	11. Marketing of aviation fuels to general aviation in the Southeast U.S.	Unilateral / Coordinated	Post-merger > 1900 Change > 250	Divestiture of Texaco's general aviation business to an up-front buyer
	12. Marketing of aviation fuels to general aviation in the western U.S.	Unilateral / Coordinated	Post-merger > 3400 Change > 1600	As above
Valero/UDS ³⁸ (2001)	1. Refining and Bulk Supply of CARB 2 gasoline for northern California	Unilateral / Coordinated	Post-merger > 2700 Change > 750	Divestiture of UDS's refinery at Avon, CA, bulk gasoline supply contracts, and 70 owned and operated retail outlets

Figure 2 (continued)

Firms (Year)*	Markets Affected	Theory of Anti-competitive Effects	Concentration (HHI)	FTC Enforcement Action
Phillips/ Conoco ³⁹ (2002)	2. Refining and Bulk Supply of CARB 3 gasoline for northern California	Unilateral / Coordinated	Post-merger > 3050 Change >1050	As above
	3. Refining and Bulk Supply of CARB 2 gasoline for state of California	Coordinated	Post-merger > 1750 Change > 325	As above
	4. Refining and Bulk Supply of CARB 3 gasoline for state of California	Coordinated	Post-merger >1850 Change > 390	As above
	1. Bulk supply (via refining or pipeline) of light petroleum products in eastern Colorado	Coordinated	Post-merger > 2600 Change > 500	Divestiture of Conoco refinery in Denver and all of Phillips marketing assets in eastern Colorado
	2. Bulk supply of light petroleum products in northern Utah	Coordinated	Post-merger > 2100 Change > 300	Divestiture of Phillips refinery in Salt Lake City and all of Phillips marketing assets in northern Utah
	3. Terminating services in the Spokane, Washington area	Unilateral / Coordinated	Post-merger 5000 Change > 1600	Divestiture of Phillips' terminal at Spokane
	4. Terminating services for light products in the Wichita, Kansas area	Unilateral / Coordinated	Post-merger > 3600 Change > 750	Terminal throughput agreement with option to buy 50% undivided interest in Phillips terminal
	5. Bulk supply of propane in southern Missouri	Unilateral / Coordinated	Post-merger 3700 Change > 1200	Divestiture of Phillips' propane business at Jefferson City and E. St. Louis; contracts giving buyer nondiscriminatory access to market at Conway, KS
	6. Bulk supply of propane in St. Louis	Unilateral / Coordinated	Post-merger > 7700 Change > 1000	As above
	7. Bulk supply of propane in southern Illinois	Unilateral / Coordinated	Post-merger > 7700 Change > 1000	As above
8. Natural gas gathering by pipeline in certain parts of western Texas and southeastern New Mexico (Permian Basin)	Unilateral ⁴⁰	Not publicly available	Divestiture of Conoco's gas gathering assets in each area	

Figure 2 (continued)

Firms (Year)*	Markets Affected	Theory of Anti-competitive Effects	Concentration (HHI)	FTC Enforcement Action
	9. Fractionation of natural gas liquids at Mont Belvieu, Texas	Unilateral / Coordinated ⁴¹	Not publicly available	Prohibitions on transfers of competitive information; voting requirements for capacity expansion
Shell/Pennzoil Quaker State ⁴² (2002)	Refining and marketing of paraffinic base oil in U.S. and Canada	Unilateral / Coordinated	Post-merger >2300 Change >700	Divestiture of Pennzoil interest in lube oil joint venture; Pennzoil sourcing of lube oil from third party lube oil refiner frozen at current level

Source: Compiled from FTC complaints, orders, and analyses to aid public comment.

Note:

*Figure 2 chronologically lists enforcement actions, beginning with the FTC's first challenge of a major petroleum merger in 1981. The year cited is the year in which the merger was proposed and most of the FTC activity occurred; in some cases, a consent order was not final until the following calendar year.

¹ Mobil/Marathon (1981), Memorandum of Points and Authorities in Support of the Federal Trade Commission's Complaint for Temporary Restraining Order and for Preliminary Injunction ("Mobil/Marathon Complaint Memorandum") 6, 26-27. 1982 Merger Report.

² While the theories of anticompetitive effects were not always clearly articulated in the earliest petroleum merger investigations, a careful reading of the complaint and accompanying materials suggests the type of effects the investigators had in mind. The classifications of theories for these early cases listed in Figure 2 are therefore based in part on the authors' interpretation of the complaints, court documents, and staff case memoranda. In the case of Mobil and Marathon, the merger would "enhance Mobil's market power" in the relevant markets by "doubling and tripling its share," (Mobil/Marathon Complaint Memorandum 26, 29) suggesting a likelihood of unilateral anticompetitive effects, and that it would increase concentration in already concentrated markets and remove a firm that had tended to act as a maverick, pricing aggressively and selling large volumes to independent retailers (Mobil/Marathon Complaint Memorandum 29-30) – pointing toward a theory of coordinated effects.

³ The Complaint alleged that the firms' combined shares of wholesale gasoline sales exceeded 24.5% in eighteen SMSAs, reaching 44.0% in one city and 49.4% in another. While HHIs were not calculated at that time, the parties' contribution to HHI (that is, the sum of their squared shares) can be calculated from the market share data given (Mobil/Marathon Complaint Memorandum 27, Table 1). The parties' pre-merger contribution to HHI ranged between 500 and 1000 for ten of the eighteen SMSAs and exceeded 1000 for another three.

⁴ Gulf/Cities Service (1982), Complaint for a Temporary Restraining Order and Preliminary Injunction Pursuant to Section 13(b) of the FTC Act ("Gulf/Cities Service Complaint"), ¶ 19-22. 1982 Merger Report.

⁵ Gulf and Cities Service owned 16.78% and 13.98%, respectively, of Colonial Pipeline. Since the merged firm's share would exceed 25%, it would be able to unilaterally block future pipeline expansion under the pipeline's rules. Gulf/Cities Service Complaint ¶ 19.

⁶ Texaco/Getty (1984), Complaint ¶ 15-59.

⁷ At this time pipeline transport from the Gulf Coast was not considered to be in the relevant market for "the manufacture of refined light products." Texaco/Getty (1984), Complaint ¶ 19-21.

⁸ Texaco owned 14.3% of Colonial Pipeline, "the dominant means of transporting additional refined light products into the Northeast region, supplying approximately 36.9 percent of total consumption . . . in 1982." Getty owned 100% of the Getty Eastern Products Pipeline. Texaco/Getty (1984), Complaint ¶ 33-35.

⁹ Texaco owned 40% of the Wyco Pipeline, one of four pipelines delivering refined product to Colorado, while Getty owned 50% of the Chase Pipeline. Texaco/Getty (1984), Complaint ¶ 29-31.

¹⁰ Both Texaco and Getty owned refineries and proprietary pipeline systems in the relevant market. While Texaco produced less heavy crude oil than it could refine, Getty produced more than it could refine on the West Coast. The Complaint alleged that the merger was “likely to increase Texaco’s incentives and ability to deny non-integrated refiners heavy crude oil and access to proprietary pipelines.” Texaco/Getty (1984), Complaint ¶ 50-57.

¹¹ Chevron/Gulf (1984), Complaint ¶ 15-41.

¹² Gulf owned the largest share, 16.78%, of Colonial Pipeline, while Chevron owned the second largest share, 27.13%, of Plantation Pipeline, Colonial’s only direct competitor. Chevron/Gulf (1984), Complaint ¶ 25-26.

¹³ Chevron owned a proprietary pipeline running from the West Texas/New Mexico producing area to El Paso, while Gulf owned the largest share of the West Texas Gulf Pipeline running from the producing area to the Gulf Coast and the MidValley Pipeline at Longview, TX. Chevron/Gulf (1984), Complaint ¶ 38-39.

¹⁴ Conoco/Asamera (1986), Complaint that the Commission voted to pursue.

¹⁵ The Preliminary Injunction Complaint in Conoco/Asamera alleged that the merger would create a dominant firm in the relevant markets. Conoco/Asamera (1986), Complaint that the Commission voted to pursue ¶ 15.

¹⁶ PRI/Shell (1987), Complaint ¶ 6-12.

¹⁷ Sun/Atlantic (1988), Complaint and Order.

¹⁸ Shell/Texaco (1997), Complaint ¶ 10-37; Analysis of Proposed Consent Order to Aid Public Comment.

¹⁹ The Texaco heated pipeline was the only pipeline supplying undiluted heavy crude oil to the San Francisco Bay area, where Shell and a competitor refined asphalt. Shell/Texaco (1997), Complaint ¶ 15.

²⁰ Shell owned 24% of Plantation Pipeline and Texaco owned 14% of Colonial Pipeline. Shell/Texaco (1997), Complaint ¶ 32.

²¹ BP/Amoco (1998), Complaint ¶ 8-21; Analysis of Proposed Consent Order to Aid Public Comment.

²² Exxon/Mobil (1999), Complaint ¶ 8-54; Analysis of Proposed Consent Order to Aid Public Comment.

²³ Exxon owned 49% of Plantation Pipeline and Mobil owned 11% of Colonial Pipeline. Exxon/Mobil (1999), Complaint ¶ 13.

²⁴ Exxon and Mobil owned 20% and 3%, respectively, of the Trans-Alaska Pipeline System (TAPS), the only means of transporting Alaskan North Slope (ANS) crude oil to the port facilities at Valdez, AK. Exxon/Mobil (1999), Complaint ¶ 14.

²⁵ Exxon and Mobil together accounted for 75% of worldwide sales, and 90% of worldwide sales to commercial airlines. Exxon/Mobil (1999), Analysis of Proposed Consent Order to Aid Public Comment.

²⁶ BP/ARCO (2000), Complaint ¶ 10-66; Analysis of Proposed Consent Order to Aid Public Comment.

²⁷ BP had a 44% share of ANS crude oil production at that time, while ARCO had a 30% share, implying that their contribution to the HHI was 2836. Their contribution to the post-merger HHI would have been 5476. BP/ARCO (2000), Analysis of Proposed Consent Order to Aid Public Comment.

²⁸ The ARCO Alaska assets divested included crude oil exploration and production assets, 22% interest in TAPS, and specialized tanker ships. BP/ARCO (2000), Analysis of Proposed Consent Order to Aid Public Comment.

²⁹ BP and ARCO together won 60% of the Alaska state lease auctions during the 1990s, while the top four bidders won 75%. BP/ARCO (2000), Analysis of Proposed Consent Order to Aid Public Comment.

³⁰ BP (50%) and ARCO (22%) both held interests in TAPS. Their contribution to the HHI would have been 2984 pre-merger and 5184 post-merger. There were five other owners of TAPS; Exxon held 20% (see note 24 *supra*), and the four others’ shares are not publicly available; including Exxon and assigning the four other firms equal shares yields a lower bound for the HHI of 3400 pre-merger or of 5600 post-merger. BP/ARCO (2000), Analysis of Proposed Consent Order to Aid Public Comment.

³¹ The FTC alleged that BP Amoco, ARCO, and Exxon Mobil were the only three companies that held “sufficiently large volumes of gas reserves to have the potential to develop those reserves for significant commercial use.” BP/ARCO (2000), Analysis of Proposed Consent Order to Aid Public Comment.

³² BP and ARCO together accounted for 43% of storage capacity, 49% of pipeline capacity, and 95% of trading services at Cushing. BP/ARCO (2000), Analysis of Proposed Consent Order to Aid Public Comment.

³³ Chevron/Texaco (2001), Complaint ¶ 12-57; Analysis of Proposed Consent Order to Aid Public Comment.

³⁴ Chevron held a 17% interest in Explorer Pipeline, and Texaco and Equilon (Texaco’s joint venture with Shell) together held 36%. Explorer is the largest pipeline supplying bulk Phase II Reformulated Gasoline (RFG II) to St. Louis; at the time, Equilon also had a long-term contract that gave it control of much of the output of a local St. Louis area refinery. Chevron/Texaco (2001), Analysis of Proposed Consent Order to Aid Public Comment.

³⁵ Equilon owned 100% of Delta, and Chevron owned 50% of Cypress; these two pipelines were the only means of transporting crude from the Eastern Gulf of Mexico to on-shore terminals. Chevron/Texaco (2001), Analysis of Proposed Consent Order to Aid Public Comment.

³⁶ Texaco owned 33% of the Discovery Gas Transmission System; Chevron and its affiliate Dynegy together owned 77% of the Venice Gathering System, one of only two other pipeline systems for transporting natural gas from this area. Chevron/Texaco (2001), Analysis of Proposed Consent Order to Aid Public Comment.

