



Tropical Depression Harvey

Event Report (Update #14)

| | |
|--------------------------------|--|
| REPORT TIME & DATE: | 5:00 PM EDT Friday, September 1, 2017 |
| INCIDENT START DATE: | Friday, August 25, 2017 |
| PRIMARY LOCATION(S): | Gulf Coast (Texas and Louisiana) |
| REPORT DISTRIBUTION: | Public @ https://energy.gov/oe/downloads/hurricane-harvey-situation-reports-august-2017 |

EXECUTIVE SUMMARY

Post-Tropical Cyclone Harvey is continuing to weaken and is now 30 miles northwest of Nashville, Tennessee moving northeast with maximum sustained winds of 25 MPH. Harvey has shown a loss of most tropical characteristics as it moves northeastward toward the Ohio valley, and is expected to weaken into Saturday. An upper-level trough arriving from the Great Lakes should begin to interact with Harvey in Ohio on Saturday and is expected to support a secondary extratropical low over New England on Sunday. Widespread flooding is expected to continue in and around Houston, Beaumont, Port Arthur, Orange, and toward the Louisiana border through the weekend and may impede electrical and fuel restoration. FEMA and DOE are tracking Hurricane IRMA and are preparing staffing contingencies should the storm impact U.S. interests.

Electricity Sector Impacts (as of 2:30 PM EDT)

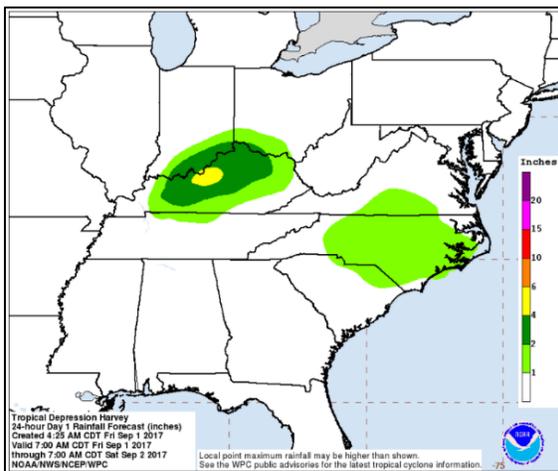
- Texas
 - As of 2:30 PM EDT, September 1, the State of Texas has 158,771 customer outages. This represents 1.3% of customers in the state.
 - AEP Texas estimates that those in Corpus Christi will have power restored by 10 PM EDT, Saturday, September 2, if not sooner.
 - CenterPoint Energy is reporting 98.89% of customers have power. High water continues to be a factor in restoration, including Brazoria County.
- Louisiana
 - As of 2:30 PM EDT, September 1, the State of Louisiana has 1,690 customer outages. This represents less than 1% of customers in the state.
- Tennessee
 - As of 2:30 PM EDT, September 1, the State of Tennessee has 17,668 customer outages. This represents less than 1% of customers in the state.

Oil and Natural Gas Sector Impacts (as of 2:30 PM EDT)

- The Secretary of Energy has authorized the Strategic Petroleum Reserve (SPR) to negotiate and execute an emergency exchange agreements with three companies to provide 4.5 million barrels of crude oil. Authorized exchanges are summarized in this report.
- Shipments along Colonial’s Line 1 is operating intermittently when refinery and terminal product is available to fill the line. The portion of the pipeline between Houston and Herbert remains down and Colonial is estimating returning this portion of the line to service this Sunday. Colonial’s main concern along the pipeline right-of-way is potential water damage at waterway crossings. Experts are currently evaluating the integrity of the line.

- Colonial currently estimates that it will be able to return to service from Houston Sunday, September 3, following an evaluation of its infrastructure and successful execution of its startup plan. This restart estimate is contingent on finding no major flood damage during facility inspections.
- As of 03:00 PM EDT, September 1, 10 refineries in the Gulf Coast region were shut down, according to public reports. One refinery came back online since this morning’s update. These refineries have a combined refining capacity of 2,917,729 b/d, equal to 30.1% of total Gulf Coast (PADD 3) refining capacity and 15.8% of total U.S. refining capacity.
- Six refineries had begun the process of restarting from being shut down, which may take a several days or weeks to start producing product, depending on whether they have been damaged. One refinery started operating, while another refinery began restarting since this morning’s update. These refineries have a combined capacity of 968,220 b/d, equal to 10% of total Gulf Coast (PADD 3) refining capacity and 5.2% of total U.S. refining capacity.
- Five refineries in the Gulf Coast region were operating at reduced rates. One refinery that was shut down began producing at reduced rates since this morning’s update. The refineries have a combined total capacity of 1,563,776 b/d, equal to 16.1% of total Gulf Coast (PADD 3) refining capacity and 8.4% of total U.S. refining capacity. (NOTE: Actual crude throughput (production) reductions are lower than the total combined capacity).
- Unity of Message remains a priority for the Federal Government and the Energy Sector. FEMA has established a “Rumor Control” website to assist in this process: <https://www.fema.gov/hurricane-harvey-rumor-control>

INCIDENT OVERVIEW



- As of 11:00 AM EDT, Post-Tropical Cyclone Harvey was 30 miles northwest of Nashville, Tennessee moving northeast at 16 MPH, with maximum sustained winds of 25 MPH. Harvey has shown a loss of most tropical characteristics as it moves northeastward toward the Ohio valley, and is expected to weaken into Saturday. An upper-level trough arriving from the Great Lakes should begin to interact with Harvey in Ohio on Saturday and is expected to support a secondary extratropical low over New England on Sunday.

