**Primer on Gasoline Prices**

Gasoline, one of the main products refined from crude oil, accounts for just about 17 percent of the energy consumed in the United States. The primary use for gasoline is in automobiles and light trucks. Gasoline also fuels boats, recreational vehicles, and various farm and other equipment. While gasoline is produced year-round, extra volumes are made in time for the summer driving season. Gasoline is delivered from oil refineries mainly through pipelines to a massive distribution chain serving 168,987 retail gasoline stations throughout the United States.¹ There are three main grades of gasoline: regular, mid-grade, and premium. Each grade has a different octane level. Price levels vary by grade, but the price differential between grades is generally constant.

**WHAT ARE THE COMPONENTS OF THE RETAIL PRICE OF GASOLINE?**

The cost to produce and deliver gasoline to consumers includes the cost of crude oil to refiners, refinery processing costs, marketing and distribution costs, and finally the retail station costs and taxes. The prices paid by consumers at the pump reflect these costs, as well as the profits (and sometimes losses) of refiners, marketers, distributors, and retail station owners.

Right now, the price of crude oil is close to $100 per barrel, which means that crude oil accounts for well over 50% of the cost of a gallon of regular grade gasoline. In comparison, the average price for crude oil in 2003 was $28.50 per barrel, and it comprised 44% of the cost of a gallon of regular gasoline, and when oil prices hit a record high near $150/barrel in 2008, crude prices accounted for around 75% of retail gasoline costs. The share of the retail price of regular grade gasoline that crude oil costs represent varies somewhat over time and among regions.

Federal, State, and local taxes are a large component of the retail price of gasoline. Federal excise taxes are 18.4 cents per gallon and State excise taxes average about 21 cents per gallon.² Also, eleven States levy additional State sales and other taxes, some of which are applied to the Federal and State excise taxes. Additional local county and city taxes can have a significant impact on the price of gasoline. In Pennsylvania, we pay about 50 cents of total taxes on a gallon of gasoline, which is one of the higher rates in the nation.

Refining (turning crude oil into gasoline) costs and profits comprise another, usually relatively fixed, part of the retail price of gasoline. This component varies from region to region due to the different formulations required in different parts of the country.

Distribution, marketing and retail dealer costs and profits combined make up the final portion of the cost of a gallon of gasoline. From the refinery, most gasoline is shipped first by pipeline to terminals near consuming areas, then loaded into trucks for delivery to individual stations. Some retail outlets are owned and operated by refiners, while others are independent businesses that purchase gasoline for resale to the public. The price on the pump reflects both the retailer’s purchase cost for the product and the other costs of operating the service station. It also reflects local market conditions and factors, such as the desirability of the location and the marketing strategy of the owner.

WHY DO GASOLINE PRICES FLUCTUATE?

Even when crude oil prices are stable, gasoline prices normally fluctuate due to factors such as seasonality and local retail station competition. Additionally, gasoline prices can change rapidly due to crude oil supply disruptions stemming from world events, or domestic problems such as refinery or pipeline outages.

**Seasonality in the demand for gasoline** - When crude oil prices are stable, retail gasoline prices tend to gradually rise before and during the summer, when people drive more, and fall in the winter. Good weather and vacations cause U.S. summer gasoline demand to average about 5% higher than during the rest of the year. If crude oil prices remain unchanged, gasoline prices would typically increase by 10-20 cents from January to the summer.

**Changes in the cost of crude oil** - Events in crude oil markets were a major factor in all but one of the five run-ups in gasoline prices between 1992 and 1997, according to the National Petroleum Council’s study, U.S. Petroleum Supply - Inventory Dynamics.

About 47 barrels of gasoline are produced from every 100 barrels of crude oil processed at U.S. refineries, with other refined products making up the remainder.

Crude oil prices are determined by worldwide supply and demand, with significant influence by the Organization of Petroleum Exporting Countries (OPEC). Since it was organized in 1960, OPEC has tried to keep world oil prices at its target level by setting an upper production limit on its members. OPEC has the potential to influence oil prices worldwide because its members possess such a great portion of the world’s oil supply, accounting for about 40% of the world’s production of crude oil and holding more than two-thirds of the world’s estimated crude oil reserves. Additionally, increased demand for gasoline and other refined products in the U.S. and the rest of the world is also exerting upward pressure on crude oil prices.

