July 2009

ENERGY MARKETS

Refinery Outages Can Have Varying Gasoline Price Impacts, but Gaps in Federal Data Limit Understanding of Impacts

GAO Accountability • Integrity • Reliability

Highlights

Highlights of GAO-09-700, a report to congressional requesters

Why GAO Did This Study

In 2008, GAO reported that, with the exception of the period following Hurricanes Katrina and Rita, refinery outages in the United States did not show discernible trends in reduced production capacity, frequency, and location from 2002 through 2007. Some outages are planned to perform routine maintenance or upgrades, while unplanned outages occur as a result of equipment failure or other unforeseen problems. GAO was asked to (1) evaluate the effect of refinery outages on wholesale gasoline prices and (2) identify gaps in federal data needed for this and similar analyses.

GAO selected refinery outages from 2002 through September 2008 that were at least among the largest 60 percent in terms of lost production capacity in their market region and lasted at least 3 days. GAO developed an econometric model and tested a variety of assumptions using public and private data.

What GAO Recommends

We recommend that the Administrator of the Energy Information Administration (EIA) convene a panel of agency officials, industry representatives, and experts to determine if existing data meet the current and future needs of the Congress and analysts who use such data. We provided a draft of this report to EIA, the Environmental Protection Agency (EPA), and the Department of Transportation (DOT). EIA agreed with our recommendations, and EPA and DOT made technical comments only.

View GAO-09-700 or key components.
For more information, contact Frank Rusco at (202) 512-3814 or ruscof@gao.gov.

What GAO Found

While some unplanned refinery outages, such as those caused by accidents or weather, have had large price effects, GAO found that in general, refinery outages were associated with small increases in gasoline prices. Large price increases occurred when there were large outages; for example, in the aftermath of hurricanes Katrina and Rita. However, we found that such large price increases were rare, and on average, outages were associated with small price increases. For example, GAO found that planned outages generally did not influence prices significantly—likely reflecting refiners' build-up in inventories to meet demand needs prior to shutting down—while for unplanned outages, average price effects ranged from less than one cent to several cents-per-gallon. Key factors influenced the size of price increases associated with unplanned outages. One such factor was whether the gasoline was branded—gasoline sold at retail under a specific refiner's trademark—or unbranded—gasoline sold at retail by independent sellers. Our analysis showed that during an unplanned outage, branded wholesale gasoline prices had smaller price increases than unbranded, suggesting that refiners give preference to their own branded customers during outages, while unbranded dealers must seek out supplies in a more constrained market. Another factor that affected the size of price increases associated with outages was the type of gasoline being sold. Some special blends of gasoline developed to reduce emissions of air pollutants exhibited larger average price increases than more widely used and available conventional gasoline, suggesting that these special gasoline blends may have more constrained supply options in the event of an outage.

Existing federal data contain gaps that have limited GAO's and Department of Transportation's (DOT) analyses of petroleum markets and related issues. For example:

- Data linking refiners to the markets they serve were inadequate for GAO to fully evaluate the price effects of unplanned outages on individual cities, limiting the analysis to broader average effects.
- Pipeline flow and petroleum product storage data were inadequate for DOT to fully address a January 2009 Congressionally mandated study to identify potential pipeline infrastructure constraints, and limited GAO's ability to identify re-supply options for cities experiencing outage disruptions.

Federal agencies generally have continued to update their data collection surveys to meet their respective needs and emerging changes in the energy sector. However, in some cases the individual agency efforts have resulted in the collection of information that does not necessarily meet the data needs of other agencies or analysts who monitor petroleum product markets.