³⁷ Chevron owned 26% of Dynegy, which held large interests in two of the four fractionators in the market, and had representation on Dynegy’s Board of Directors; Texaco held a minority interest in a third. The merger might have led to the sharing of competitively sensitive information and might also have permitted the merged firm to exercise unilateral market power. Chevron/Texaco (2001), Analysis of Proposed Consent Order to Aid Public Comment.

³⁸ Valero/UDS (2001), Complaint ¶ 13-21; Analysis of Proposed Consent Order to Aid Public Comment.

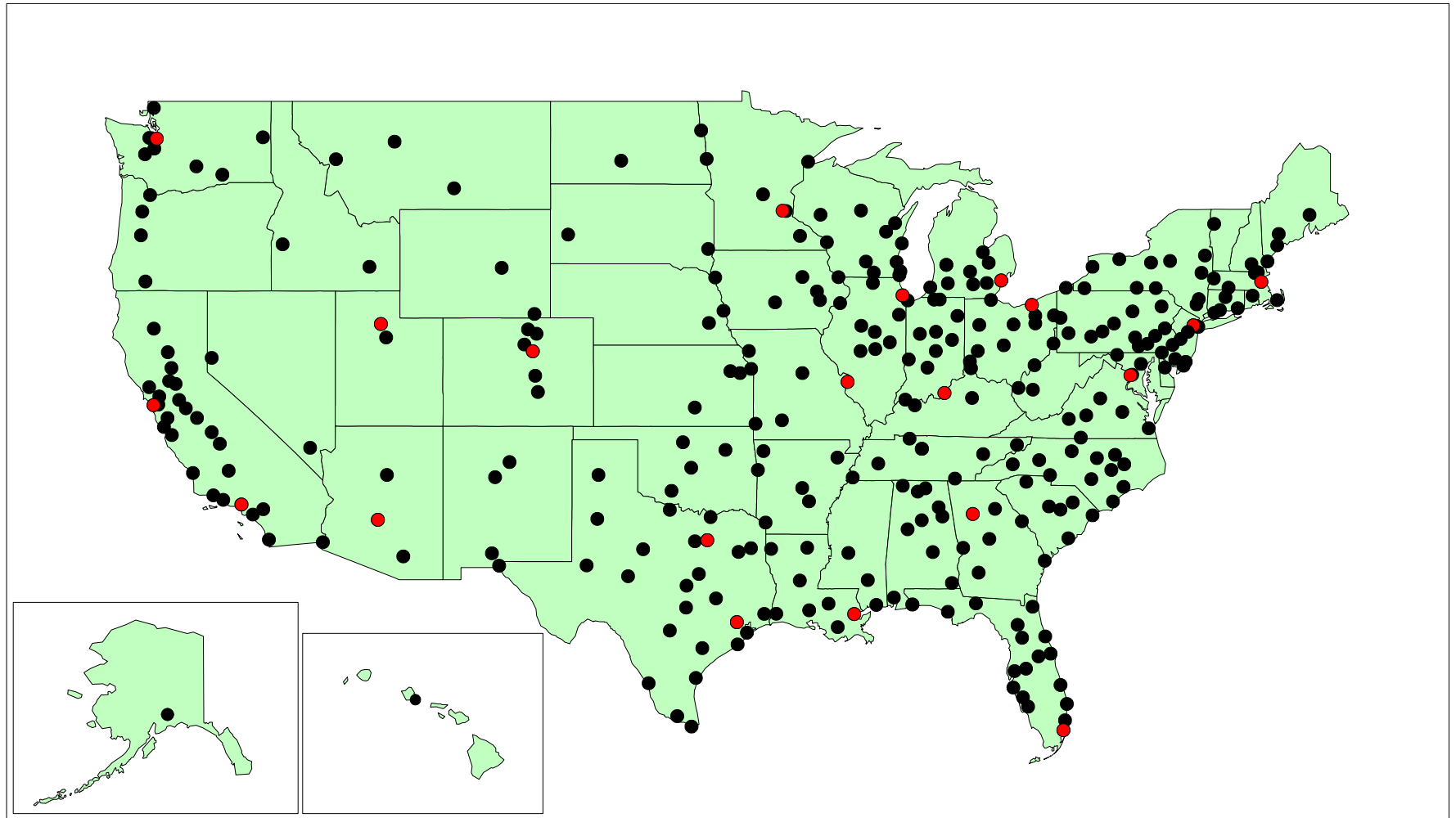
³⁹ Phillips/Conoco (2002), Complaint ¶ 8-135; Analysis of Proposed Consent Order to Aid Public Comment.

⁴⁰ Phillips owned 30% of Duke Energy Field Services (DEFS); DEFS and Conoco were the only gatherers in the Permian Basin. Phillips/Conoco (2002), Complaint ¶ 69-71.

⁴¹ Phillips owned 30% of DEFS, with representation on its Board of Directors; DEFS held an interest in two of the four fractionators in the market. Conoco partially owned and operated a third, Gulf Coast Fractionators. The merger would have given the combined firm veto power over significant expansion projects and might have led to the sharing of competitively sensitive information. Phillips/Conoco (2002), Complaint ¶ 76-79.

⁴² Shell/Pennzoil-Quaker State (2002), Complaint, Analysis of Proposed Consent Order to Aid Public Comment.

Figure 3 - FTC Gasoline Price Monitoring



- Retail Monitoring
- Retail and Wholesale Monitoring

Figure 4

Phoenix Wholesale Rack Prices vs. Predicted High & vs. Los Angeles

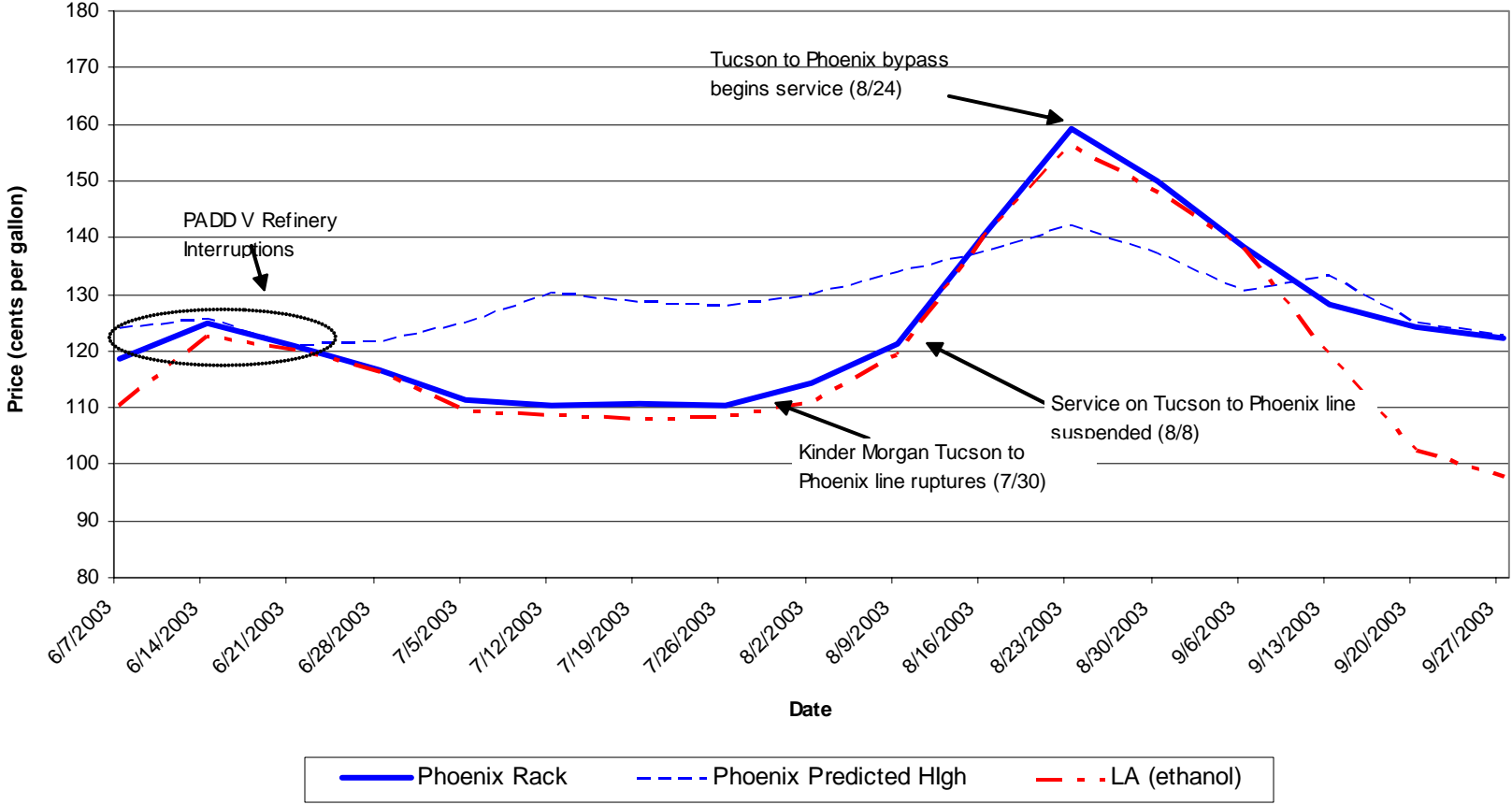


Figure 5

Actual and Predicted Price of Gasoline in Atlanta, Georgia
January 2001 - February 2004

