



HoustonBusiness

A Perspective on the Houston Economy

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Houston After the Hurricanes

A month after the storms, their impact is higher gasoline and natural gas prices, the shutdown of several refineries through year-end and extensive damage from New Orleans flooding.

Hurricane Katrina arrived on the Louisiana Gulf Coast Aug. 29 with winds of 140 miles per hour. Less than a month later, Hurricane Rita landed on the Texas–Louisiana border with winds of 120 miles per hour. Both storms crossed the Gulf of Mexico with even more powerful winds. Their Category 5 intensity wrought extensive damage to offshore oil and gas production facilities.

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Damage Upstream

The Gulf of Mexico provides the United States with 1.5 million barrels of oil per day, or 29 percent of U.S. production. It pro-

vides 10 billion cubic feet of natural gas per day, or 21 percent of U.S. production. Figure 1 shows the percentage of oil and natural gas production shut down as Katrina crossed the Gulf, followed by Rita. At the peak in late September, 100 percent of oil and 80 percent of natural gas production were out of service. By Oct. 20, 64.5 percent of oil and 52 percent of natural gas production remained shut down.

Permanent losses include 108 low-producing, end-of-life structures that were destroyed and will not be replaced, causing the loss of 1.7 percent of oil production and 0.9 percent of gas output. Another 53 platforms were seriously damaged, including large producers like the Chevron Typhoon and Shell Mars platforms that will be out for months. These two platforms alone produce 190,000 barrels of oil and 220 million cubic feet of natural gas per day.

Why has recovery been so slow? Several factors come into play. Traditional staging areas for the oil industry, like Venice, Port Fourchon and Cameron, suffered extensive damage to docks, warehouses and supply

boats. Further, the amount of damage done by the two storms has left repair services stretched thin. Although damage assessment and repair to the pipeline gathering system are the slowest procedures to complete, so far pipeline damage does not appear severe. Finally, onshore gas-processing facilities that extract liquids from the natural gas stream remain out of service. The pace of recovery of Gulf oil and gas production remains unclear and unpredictable.

As we moved through August, crude oil prices slowly rose from \$60 to near \$70 per barrel, partly a product of the advancing Hurricane Katrina. However, the emergency release of crude oil and oil products from both the U.S. and European oil reserves filled the supply gap, even as demand was reduced by the damage to the refinery system. The result was a quick fall in crude prices below pre-hurricane levels and prices below \$60 by mid-October.

Natural gas prices, however, jumped from \$10 to \$11 per thousand cubic feet as Katrina approached, rose to \$12 as damage was assessed and then to \$15 as Rita moved through the Gulf. Prices have since settled near \$14, waiting for the arrival of winter heating loads. Natural gas inventories were 25 percent above normal last spring but have been pulled down to normal levels by a very hot summer and heavy air-conditioning demand by electric utilities. We will enter the winter with normal inventories but with two-thirds of Gulf production crippled and with the outlook for improved production uncertain. This raises the prospect of a further spike in gas prices if the winter turns colder than normal.

Damage Downstream

As Katrina steamed into the Gulf of Mexico, gasoline prices

moved upward sharply along with the price of crude. Even before the storm, mechanical problems and refinery fires were driving retail gasoline prices above \$2.50 per gallon. Prices then spiked to \$3.04 and \$2.92, respectively, a few days after Katrina and Rita arrived and refinery damage was assessed.

Widespread precautionary shutdowns of refinery capacity resulted from the size of the storms and the uncertainty of their paths. As Katrina came ashore, for example, 20 percent of U.S. refinery capacity was closed as a precaution or because oil supplies were lost as ports closed or platforms shut down in the Gulf. Two weeks later, as electricity, feedstocks and transportation were slowly restored, four heavily damaged refineries (5.1 percent of U.S. capacity) were shut in and would have to remain closed for weeks or months.

Then, as Rita approached on Sept. 23, precautionary closings in Houston and the Port Arthur–Lake Charles region shut down 4 million barrels per day of capacity. Combined with the Katrina refineries, 4.9 million barrels per day were down, or

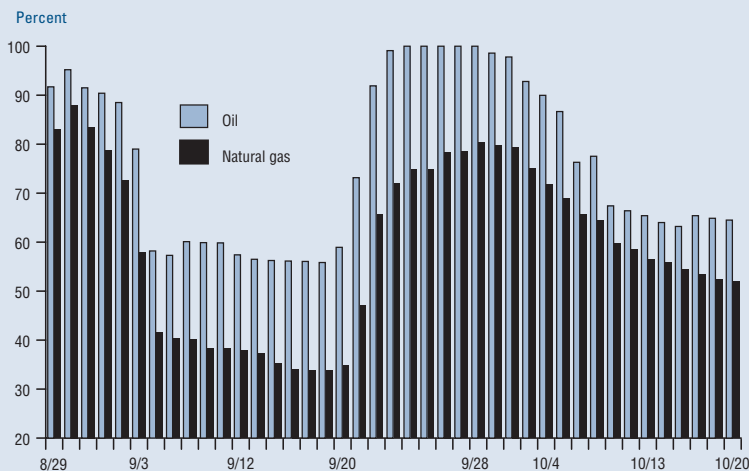
28.6 percent of U.S. capacity.