- Harvey is expected to produce additional rainfall accumulations of 1 to 3 inches from western Kentucky into southeastern Indiana, southern Ohio and western West Virginia, with isolated amounts from 4 to 6 inches possible. These rains will enhance the risk of flash flooding across these areas. Widespread flooding is expected to continue in and around Houston, Beaumont, Port Arthur, Orange, and toward the Louisiana border through the weekend. Flash flood watches and warnings are in effect from parts of northern Mississippi across western Tennessee, Kentucky, Southern Indiana, and Southwest Ohio.

ELECTRICITY SECTOR

ELECTRICITY OUTAGE DATA

| ELECTRICITY OUTAGES AS OF 2:30 PM EDT 09/1/2017 | | | |
|---|------------------------------------|--|-----------------------------|
| Impacted State | Current Confirmed Customer Outages | Percent of Confirmed State Customers without Power | 24-hr Peak Customer Outages |
| Louisiana | 1,690 | <1% | 10,619 |
| Tennessee | 17,668 | <1% | 35,426 |
| Texas | 158,771 | 1.3% | 193,225 |
| Total | 173,129 | - | * |

**There is no sum of the Peak Customer Outage column because peaks for individual utilities occur at different times; a total would not reflect peak outages.*

- Louisiana
 - As of 2:30 PM EDT, September 1, the State of Louisiana has 1,690 customer outages. This represents <1% of customers in the state.
 - Entergy Louisiana has 961 customer outages. This is a 90% decrease from last report.
 - Beauregard Electric Coop (BECi) has 511 customer outages. This is a 18% decrease from last report.
- Tennessee
 - As of 2:30 PM EDT, September 1, the State of Tennessee has 17,668 customer outages. This represents <1% of customers in the state.
 - Memphis Light Gas and Water has 11,226 customer outages. This is a 31% decrease from last report.
 - Cumberland EMC has 2,450 customer outages. This utility did not appear on the last report.
- Texas
 - As of 2:30 PM EDT, September 1, the State of Texas has 153,771 customer outages. This represents 1.3% of customers in the state.
 - AEP Texas has 65,995 customer outages. This is a 4% decrease from last report.
 - Entergy Texas has 55,489 customer outages. This is a 1.7% decrease from last report.



- CenterPoint Energy has 21,736 customer outages. This is a 16% decrease from last report.
- Sam Houston Electric Coop has 8,739 customer outages. This is a 5% decrease from last report.
- AEP Texas crews are using drones and helicopters to assess damage and working to repair or replace:
 - 3,100 distribution poles
 - 500 transmission structures
- CenterPoint Energy is reporting 98.89% of customers have power. High water continues to be a factor in restoration, including Brazoria County.
- Energy Texas are unable to restore the remaining outages within their service area due to high water.

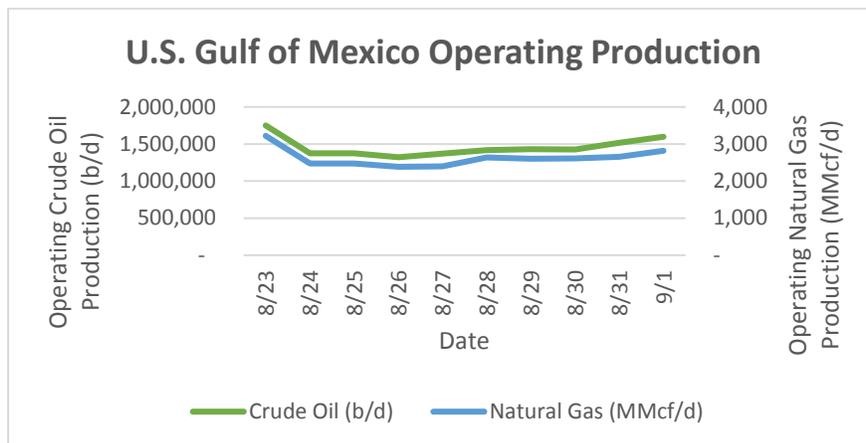
OIL & GAS SECTOR

OFFSHORE PRODUCTION

- As of 12:30 PM EDT, September 1, 152,989 b/d (8.74%) of the oil production and 405.99 MMcf/d (12.61%) of the natural gas production in the federally administered areas of the U.S. Gulf of Mexico are shut-in, according to estimates by the Bureau of Safety and Environmental Enforcement (BSEE).