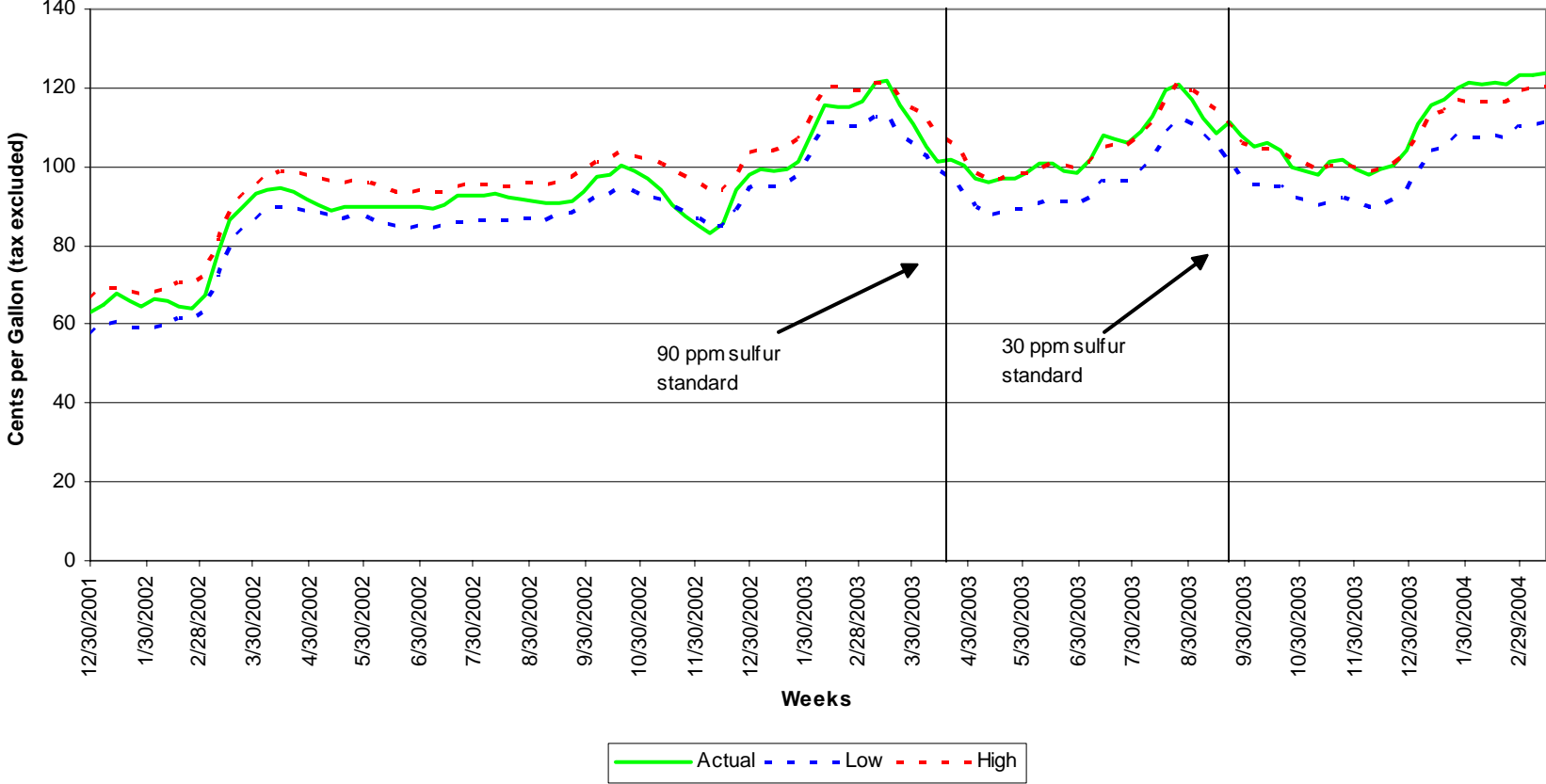


Figure.6

**Actual and Predicted High Price of RFG Gasoline in New York, New York
June 2003-January 2004**

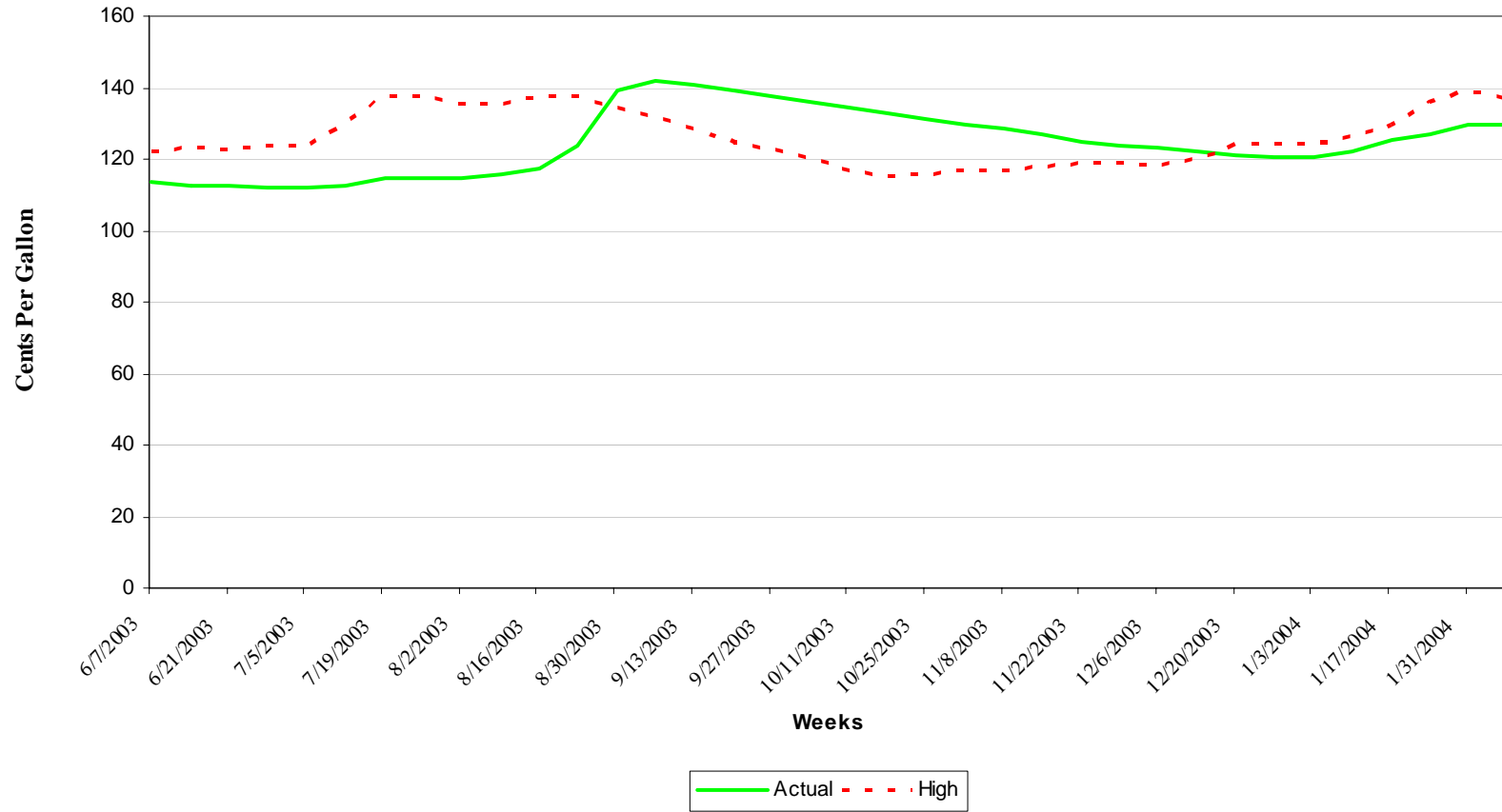


Figure 7

Retail Gasoline Prices in Reno (Excluding Tax)

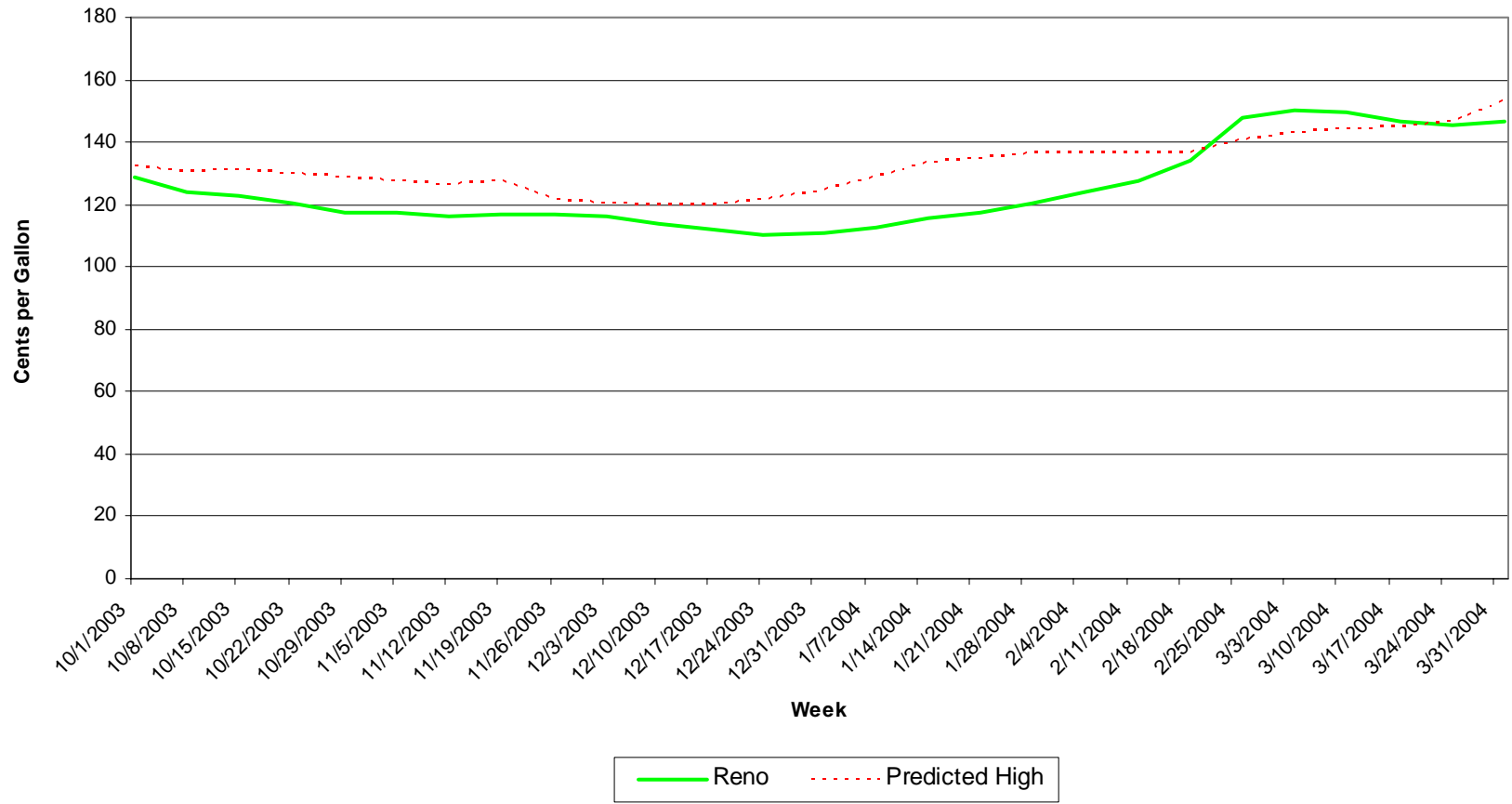


Figure 8

Retail Gasoline Prices in Las Vegas (Excluding Tax)

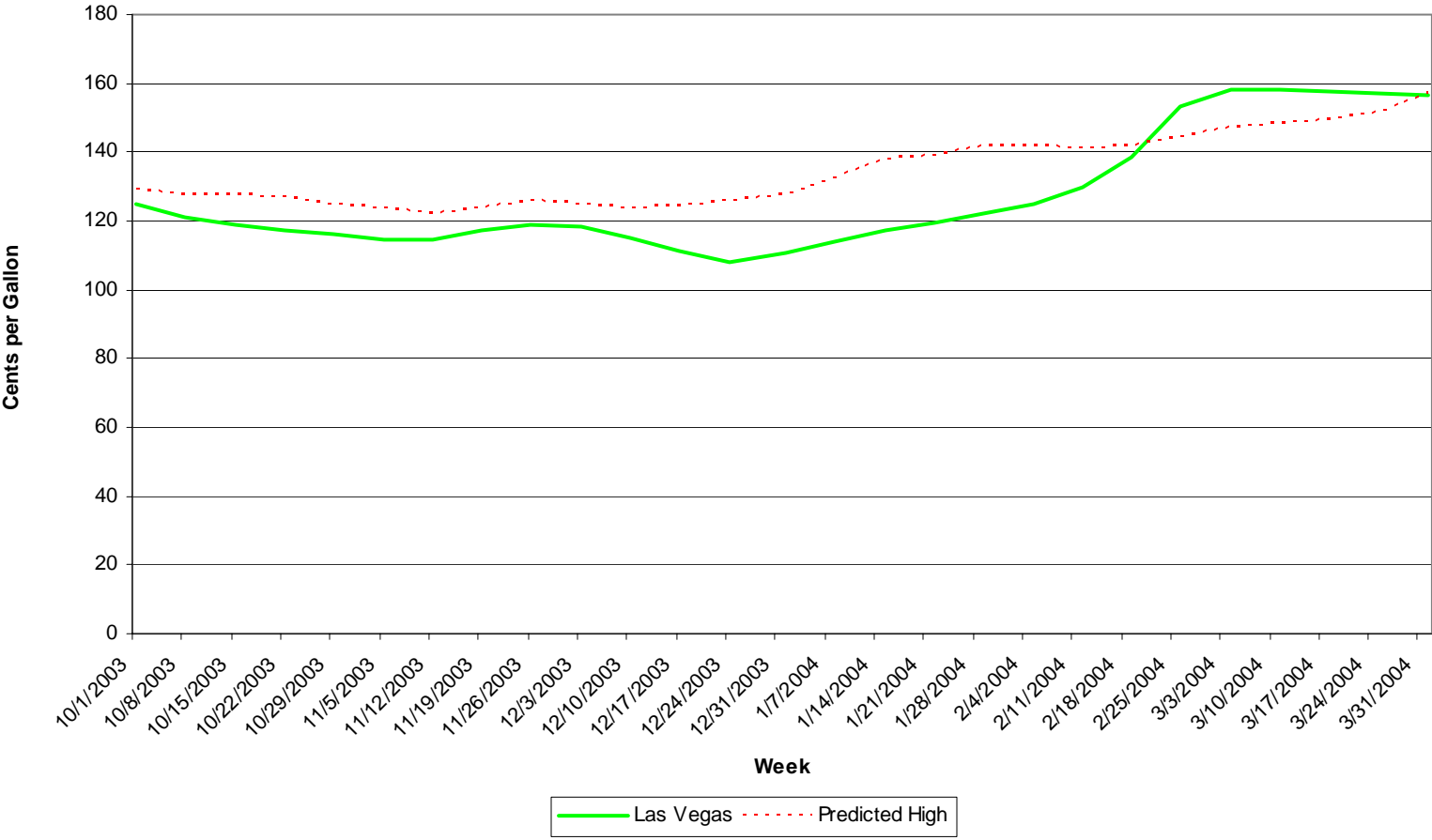


Figure 9

Retail Gasoline Prices in San Francisco (Excluding Tax)