By Oct. 19, some normalcy returned. All the Port Arthur–Lake Charles refineries had electricity restored, wind damage repaired and were either running or restarting. One large refinery near Houston had not restarted. Three of the Katrina refineries were still down and without well-defined restart dates. About 6 percent of U.S. refining remained out of service.

Higher gasoline prices—however painful to the pocketbook—have been instrumental in filling the gap left by the damaged refineries. High prices and regulatory relief from air quality restrictions have allowed imports of refined products to jump from 3 million barrels per day to 5 million. At the same time, high prices and the end of the driving season have pushed down gasoline demand from near 10 million barrels per day to 8.9 million.

Petrochemical plants were also part of the massive shutdown of oil-related facilities as the storms approached, especially under the threat of Rita. Table 1 shows the percentage of capacity closed for several products as the storm came

Figure 1
Percentage of Gulf of Mexico Oil and Natural Gas Production Out of Service



SOURCE: Minerals Management Service.

NOTE: Katrina hit Aug. 29; Rita hit Sept. 24. Some dates are missing due to incomplete data for the time period reported.

ashore. Rita's size and the uncertainty of its landfall closed plants all along the Texas Gulf Coast and into Louisiana. The storm missed the Houston Ship Channel but still found one of the nation's most important chemical and refining regions near Port Arthur and Lake Charles. Ten days after Rita landed, 31 percent of North American ethylene was still closed, 21 percent of propylene, 37 percent of benzene and 22 percent of polyethylene.

Most chemical plants had returned to service by Oct. 19. A few plants in the Port Arthur–Lake Charles area were either making final repairs or in the process of restarting.

Damage to the National Economy

In the wake of Hurricanes Katrina and Rita, 6.8 million residents of Alabama, Louisiana, Mississippi and Texas qualify for various levels of federal assistance. This is about 2.4 percent of the U.S. population and includes 13 metropolitan areas. The largest metro area is New Orleans with 1.3 million people, comparable in size to Austin, Memphis or Nashville. Only two other affected metro areas are larger than 500,000 (Baton Rouge and Jackson, Miss.), and only two more are larger than 250,000. The unique aspect of the storms is the flooding of New Orleans, which affects 0.4 percent of U.S. personal income and 0.5 percent of employment. Of course, the extent of personal loss and human suffering caused by the storms cannot be quantified. From a purely economic standpoint, this region's importance is based on its key transportation links and the concentration of energy facilities.

Everyone from the Treasury secretary to the head of the Council of Economic Advisers rushed to reassure the nation

that the U.S. economy would survive this blow. The effects should be transitory, with the slowdown caused by the storms quickly offset by the cleanup, repair and rebuilding that follow. The *Blue Chip Economic Indicators*, a compilation of many economic forecasts, underscored this view with its revised national outlook after both Katrina and Rita. Each revision moved expected output and inflation in both 2005 and 2006 by less than a tenth of a percentage point. Economic news since the hurricanes, such as nonfarm employment, the Purchasing Managers Index and the Federal Reserve's Beige Book, point to strong growth continuing after the storms.

The Evacuees in Houston¹

It is widely thought that there are about 125,000 evacuees in the Houston area, although the number is difficult to verify. School enrollment has been used as one gauge but is something of a moving target. Enrollment grew significantly between September and October, but some districts are reporting that a number of enrollees are no longer attending—leading to speculation that they have gone home. However, an enrollment of 14,522 students in the eight largest districts in Houston suggests 25,000 student evacuees in Houston-area private and public schools. Based on the age group from 5 to 18 years making up just under 20 percent of the New Orleans population, this is consistent with 100,000–125,000 Houston evacuees.