Rapid gasoline price increases have occurred in response to crude oil shortages caused by, for example, the Arab oil embargo in 1973, the Iranian revolution in 1978, the Iran/Iraq war in 1980, and the Persian Gulf conflict in 1990. Gasoline price increases in recent years have been due in part to OPEC crude oil production cuts, turmoil in key oil producing countries, and problems with petroleum infrastructure (e.g., refineries and pipelines) within the United States. Additionally, increased demand for gasoline and other petroleum products in the U.S. and the rest of the world is also exerting upward pressure on prices.

**Product supply/demand imbalances** - If demand rises quickly or supply declines unexpectedly due to refinery production problems or lagging imports, gasoline inventories (stocks) may decline rapidly. When stocks are low and falling, some wholesalers become concerned that supplies may not be adequate over the short term and bid higher for available product. Such imbalances have occurred when a region has changed from one fuel type to another (e.g., to cleaner-burning gasoline) as refiners and marketers adjust to the new product.

Gasoline may be less expensive in one summer when supplies are plentiful vs another summer when they are not. These are normal price fluctuations, experienced in all commodity markets.

However, prices of basic energy (gasoline, electricity, natural gas, heating oil) are generally more volatile than prices of other commodities. One reason is that consumers are limited in their ability to substitute between fuels when the price for gasoline, for example, fluctuates. So, while consumers can substitute readily have that option in fueling their vehicles.
WHY DO GASOLINE PRICES DIFFER ACCORDING TO REGION?

Although price levels vary over time, Energy Information Administration (EIA) data indicate that average retail gasoline prices tend to typically be higher in certain States or regions than in others (Figure 2). Aside from taxes, there are other factors that contribute to regional and even local differences in gasoline prices:

Proximity of supply - Areas farthest from the Gulf Coast (the source of nearly half of the gasoline produced in the U.S. and, thus, a major supplier to the rest of the country), tend to have higher prices. The proximity of refineries to crude oil supplies can even be a factor, as well as shipping costs (pipeline or waterborne) from refinery to market.

Supply disruptions - Any event which slows or stops production of gasoline for a short time, such as planned or unplanned refinery maintenance, can prompt bidding for available supplies. If the transportation system cannot support the flow of surplus supplies from one region to another, prices will remain comparatively high.

Competition in the local market - Competitive differences can be substantial between a locality with only one or a few gasoline suppliers versus one with a large number of competitors in close proximity. Consumers in remote locations may face a trade-off between higher local prices and the inconvenience of driving some distance to a lower-priced alternative.

Environmental programs - Some areas of the country are required to use special gasolines. Environmental programs, aimed at reducing carbon monoxide, smog, and air toxics, include the Federal and/or State-required oxygenated, reformulated, and low-volatility (evaporates more slowly) gasolines. Other environmental programs put restrictions on transportation and storage. The reformulated gasolines required in some urban areas and in California cost more to produce than conventional gasoline served elsewhere, increasing the price paid at the pump.

Twenty-five States have passed legislation to restrict the use of the gasoline additive MTBE but only California, Kentucky, Missouri, New Hampshire, New Jersey, New York, and Rhode Island relied on the additive. The Energy Policy Act of 2005, signed into law in August 2005, also allows refiners to discontinue use of oxygenates (including MTBE) in reformulated gasoline. Because of the concerns of groundwater contamination, MTBE is expected to be phased out in the U.S. in the next few years. MTBE removal requires large changes to gasoline production and distribution. California faced temporary supply dislocations and price volatility during the summer of 2003 as MTBE was removed from gasoline in the State. Nevertheless, New York and Connecticut had a relatively smooth transition phasing out MTBE in 2004 as a result of better preparation from the gasoline suppliers and distributors.

Operating costs - Even stations located adjacent to each other have different traffic patterns, rents, and sources of supply that influence retail price.