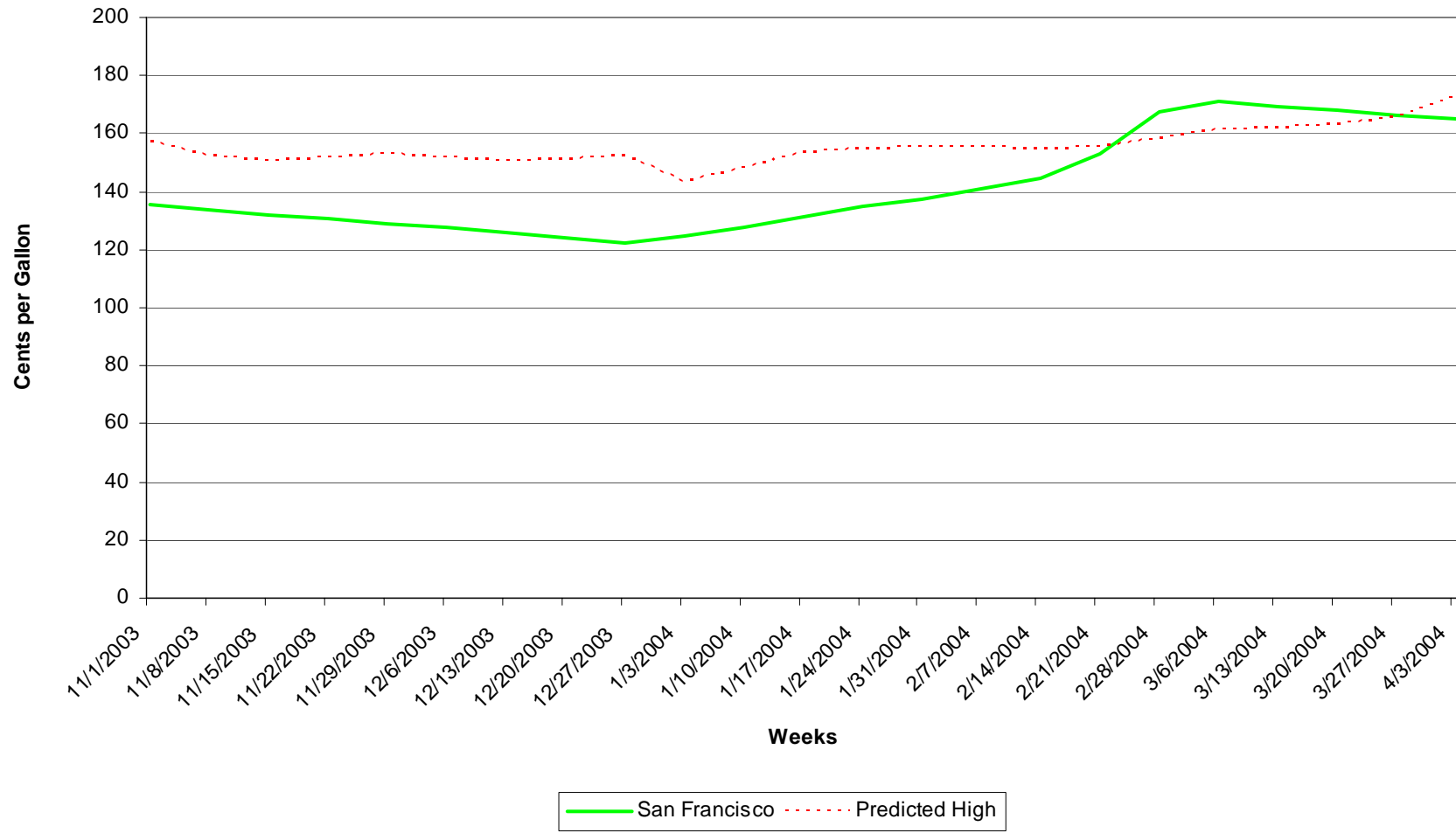


Figure 10

Retail Gasoline Prices in Los Angeles (Excluding Tax)