The only piece of solid evidence on who will stay is a survey of evacuees, most at the Reliant Park complex, that indicated about half would not return to New Orleans.² Among those who would relocate, 65 percent wanted to stay in Hous-

Table 1
Chemical Plants Affected by Hurricanes Katrina and Rita
(Peak percent capacity shut down by each storm)

	Katrina	Rita
Ethylene	15.8	58.5
Propylene	18.5	30.7
Benzene	19.6	68.5
Polyethylene	3.7	63.0
Styrene	29.3	85.3
Butadiene	9.1	95.8

NOTE: Percentages expressed as part of North American capacity.

SOURCE: Chemical Management Associates Inc.

ton. Taking these numbers at face value, Houston's population has permanently grown by 40,000, and about 20,000 will be seeking employment.

Is this a strain on the local economy? Houston's greatest asset is its size. Consider the influx of students as an analogy. The 5,200 new students pushed into the Houston Independent School District on a moment's notice seems overwhelming, until you realize that HISD already had 212,000 students spread over 307 schools. Stated as 17 new students per school, the number is considerably less threatening. Houston has generated jobs in recent months at a pace of 30,000–40,000 per year, a number that suggests Houston may have a problem digesting 20,000 new workers in one bite. However, with a labor force of 2.5 million, even if swallowed at once, the evacuees would push up the unemployment rate by only 0.7 percent.

—Robert W. Gilmer

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Notes

¹ For similar discussions, see "Houston Performance Update—Katrina Edition," by Kathryn Koepke and Richard Zigler, O'Connor and Associates, white paper, September 2005; and "Katrina and Houston's Economy," *Houston: The Economy at a Glance*, Greater Houston Partnership, October 2005.

² "Survey of Hurricane Katrina Evacuees," *Washington Post/Kaiser Family Foundation/Harvard School of Public Health* (September 2005).

September brought Houston a series of extraordinary events: The flooding of New Orleans delivered 125,000 evacuees to the city on an emergency basis, and two hurricanes steamed through the Gulf of Mexico, damaging energy facilities both on shore and off. As the drama ends, the ensuing problems are becoming more manageable. The main threat is high energy prices through the winter, with much Gulf oil and gas production still shut down and 6 percent of U.S. refining capacity out of service.

Retail and Auto Sales

Retailers reported mixed results. Furniture stores saw a significant drop in sales, larger than could be explained by the approach of Hurricane Rita. They were concerned that high electricity and gasoline bills were beginning to affect consumer spending in other areas. But despite evacuations, sales at a department store chain with a number of outlets on the Gulf Coast were down only marginally for September, carried by a surge in buying of basic clothing items. Retailers worried about energy prices thought basic buying could carry them for several months to come. Upscale retailers expressed concern only about selling autumn merchandise in the face of very warm weather.

The big boost from incentives that carried Houston auto dealers to a 30 percent increase in July began to wear off in August. Sales were up only 2 percent compared with

August a year ago and down 1 percent for the month.

Real Estate

Existing home sales in August were up 17 percent from a year earlier and 9 percent on a year-to-date basis. Sales data are based on closings, making it too early to reflect any Katrina-related effects. But home rentals were up 117 percent in the first two weeks of September, compared with the same period a year earlier.

The Houston apartment market got a dramatic boost from the influx of Katrina evacuees, pushing the occupancy rate for Class A apartments from the mid-80s to over 90 percent. The strongest demand is for large two- and three-bedroom apartments. Leases are being signed for three and six months. FEMA vouchers expire in six months, raising concerns about the duration of this storm-related boost to occupancy.

Although New Orleans companies are relocating some operations to Houston, the improvement in office markets has been muted. Relocations are too limited, and the space available in Houston is too plentiful to make much of a dent in vacancy rates.

Crude and Oil Products

Crude inventories remained comfortable in early October, near five-year-high levels. Distillate inventories (diesel and heating oil) were also near five-year highs, but there is concern that they should be building

more rapidly at this time of year. Refinery utilization fell dramatically amid widespread shutdowns. Respondents expressed unease about the lack of fall maintenance as the refinery system restarts and the potential for mechanical problems ahead. Margins for refiners spiked with the arrival of each storm, each time pushing profits over \$15 per barrel.

Petrochemicals

Rita and Katrina have resulted in widespread shortages of many chemicals and plastics, and contract customers for these goods find themselves on allocation. Record price increases have been announced for a long list of plastics, including ethylene, propylene, polyethylene, polypropylene, polyvinyl chloride and PET bottle plastics. Price increases are driven by continued strong demand, low inventories and rising feedstock prices.

Oil Services and Machinery

Focusing on land-based rigs, the rig count continued to rise through September for both the United States and Texas. Respondents report that demand is strong, they cannot fill orders from customers on a timely basis, and they are pushing through price increases to build margin. Repairs in the Gulf of Mexico are hampered by a lack of basic infrastructure.



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