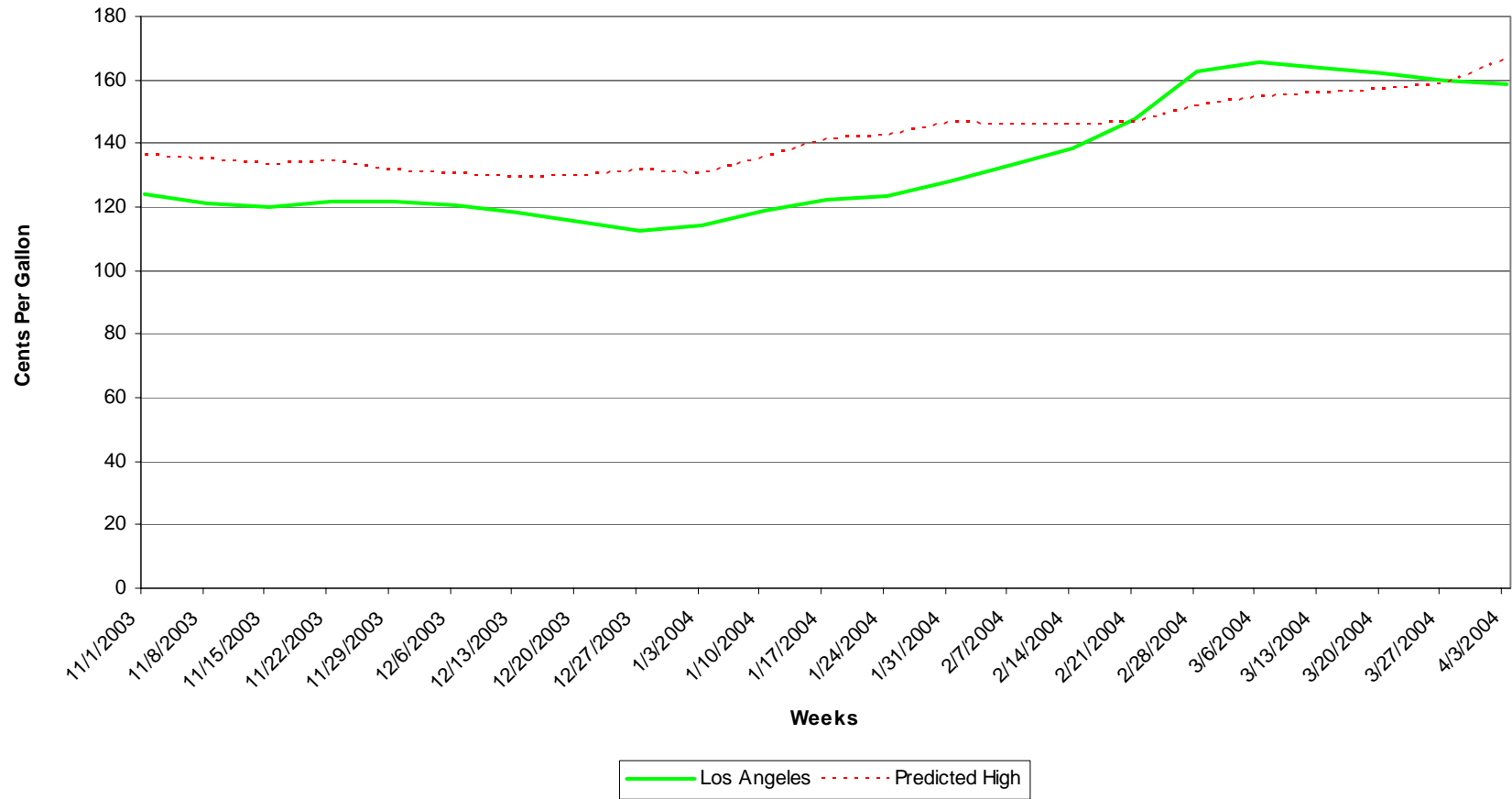


Figure 11

San Francisco, CA Wholesale Rack Prices
Carb RFG w/ 7.7% ethanol

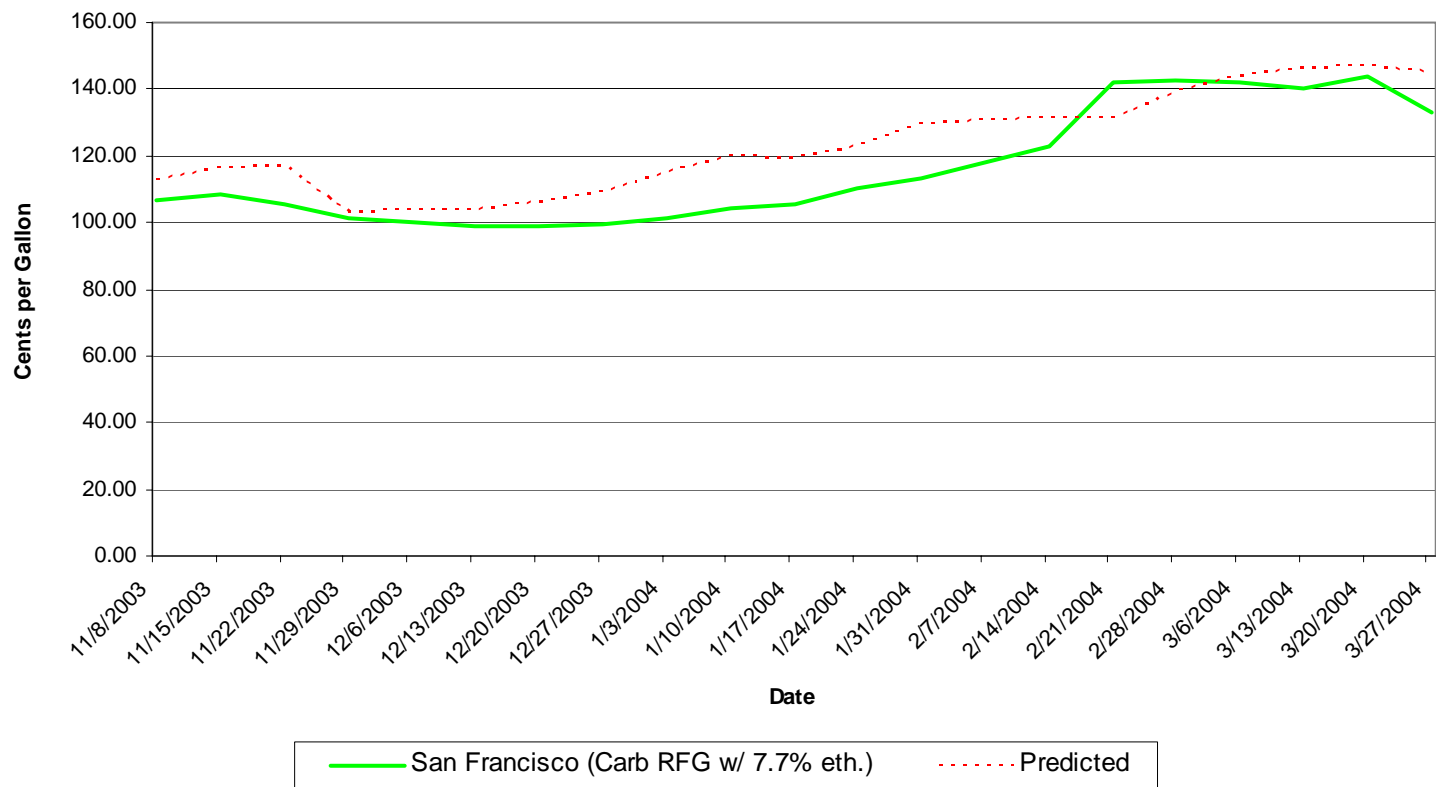


Figure 12

Los Angeles, CA Wholesale Rack Prices
Carb RFG w/ 7.7% ethanol

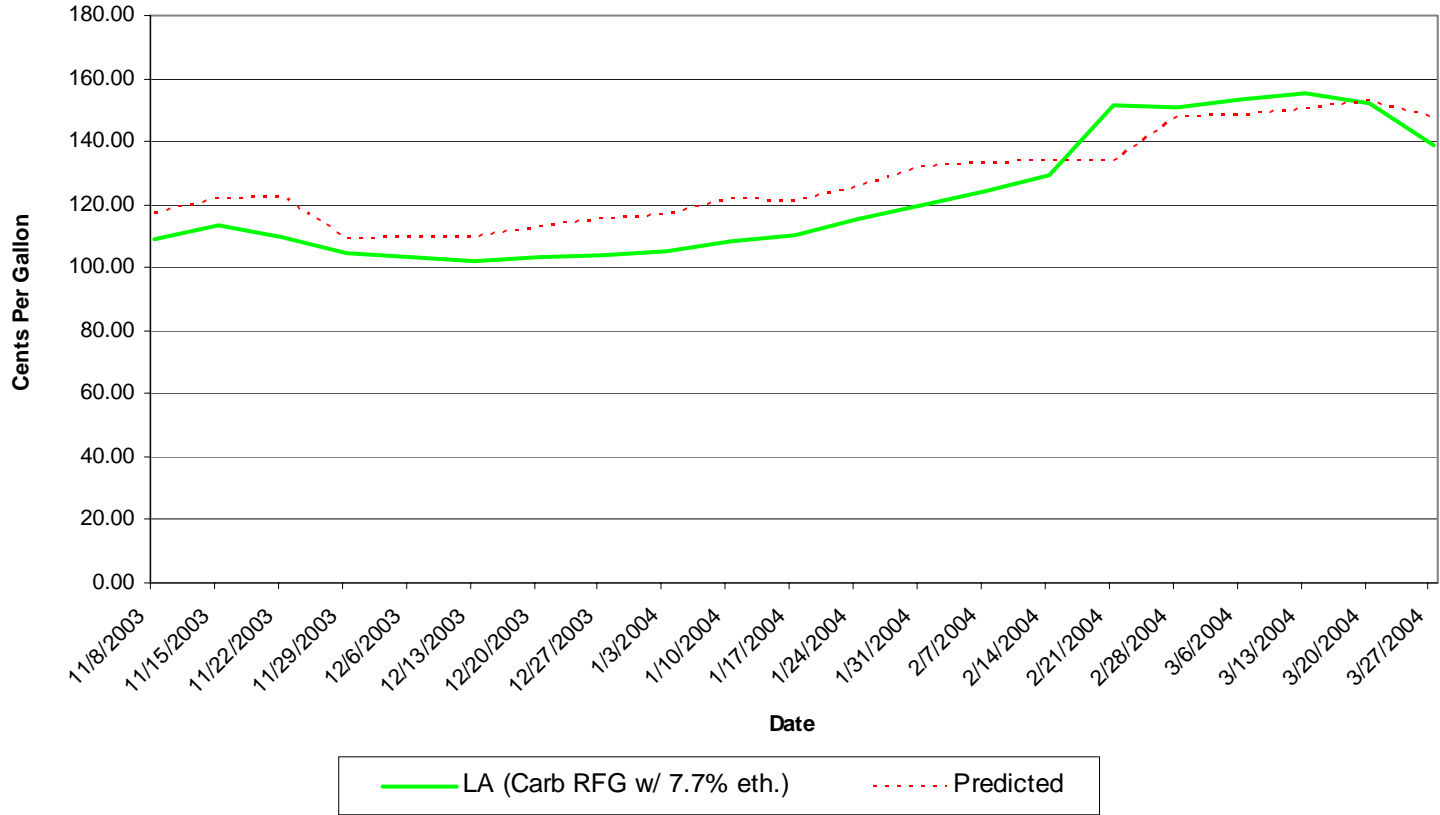


Figure 13

**California Production and Inventories(2004 relative to 2003) and
LA Rack Prices (relative to Houston)**

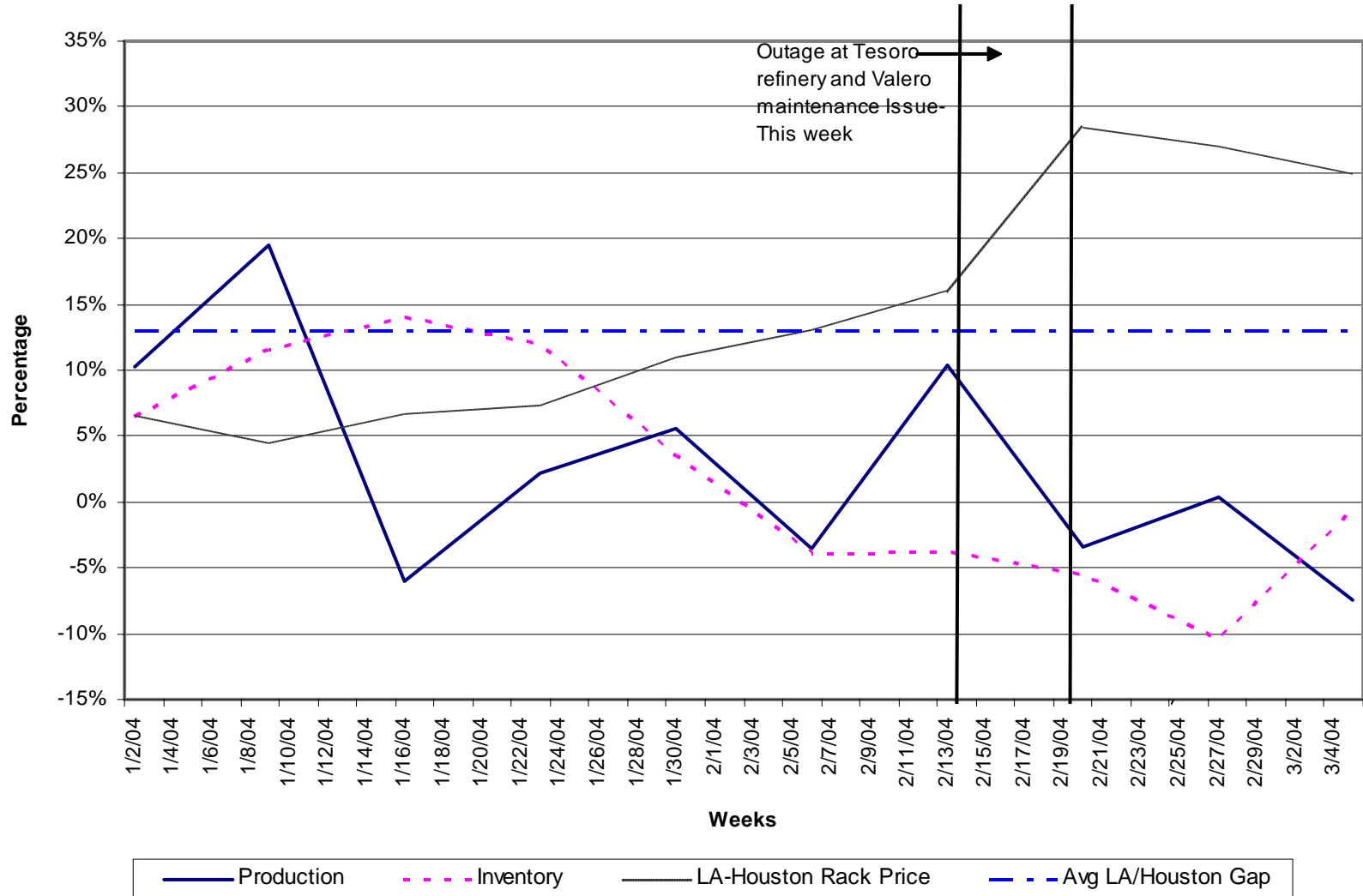


Figure 14 - Size Distribution of Operating Refineries 1986 and 2003

Operating Distillation Capacity (barrels per day)	1986		2003	
	Number of Refineries	Percent of Capacity	Number of Refineries	Percent of Capacity
1-10,000	41	1.8	14	0.5
10,001-25,000	25	2.9	20	2.1
25,001-50,000	40	10.6	12	2.9
50,001-100,000	38	19.2	37	15.9
100,001-200,000	27	26.2	29	27.6
Greater than 200,000	19	39.4	29	51.0
Total ¹	190		141	

Source: EIA, *Petroleum Supply Annual*, (1985, 2002). Capacity as at January 1 of year shown.

Note: ¹Excludes refineries that were classified as "operable" by EIA, but listed with zero operating capacity.

Figure 15 - Refinery closures, 1995-2003

<i>Year</i>	<i>Owner</i>	<i>Location</i>	<i>PADD</i>	<i>Crude Oil Distillation Capacity (bbl/cd)</i>
1995	Indian Refining	Lawrenceville, IL	2	80,750
	Cyril Petrochemical Corp.	Cyril, OK	2	7,500
	Powerine Oil Co.	Santa Fe Springs, CA	5	46,500
	Sunland Refining Corp.	Bakersfield, CA	5	12,000
1996	Barrett Refg. Corp.	Custer, OK	2	10,500
	Laketon Refg.	Laketon, IN	2	11,100
	Total Petroleum	Arkansas City, KS	2	56,000
	Arcadia Refg. & Mktg.	Lisbon, LA	3	7,350
	Barrett Refg. Corp.	Vicksburg, MS	3	8,000
	Intermountain Refg. Co.	Fredonia, AZ	5	3,800
1997	Gold Line Refg. Ltd.	Lake Charles, LA	3	27,600
	Canal Refg. Co.	Church Point, LA	3	9,500
	Pacific Refg. Co.	Hercules, CA	5	50,000
1998	Gold Line Refining Ltd.	Jennings, LA	3	12,000
	Petrolite Corp.	Kilgore, TX	3	600
	Shell Oil Co.	Odessa, TX	3	28,300
	Pride Refg. Inc.	Abilene, TX	3	42,750
	Sound Refg. Inc.	Tacoma, WA	5	40,000
1999	TPI Petro, Inc.	Alma, MI	2	51,000
2000	Calumet Lubricants Co.	Rouseville, PA	1	12,800
	Berry Petroleum Co.	Stephens, AR	3	6,700
	Chevron U.S.A. Inc.	Richmond Beach, WA	5	0
2001	Premcor Refining Group	Blue Island, IL	2	80,515
2002	Premcor Refining Group	Hartford, IL ¹	2	64,000
	American International	Lake Charles, LA	3	30,000
	Foreland Refining Corp.	Tonapah, NV	5	0
	Tricor Refining LLC	Bakersfield, CA	5	0
2003	No Refineries Closed			

Source: Energy Information Administration Forms EIA-810, "Monthly Refinery Report" and EIA-820, "Annual Refinery Report." Refineries with no vacuum distillation capacity may still have downstream capacity.

¹ConocoPhillips purchased some of the assets of the refinery in July 2003 to allow its Wood River, IL refinery to process heavier, lower cost crude oil. http://www.conocophillips.com/news/nr/073103_woodriver.asp.

Appendix

*Staff Analysis of General Accounting Office Report*¹

Bureau of Economics Federal Trade Commission

Introduction

The U.S. General Accounting Office's May 2004 report on effects of concentration and mergers in the petroleum industry considers an important subject with direct relevance for past and prospective antitrust policy in the petroleum industry.² The Commission takes its mandate to protect consumers against anticompetitive business practices and mergers very seriously and bases its enforcement decisions on sound legal and economic foundations. These decisions are frequently informed by well documented, careful empirical economic studies by Commission staff or such studies submitted to the Commission by respondents in law enforcement investigations. The Commission accords weight to such studies only when it is fully satisfied with their methodological soundness, the robustness of their results to alternative assumptions and specifications, and their replicability. The GAO report falls short of the standards that the Commission insists on in discharging its law enforcement responsibilities.

It is not possible at this point to assess completely the GAO report's conclusions, nor to

¹This Appendix on the GAO Report is a memorandum prepared by the staff of the FTC's Bureau of Economics and does not necessarily represent the views of the Commission or any individual Commissioner.

²U.S. General Accounting Office, *Energy Markets: Effects of Mergers and Market Concentration in the U.S. Petroleum Industry* (May 2004) (hereinafter, "GAO report"). As the Commission said in its August 2003 letter commenting on a draft of this report, the draft was fundamentally flawed. The relatively minor changes made in the report since then do not change that conclusion.

provide a full critique of its methodology. The report's econometric models, relevant data panels, and estimation procedures are poorly documented in many key respects. The report's claim that a researcher could replicate its results with the methodological descriptions it provides (assuming the researcher has the relevant data) is simply incorrect.³ Nevertheless, based on our present understanding, we believe that the GAO report is fundamentally flawed, and cannot provide a reliable foundation for conclusions regarding the competitive effects of changes in concentration or past mergers on prices in the petroleum industry.

In this analysis, we first present an overview of the GAO report that provides general observations and summarizes the report's key findings. We then provide a description of analytical problems common to both GAO's price-concentration study and its specific merger effects study. We address problems specific to each of these studies in the two sections that follow, and we close with a summary of our concerns.

General Observations

The core of the GAO report consists of two econometric analyses: a price-concentration study and a study of the effects of particular mergers on prices. GAO's price-concentration study seeks to describe the relationship between wholesale gasoline prices and concentration in

³For example, the report's description of how standard estimation techniques of a well known, proprietary statistical program (STATA) were modified is inadequate to permit a researcher to replicate the estimation method with reasonable confidence. Among other deficiencies, the report fails to document precisely how competitive overlaps at the rack were identified, which racks were assumed to be affected by which mergers, and precisely how alternative specifications (including ones that appeared or were mentioned in GAO's summer 2003 draft report, but not in its final report) yielded different results.

refinery capacity, measured at the PADD level, during 1994 through 2000.⁴ In its second study, GAO attempts to estimate the effects of eight petroleum company mergers completed during 1994 through 1999 on wholesale gasoline prices.

The wholesale gasoline prices used by GAO are posted rack prices adjusted for the price of crude oil. These are the posted prices for purchases by independent distributors (typically referred to in the industry as “jobbers”) that pick up gasoline at terminal racks for subsequent delivery to service stations. For the nation as a whole, more than half of all gasoline is sold at the rack, although this proportion varies regionally.⁵

The GAO report does *not* address the effects of concentration or mergers on retail pump prices.⁶ Rack wholesale prices and retail prices do not always move together, in part because rack prices do not necessarily measure actual wholesale transactions prices, which are also affected by discounts, and in part because significant quantities of gasoline reach the pump without going through jobbers.⁷

⁴PADD stands for Petroleum Administration for Defense District. PADD I consists of the East Coast. PADD II consists of the Midwest. PADD III includes the Gulf Coast. PADD IV consists of the Rocky Mountain region. PADD V is made up of the West Coast plus Alaska and Hawaii.

⁵Energy Information Administration (EIA) data show that in PADD V (the West Coast) rack sales account for only about one quarter of all refiner dispositions of gasoline. In that area, sales to lessee and open retailer dealers on a dealer tank wagon basis and transfers to refiner owned and operated stations account for about three-quarters of all transactions. In other parts of the country, such as the mid-continent, the proportion of rack sales is greater than the national average. See EIA Form 782-A, “Refiners/Gas Plant Operators Monthly Petroleum Products Sales Report,” (monthly).

⁶GAO report at 199.

⁷A recent retrospective study by Commission economists concerning the effects of the Marathon-Ashland joint venture on gasoline prices underscores the significance of the wholesale/retail distinction. This study found that wholesale prices increased after the formation

To put into perspective the task of explaining wholesale gasoline prices (minus crude oil prices), Figure A-1 shows monthly national average wholesale prices (minus crude oil prices) in 2000 dollars between 1986 and the present. The average margin between wholesale gasoline prices and crude oil prices over this period was 20.4 cpg in 2000 dollars. The period covered by the GAO report—between January 1, 1994, and December 31, 2000, is indicated by vertical lines.

The GAO report uses two main variables to control for factors affecting wholesale gasoline prices other than the potential effects of concentration and mergers: a measure of national refinery capacity utilization and a PADD-level measure of gasoline inventories as a proportion of an estimate of expected demand for gasoline.⁸ GAO believes, incorrectly, that with the inclusion of these two variables its models isolate the effects of concentration and mergers on wholesale gasoline prices.⁹

Results of GAO's Price-Concentration Study

The GAO report generally finds positive, statistically significant correlations between

of the joint venture, a finding broadly consistent with GAO's finding. Unlike GAO, Commission economists could not conclude that this price increase was attributed to the joint venture because the price increase occurred about a year and half after the formation of the joint venture and because the price increase occurred about the same time as regulatory changes affecting the demand and supply of fuels with certain specifications. Commission economists, however, saw no evidence of an increase in *retail* prices after the formation of the joint venture. Apparently stations facing the higher wholesale rack price were not able to pass through these price increases because of competition with stations directly supplied by refiners. See Christopher T. Taylor and Daniel S. Hosken, "The Economic Effects of the Marathon-Ashland Joint Venture: The Importance of Industry Supply Shocks and Vertical Market Structure," FTC Bureau of Economics Working Paper (March 17, 2004).

⁸As discussed in greater detail below, the GAO report also used two control variables in some of its estimates to account for supply disruptions.

⁹GAO report at 216.

PADD-level refinery capacity concentration and wholesale prices.¹⁰ The report provides a total of ten estimates of the effects of concentration on prices. These estimates cover three fuel types (conventional, reformulated, and CARB gasoline) and different geographic areas. Seven estimates, all involving either conventional or reformulated gasoline, found that observed concentration increases were associated with wholesale price increases ranging from 0.15 cents per gallon (cpg) to 1.3 cpg. Although increases in concentration were associated with larger increases in wholesale CARB gasoline prices, about 7 cpg for branded gasoline and nearly 8 cpg for unbranded,¹¹ the results were not at a level of confidence normally thought to be statistically significant. Moreover, the GAO report did not find a statistically significant effect of concentration on wholesale prices for unbranded conventional gasoline in the Eastern U.S. (PADDs I, II, and III).

Results of GAO's Study of Particular Mergers

GAO also examined eight mergers completed between 1994 and 1999.¹² The GAO report provides 28 estimates of the effects of these mergers on wholesale prices of branded and unbranded gasoline of three types (conventional, reformulated, and CARB). GAO reports that most mergers were associated with wholesale price increases, but the results were very mixed. In sixteen cases, GAO finds a positive and statistically significant effect of a merger on price,

¹⁰The GAO report's price-concentration regression results are presented in Tables 24 through 27 at 143-150.

¹¹GAO's estimates of the effect of concentration on wholesale prices for CARB gasoline were significant only at the 10% level; this is a level of significance less stringent than is usually employed by researchers.

¹²The GAO report's merger regression results are presented in Tables 21 through 23 at 143-146.

ranging from about 0.4 cpg to 6.9 cpg. In seven cases, GAO finds a negative and statistically significant effect, ranging from about -0.4 cpg to -1.8 cpg. In the other five cases, GAO finds no statistically significant effect.

The remainder of this analysis will explain weaknesses in the GAO report. Because of these weaknesses, the results of the GAO analyses are unreliable.

Problems Common to Both the Price-Concentration and Merger Analyses¹³

The GAO analyses did not adequately account for factors other than changes in concentration or mergers that influenced wholesale gasoline prices during the relevant period.¹⁴ Because we do not have the data and documentation required to replicate the GAO study, and GAO refuses to share this information with us, we cannot determine the precise extent to which accounting for these factors would change the report's results. Nevertheless, we can

¹³We also have serious concerns with statistical techniques GAO used in conducting its studies. Specifically, from its description, it is not clear that GAO correctly implemented its instrumental variables estimator. Also GAO's standard errors in some regressions are unusually small; this result raises concerns about how they were estimated. The extremely high levels of significance on many of the coefficient estimates on Tables 21 and 24 (with accompanying t-statistics of 50 or greater) suggest that the standard errors are severely downward biased. This problem is common when attempting to measure the effect of aggregate public policy variables (mergers or concentration) on smaller micro units (racks) by merging the aggregate data with micro observations, based upon the assumption that each micro unit (rack) is an independent unit. See Moutlon, Brent R., "An Illustration of a Pitfall in Estimating the Effects of Aggregate Variables on Micro Units," *Review of Economics and Statistics*, May 1990, 72(2) at 334-38.

¹⁴As a first step to test the robustness of the GAO estimating equation, Commission economists used terminal rack price data from 1997 through 2000 for five cities for reformulated gasoline. Commission economists estimated the GAO's equation for rack price minus the price of crude using GAO's variables (PADD ratio of inventory to expected demand, national refinery utilization, a Midwest gasoline crisis variable, and a fixed effect for each city). Commission economists added variables for seasonality, imports, price of MTBE, the GAO inventory variable in other PADDs, and alternative measures for supply disruptions in the summer of 2000. As discussed below, in a regression containing all these additional variables, each was estimated to be statistically significant in explaining variation in wholesale gasoline prices.

demonstrate that a number of factors that have significant effects on wholesale gasoline prices were not taken into account in the GAO study. This result is extremely important. All researchers know that failure to control for relevant variables undermines the results of a study. To the extent that these omitted variables are correlated with concentration or mergers, these omissions will bias GAO's estimates of the effects of concentration and mergers on wholesale gasoline prices.¹⁵

Supply Disruptions and Gasoline Formulation Changes

The GAO analyses attempted to control for some specific supply disruptions. GAO used variables that were designed to control for the Midwest gasoline crisis of 2000 and for a series of disruptions in 1999 and 2000 on the West Coast. The GAO report found that these supply disruption variables have large and statistically significant effects on wholesale prices. The GAO report found that inclusion of these variables reduced the magnitude of estimated merger and concentration effects in many cases, but for many of the regressions had little impact on their statistical significance.¹⁶

¹⁵The GAO report (at 207) agrees that omitted variables could bias regression estimates, but claims that this criticism does not apply to its models. The GAO report, however, offers no basis for a claim that omitted variables are not an important potential problem in its estimations of the effects of mergers and concentration on price, other than assertions that all necessary control variables have been included. The GAO report (also at 207) cites to a textbook by William H. Greene (*Econometric Analysis*, 4th edition, at 334-337), which the GAO report describes as providing "a more relevant discussion" of the effects of omitted variables upon regression results, a discussion that uses a simple estimation of the demand for gasoline as an illustrative example. However, Greene's discussion is merely a technical articulation of the potential bias of regression estimates due to omitted variables--a discussion with which we fully agree. It does not provide any support for the proposition that the GAO report's estimates do not suffer from significant omitted variable bias.

¹⁶One exception is in the GAO report's estimation of the effects of concentration on unbranded conventional gasoline prices in PADDs I through III. In that estimation, GAO found

We believe that GAO's measures of supply disruptions are both incomplete and poorly implemented. For example, GAO assumed that the effects of the Midwest gasoline crisis were limited to rack prices in PADD II (the Midwest) during June 2000.¹⁷ In fact, the Midwest gasoline crisis began in mid-May, in the case of reformulated gasoline, and prices for conventional gasoline continued to be elevated well into July in some cities, Detroit in particular. Also, the Midwest gasoline crisis significantly impacted prices outside PADD II. Figure A-2 shows the variation in the wholesale price of gasoline (less the price of crude oil) in Boston, after controlling for GAO's variables for national refinery capacity utilization and the ratio of inventories to expected demand. This gasoline price spike in Boston at the time of the summer 2000 Midwest gasoline crisis demonstrates that GAO did not adequately control for the Midwest gasoline crisis.

Similarly, Figure A-2 reveals a price spike in Boston in March/April 2000, which occurred during a switch from winter to summer specifications for reformulated gasoline. This switch was difficult to accomplish because 2000 was the first year of the reformulated gasoline phase 2 program.¹⁸ The fact that the March/April 2000 spike can be observed in Figure A-2 demonstrates that GAO is incorrect in claiming that its variables measuring refinery capacity utilization and the ratio of inventory to estimated demand account for price effects associated

that concentration had a positive, statistically significant effect on prices if the Midwest gasoline crisis variable were omitted from the regression but that concentration had no statistically significant effect if this disruption variable were included.

¹⁷GAO report at 115-116, 120.

¹⁸The GAO report (at 198) incorrectly states that the switch from reformulated gasoline phase I to phase II affected only the Midwest. This major change in reformulated gasoline formulation affected all areas in the nation requiring reformulated gasoline in 2000.

with formulation changes.

Because of GAO's failure adequately to control for the summer 2000 Midwest gasoline crisis and the March/April 2000 formulation change, GAO's analysis may have incorrectly attributed these two price spikes to the Exxon-Mobil merger, which GAO assumed became effective on March 1, 2000. The GAO analysis of the Exxon-Mobil merger is likely to have similar deficiencies in other areas outside PADD II.¹⁹

More generally, supply disruptions and changes in fuel formulations during the 1990s present difficult analytical challenges in isolating any effects of concentration and mergers on prices. The GAO report concedes that its controls for supply disruptions are "crude, at best."²⁰ We agree. Unfortunately for the reliability of the GAO report, "crude" in this context equates with a significant source of inaccuracy.

A further complicating factor is that there are a number of different formulations of conventional gasoline with different Reid Vapor Pressures (RVP) and oxygenates. These differences in conventional formulations can have a significant impact on prices. For example, Michigan and large parts of Ohio, Indiana, and Illinois use standard conventional gasoline, with the exception of the greater Detroit area, which since 1996 has required a low RVP variant of conventional gasoline. Testifying in 2002, then Michigan Attorney General Jennifer M.

¹⁹According to Oil Price Information Service data in our possession, these 2000 price spikes occurred in other cities in PADD I that required reformulated gasoline. The prices of conventional gasoline in PADD I were also affected by the problems in the Midwest to a lesser extent.

Supply disruptions other than those associated with the Midwest gasoline crisis and the West Coast disruptions in 1999 and 2000 identified by the GAO report may also have effects extending beyond PADD boundaries for particular gasoline formulations.

²⁰GAO report at 116.

Granhholm stated that, during the past few years, differences in fuel specifications had inhibited the market's ability to respond to gasoline price spikes. Specifically, Ms. Granhholm noted that when prices spiked in Detroit in the summer of 2000, differences in fuel specifications impeded the transfer of supplies from Ohio, Indiana, and Illinois to Detroit and therefore slowed the eventual decline in Detroit prices.²¹

Seasonal Effects

Gasoline prices (minus crude oil prices) tend to increase in the summer, as stronger demand pushes refineries, pipelines, and other parts of the supply infrastructure to full capacity. The GAO report claims that its variable measuring the ratio of gasoline inventories to estimated demand accounts for such seasonality.²² This assertion is incorrect. We found that an additional variable that accounts directly for seasonal changes is associated with an additional statistically significant summer price difference of 1 cpg to 2 cpg.

GAO's failure fully to account for seasonal factors probably has important implications for the report's findings about merger price effects. GAO's study compares prices during pre-

²¹Statement of Jennifer M. Granhholm, Attorney General, State of Michigan, at Hearings before the Permanent Subcommittee on Investigations of the Senate Committee on Governmental Affairs, *Gas Prices: How Are They Really Set?*, April 2002. Ms. Granhholm also raised concerns about firm market power and effects of petroleum mergers on gasoline prices. In particular, Ms. Granhholm stated that her office was evaluating for anticompetitive effects the 1999 acquisition of US's Michigan terminal and marketing assets by Marathon-Ashland, a transaction considered by the GAO report. As of the date of her testimony, Ms. Granhholm said no conclusions about this transaction had been reached. We are not aware of any publicly released findings or enforcement actions taken by the State of Michigan concerning the MAP-US transaction since that time.

In addition to these fuel specification issues, the closure of one of Michigan's two refineries in 1999 and outages during the summer of 2000 on the Wolverine pipeline further complicate analysis of gasoline prices in Michigan in 2000. The GAO report does not acknowledge these potentially significant events.

²²GAO report at 197.

and post-merger periods, or “windows.” The pre-merger window refers to a period before the merger has taken place. The post-merger window refers to a period during which the researcher assumes that the merger’s effect on prices would have occurred. Because some of the post merger windows used by GAO include more summer months than others, GAO’s inadequate method of accounting for seasonality may confound a merger effect with a seasonal effect.

Imports

GAO’s analyses fail to account for the competitive role of imports. There are sizeable seasonal and annual fluctuations in gasoline imports: between 1994 and 2000 the percentage of weekly U.S. consumption provided by imports ranged from 1.5 percent to 10 percent. When a variable for gasoline imports is added to the GAO report’s variables, we found that this variable is significantly related to gasoline prices.

Price of MTBE

The GAO report does not control for the price of the oxygenate MTBE, which is an important additive and cost component for reformulated and CARB gasoline. Between 1995 and 2000, reformulated gasoline (other than upper Midwest reformulated gasoline, which uses ethanol as an oxygenate) and California’s CARB gasoline contained by volume up to 10 percent MTBE. The price of MTBE fluctuated from a low of approximately 50 cpg in early 1999 to over \$1.60 a gallon in the summer of 2000. When the price of MTBE is added as an explanatory variable to the GAO’s control variables, it adds statistically significant explanatory power.

Inventories in Other PADDs

The GAO does not account for linkages among PADDs and inventories in other PADDs in explaining prices for gasoline in a given PADD. PADDs east of the Rockies are linked by product pipelines and in some cases barge and tanker traffic. As a result, inventories in other

PADDs may affect gasoline prices in a given PADD. We found that the addition of variables measuring the ratio of inventory to estimated demand in other PADDs has a statistically significant effect in explaining wholesale gasoline prices in a given PADD.

Difference-in-Difference Estimation

In models that attempt to determine the effect of changes in concentration or mergers on prices, even the addition of variables, as we have suggested above, may not adequately control for other factors that affect prices. To alleviate this problem, modern economists often examine how prices change in markets affected by a merger *relative* to markets unaffected by the merger.²³ This approach is called difference-in-difference estimation. GAO did not use this modern method. The result is that GAO failed adequately to control for many factors that have significant effects on wholesale gasoline prices, and therefore GAO is likely to have attributed to changes in concentration and to mergers price changes that occurred for reasons unrelated to those changes in industry structure.

Problems Specific to the GAO's Price-Concentration Analyses

As the Commission and its staff told GAO last August, price-concentration studies of the type carried out by GAO are subject to several serious problems. Because these problems are now widely understood, modern economists seldom use this technique. Moreover, the

²³Vita, M. and S. Sacher, "The Competitive Effects of Not-for-Profit Hospital Mergers: A Case Study," *Journal of Industrial Economics*, 49(1), March 2001, pp. 63-84; Kim, E.H, and V. Singal, "Mergers and Market Power: Evidence from the Airline Industry," *American Economic Review*, 83(3), June 1993, pp. 549-69; Hastings, J. "Vertical Relationships and Competition in Retail Gasoline Markets: Empirical Evidence from Contract Changes in Southern California," *American Economic Review*, 94(1), March 2004, pp. 317-328.

methodology used in GAO's price-concentration analyses has additional serious deficiencies.²⁴

Improper Measures of Supplier Concentration

Use of Inappropriate Geographic Markets

Any reliable price-concentration study must be based on properly defined geographic markets. If concentration affects competition, it will do so in the particular geographic area in which that competition occurs. Unless the researcher measures this geographic area correctly, the researcher can have no confidence that the results of the analysis have anything to do with measured changes in concentration. If the market is defined too broadly or too narrowly, the researcher cannot tie any change in prices that may have occurred to the change in measured concentration.

Through decades of experience, the Commission has developed expertise in defining the relevant geographic areas, or markets, in which to measure concentration. Neither the draft GAO report, which the Commission and its staff reviewed last summer, nor the final report measures concentration in *any* properly defined geographic markets.

The GAO report measures concentration for refinery capacity at the PADD level in analyzing rack prices in the corresponding PADD.²⁵ Our experience indicates that the

²⁴Letter to James E. Wells, Director of Natural Resources & Environment, U.S. General Accounting Office, from Timothy J. Muris, Chairman, Federal Trade Commission (plus enclosures), August 25, 2003.

²⁵GAO's August 2003 draft report used state-level gasoline sales as the basis for measuring concentration. In its final report, GAO concluded that concentration based on PADD-level refinery capacity is a more appropriate measure on the grounds that this measure more effectively captures refiners' ability to control gasoline sales. The focus on refinery capacity ignores potential effects of ownership of other assets, such as pipelines, product terminals, and branded marketing assets, including brand capital, contractual arrangements with jobbers, and retail locations. Many of the Commission's petroleum merger divestitures have involved such non-refinery assets.

geographic markets that are relevant to competition in wholesale gasoline do not coincide with PADDs. PADDs are much too large to be properly defined geographic markets for GAO's purposes. Because GAO has measured concentration incorrectly, its analyses of the relationships between concentration and prices are invalid. For this reason alone, the price-concentration results reported in the GAO report should be given no weight.

Neglect of Pipeline and Water Deliveries of Gasoline

Furthermore, the GAO report's measure of supplier concentration overlooks the fact that local refineries are not the only important sources of supply for wholesale gasoline. Pipeline and water deliveries are also important in some geographic markets.

PADD I provides an illustration of the importance of the preceding two weaknesses of the GAO methodology. While the GAO report treats PADD I as a single market, product terminals in the northern and southern parts of PADD I have significantly different sources for wholesale gasoline. Moreover, these sources include pipelines and water shipments. The southern part of PADD I (Maryland and south) has few refineries and is very dependent on shipments on the Colonial and Plantation pipelines and water shipments from the Gulf area refineries in PADD III. The northern part of PADD I (Pennsylvania and north) has greater local refinery production, but still receives significant supplies from foreign imports and from PADD III.

Errors in Measurement of Relevant Capacity

GAO's measure of concentration potentially suffers from other important errors. To the extent that concentration of refinery capacity is relevant to gasoline prices, the capacity in question should measure capacity to produce gasoline. Yet, GAO used crude oil distillation capacity rather than gasoline production capacity. The share of crude oil distillation capacity

that can be used to produce gasoline varies among refineries and may change over time for a given refinery. As a result, changes in GAO's measure of concentration do not necessarily reflect changes in concentration for gasoline production capacity.²⁶

Spurious Correlations Do Not Indicate Causation

Another serious problem with the GAO price-concentration analyses is spurious correlation. GAO's measures of concentration tend to increase over time. This increase is explained, at least in part, by technological and regulatory changes that have increased economies of scale. Wholesale gasoline prices may have tended to increase over time as well. This increase may be explained, at least in part, by the higher costs of producing cleaner fuels. Even if there is in fact no causal link between concentration and wholesale prices, because of time trends in both variables there may be a positive correlation between concentration and wholesale prices. Thus, these correlations do not necessarily imply causation.

Overstatement of Statistical Significance

In addition, GAO seeks to explain *weekly* variation in wholesale prices at individual racks with an *annual* PADD-level measure of concentration. For this regression, GAO is essentially replicating the same observation multiple times but is assuming that each observation provides independent information. This method of estimation could lead GAO to find apparently significant relationships where none exist.²⁷

²⁶Moreover, measures of capacity do not account for the fact that capacity utilization varies among refineries and over time. GAO controlled imperfectly for capacity utilization because utilization rates are available only at the national level.

²⁷Furthermore, the EIA data on which GAO based its concentration measure were not available for two years (1996 and 1998). As a result, in each case GAO computed an average of concentration in the two adjacent years and used this value for the missing year. The fact that GAO created the values of concentration for two of the seven years in its study casts further

Problems Specific to the GAO's Analyses of the Effects of Particular Mergers

Unexpected Results

On their face, some of GAO's findings regarding the effects of particular mergers are contrary to expectation.²⁸ Compared to markets for gasoline in other areas of the country, California markets for CARB gasoline are relatively isolated from outside sources of supply. Yet, in three of the four reported regressions for CARB gasoline, GAO finds that mergers affecting CARB gasoline had no significant price effect or were associated with a statistically significant *decrease* in price.

In the fourth instance, branded gasoline in the case of the Tosco/Unocal merger, GAO found a large, statistically significant price increase. Yet this price increase for branded gasoline is puzzling, because the GAO report found that this merger was associated with a decrease (albeit a statistically insignificant one) in the price of unbranded gasoline. Tosco had a branded presence in few of the cities affected by this merger, and where it did, Unocal typically did not have a significant branded presence.²⁹ Under these circumstances, it is virtually impossible to imagine an anticompetitive theory that would be consistent with a large increase in branded prices but no increase in unbranded prices. Had the GAO researchers understood this problem,

doubt on the reliability of the results.

²⁸Moreover, the GAO report notes (at 140) that in its data sample an average of ten suppliers posted at racks selling conventional gasoline. (The average numbers of posting suppliers for reformulated and CARB gasolines were not reported.) In markets with ten significant suppliers, competitive problems are unusual.

²⁹See, e.g., Justine Hastings and Richard Gilbert, "Market Power, Vertical Integration and the Wholesale Price of Gasoline," Working Paper (June 2002), at 13-14. Tosco sold unbranded gasoline at the rack in all the areas considered in their analysis, while Unocal sold unbranded gasoline at the rack in some areas but not others.

they would have recognized that their result must be flawed.

The relatively large and statistically significant price increases that the GAO report associates with the Exxon/Mobil merger are also extraordinarily dubious on their face. The GAO report concluded that in PADDs I and III the Exxon/Mobil merger was associated with price increases of 3.7 cpg and 5.0 cpg for branded and unbranded conventional gasoline, respectively, and 1.6 cpg and 1.0 cpg for branded and unbranded reformulated gasoline, respectively.³⁰ Yet, the Commission required large scale divestitures of Exxon and Mobil assets in these areas of the country as a condition for allowing the transaction to proceed. These divested assets included retail outlets, pipeline interests, terminals, jobber supply contracts, and brand rights. These divestitures essentially *eliminated* the competitive overlap between Exxon and Mobil in gasoline marketing in New England and the mid-Atlantic states south to Virginia (all in PADD I), and eliminated marketing overlaps in parts of Texas (in PADD III). Particularly with respect to branded prices, we strongly suspect that the GAO report's finding of higher

³⁰Exxon and Mobil also directly competed on the West Coast in production of CARB gasoline and other products. As another condition for proceeding with the merger, the Commission required the parties to divest the Exxon refinery in Benecia, California, plus related marketing assets. Although the Commission found other refiners in California to be highly integrated into retail operations, Exxon was found to differ because it sold much of its output on an unbranded basis to non-integrated marketers and through other channels. See the Commission's Analysis of Proposed Consent Order to Aid Public Comment, In the Matter of Exxon Corporation and Mobil Corporation, File No. 9910077, Docket No. C-3907, available at <http://www.ftc.gov/os/1999/11/exxonmobilana.pdf>.

The GAO report did not analyze the impact of the Exxon/Mobil merger on the West Coast, apparently because GAO's data did not show that Exxon and Mobil posted wholesale rack prices at the same terminals. At least in part, this apparent lack of competitive overlap reflects the relative thinness of posted rack sales on the West Coast and the differences in Exxon's and Mobil's marketing operations.

wholesale prices following the Exxon/Mobil transaction can not be explained by the merger.³¹

Robustness Testing

It is standard practice in an event study to vary the length and timing of the pre- and post-event windows to ascertain the robustness of the results. If the results of the estimation vary significantly when the windows are changed within reasonable limits, the estimation does not provide a basis for reliable conclusions. GAO acknowledges that it did not undertake robustness checks using windows of different lengths, and acknowledges that the lack of such testing limits its results.³²

The GAO report also asserts that the effects of a merger can be reasonably determined with its post-merger windows, which are as short as six months.³³ This is doubtful. Event studies typically use post-merger windows long enough to allow merging firms to capture any

³¹Given the GAO report's emphasis on concentration in PADD-level refinery capacity, it is worth highlighting that at the time of the merger neither Exxon nor Mobil had a refinery in PADD I. Both had refineries in PADD III, but their combination did not significantly increase refinery capacity concentration. According to our analysis of EIA data on refinery capacity as of January 1, 1999, the merger of Mobil's and Exxon's refineries increased PADD III concentration as measured by the Herfindahl-Hirschman Index (HHI) from 586 to 700. Taking PADDs I and III together, the merger increased concentration from 520 to 600. Moreover, these statistics do not reflect the additional competitive constraints imposed by imported gasoline. No practitioner or scholar who is knowledgeable about antitrust would conceive that such levels of HHIs could lead to competitive problems.

Note, however, that concentration based on refinery ownership does not reflect any contractual arrangements between different refiners, such as refinery gate supply contracts or exchange agreements. In some instances, such contractual arrangements may be important to the analysis of competitive overlaps at the refinery or marketing level.

³²GAO report at 140. Moreover, as the Commission staff enclosure with the Commission's August 2003 letter to GAO (at 15-17) explains, results reported in the August 2003 draft were not robust in many cases. As noted in Chairman Muris's statement of May 27, 2004, the results in the final report appear more robust simply because alternatives that were in the draft report were not presented.

³³GAO Report at 213.

efficiencies and to allow competitors to alter their behavior to take advantage of any increased market power in the post merger environment. If more than six to twelve months are required to realize efficiencies fully, GAO's method will not capture merger efficiencies or will attribute them to the wrong merger. Recent economic research suggests that it may take merging firms a number of years to realize efficiencies.³⁴ Similarly, more than six months may be required for firms to reach and act on terms of anticompetitive coordination. Researchers typically assess such timing issues by examining the effects of a merger using a range of window durations. GAO did not do this.

Conclusion

As indicated above, we have very serious concerns about the soundness of the analyses presented in the GAO report. We have highlighted issues that lead us to that conclusion.

The GAO report does not address the effects of concentration or mergers on *retail* pump prices. This is important because a number of studies have indicated that wholesale price effects are not necessarily indicative of retail price effects.

In addition, GAO believes, incorrectly, that the inclusion of only two control variables--national refinery capacity utilization and PADD-level inventory holdings--are sufficient to isolate the effects of concentration and mergers on wholesale gasoline prices. Our analyses indicate that it is necessary to control for several other important variables.

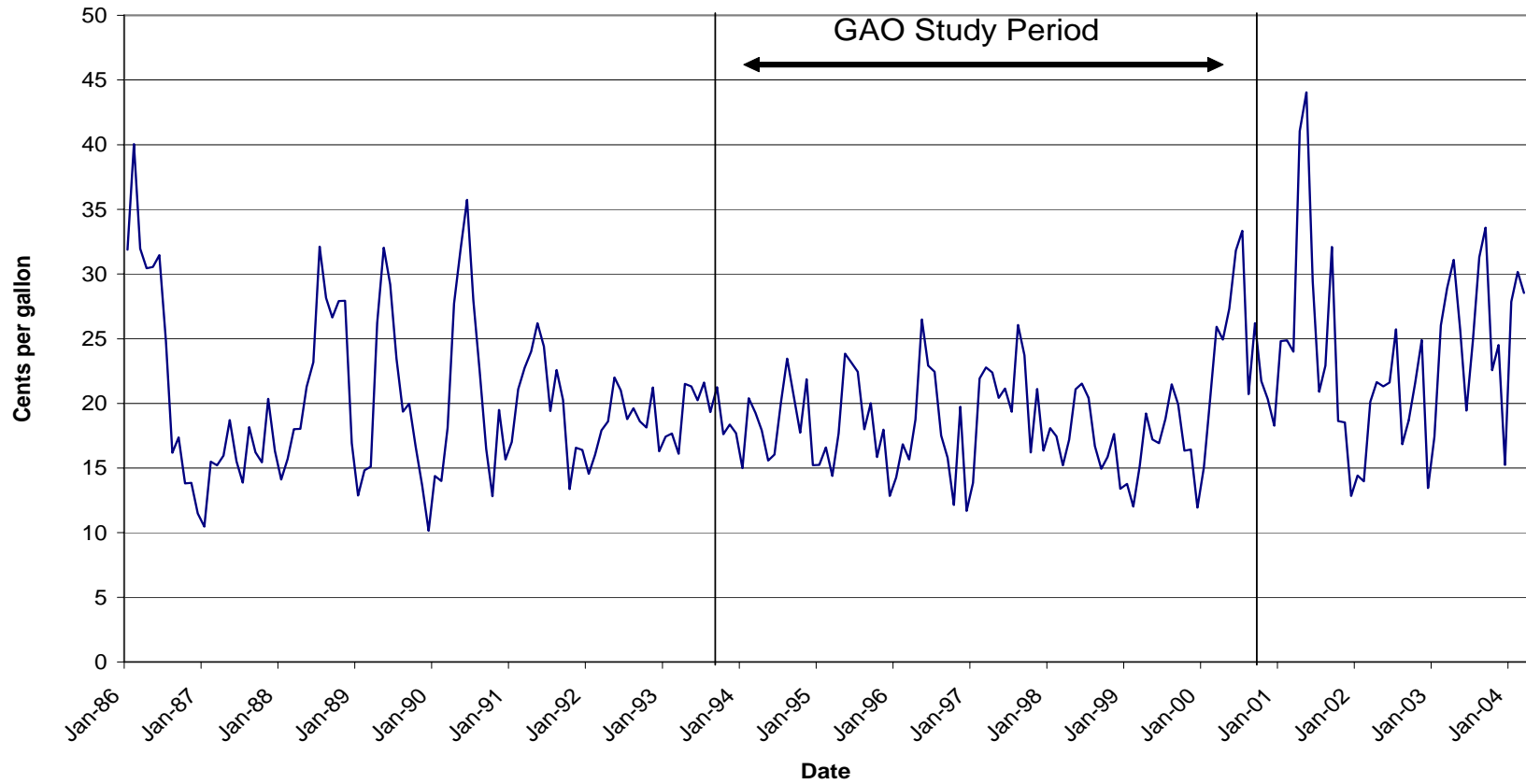
Furthermore, the GAO price-concentration study makes no attempt to measure concentration--the key explanatory variable in the analysis--in any properly defined competitive

³⁴See Focarelli, D. and F. Panetta, "Are Mergers Beneficial to Consumers? Evidence from the Market for Bank Deposits," *American Economic Review*, 93(4), September 2003, pp. 1152-1172.

market. Finally, the results of merger effects analysis are very mixed and frequently contrary to expectations.

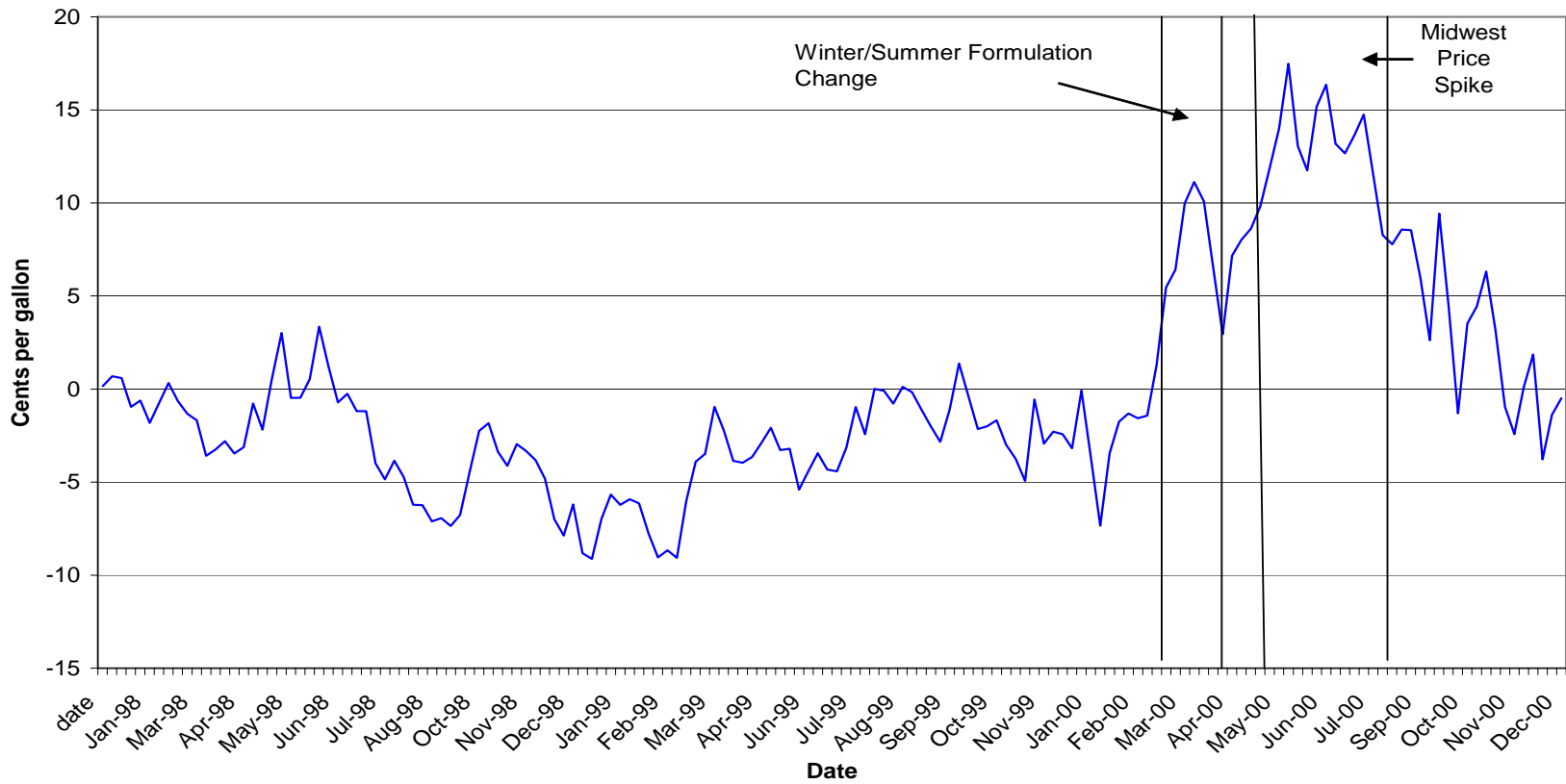
As a consequence of these many problems, the GAO report does not provide a reliable foundation for conclusions regarding the effects of changes in concentration or past mergers on prices in the petroleum industry.

Figure A-1
National Average Regular Gasoline Wholesale Price by all Sellers minus West Texas
Intermediate Crude Spot Price, Real 2000 dollars (monthly), Jan 1986-Mar 2004



Sources: Energy Information Administration, Bureau of Economic Analysis.

Figure A-2
Boston Reformulated Average Gasoline Rack Price minus WTI Crude Spot Price Controlling
for GAO Report Variables of National Refinery Capacity Utilization and Ratio of Inventory to
Expected Demand, Current dollars (weekly), Jan 1998-Dec 2000



Sources: Oil Price Information Service, Energy Information Administration and Bureau of Economics.