| U.S. Gulf of Mexico Oil & Gas Production Status <i>as of 12:30 PM EDT 09/01/2017</i> | | | |
|---|-----------------|-------------------|-------------------|
| Production | Pre-Event | Shut-In (08/31) | Shut-In (09/01) |
| Crude Oil (b/d) | 1,750,000 | 236,115 | 152,989 |
| Natural Gas (MMcf/d) | 3,220 | 568.09 | 405.99 |
| Infrastructure | Pre-Event Count | Evacuated (08/31) | Evacuated (09/01) |
| Manned Platforms | 737 | 94 | 75 |
| Rigs | 31 | 5 | 0 |

Source: BSEE: <https://www.bsee.gov/resources-tools/hurricane/activity-statistics-update>



Source: BSEE



ONSHORE PRODUCTION

- On August 26, the Texas Railroad Commission estimated that approximately 300,000 to 500,000 b/d of crude production had been shut-in in the Eagle Ford region from a pre-storm production estimate of 870,000 b/d. In addition, approximately 3.0 Bcf/d of natural gas production had been shut-in from a pre-storm production estimate of about 6.0 Bcf/d. The Commission had expected most idled production to come back online in the next few days

PETROLEUM REFINERIES

- Five refineries in the Gulf Coast region were operating at reduced rates. One refinery that was shut down began producing at reduced rates since this morning’s update. The refineries have a combined total capacity of 1,563,776 b/d, equal to 16.1% of total Gulf Coast (PADD 3) refining capacity and 8.4% of total U.S. refining capacity. (NOTE: Actual crude throughput (production) reductions are lower than the total combined capacity).
- Six refineries had begun the process of restarting from being shut down, which may take a several days or weeks to start producing product, depending whether they have been damaged. One refinery started operating, while another refinery began restarting since this morning’s update. These refineries have a combined capacity of 968,220 b/d, equal to 10% of total Gulf Coast (PADD 3) refining capacity and 5.2% of total U.S. refining capacity.
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PORTS

- The U.S. Coast Guard has set the following conditions for ports and waterways in the U.S. Gulf Coast region as a result of Harvey.

| Status of Texas and Louisiana Gulf Coast Ports <i>as of 3:00 PM EDT 09/01/2017</i> | | |
|--|---|------------|
| Port | Status | Date Stamp |
| Sector Corpus Christi | | |
| Brownsville | Open. According to USCG, port never closed due to Harvey. | 09/01/17 |
| Corpus Christi | Port Condition Recovery. Open with restrictions. Allowing vessels up to 43’ draft to transit during daytime hours only. Larger vessels allowed one-way transits during daylight hours only. Ship channel also open with restrictions. Working to reopen completely 09/04. | 09/01/17 |
| Sector Houston and Galveston | | |
| Freeport | Port Condition Recovery. Open with restrictions. Limited to daylight hours for vessels with < 33 feet draft. | 09/01/17 |
| Galveston | Port Condition Recovery. Open with restrictions. Ship channel also open with restrictions. Limited to daylight hours for vessels with < 33 feet draft. | 09/01/17 |
| Houston | Port Condition Recovery. Open with restrictions. Upper Houston Ship Channel (HSC) from Morgan’s Point inbound | 08/31/17 |



| | | |
|--|---|----------|
| | to the Turning Basin remains closed for vessel traffic until weather conditions improve. Heavy current at HSC is making it unsafe to bring in vessels. | |
| Texas City | Port Condition Recovery. Open with restrictions. | 08/30/17 |
| Sector Port Arthur and Lake Charles | | |
| Beaumont | Port Condition Zulu. Closed. Coast guard allowing vessel transit on protected inland waterways. Port dealing with heavy waters from storm. No estimate on restart, but USCG hopes 2-3 days. | 09/01/17 |
| Lake Charles | Open. | 09/01/17 |
| Nederland | Port Condition Zulu. Closed. Coast guard allowing vessel transit on protected inland waterways. | 08/30/17 |
| Orange | Port Condition Zulu. Closed. Coast guard allowing vessel transit on protected inland waterways. | 08/30/17 |
| Port Arthur | Port Condition Zulu. Closed. Coast guard allowing vessel transit on protected inland waterways. | 08/30/17 |
| Port Neches | Port Condition Zulu. Closed. Coast guard allowing vessel transit on protected inland waterways. | 08/30/17 |
| Sabine Pass | Port Condition Zulu. Closed. Unprecedented currents on the Neches River preventing movements for several more days. | 08/30/17 |
| Sector Morgan City | | |
| Houma | Houma navigational channel and Bayou Grand Caillou Floodgates have reopened. | 08/31/17 |
| Berwick | Open with restrictions. Temporary emergency vehicle controls in effect. | 08/30/17 |
| Morgan City | Open with restrictions. Temporary emergency vehicle controls in effect. | 08/30/17 |
| Sector Lower Mississippi River | | |
| All ports | Due to heavy weather, mariners are advised by the COTP to transit the lower Mississippi, Arkansas, Red, Black, and Ouachita rivers and other river tributaries with caution. | 08/30/17 |

Source: U.S. Coast Guard

RAIL

- Rail is critical for the delivery of ethanol to petroleum product terminals for gasoline blending and for the movement of refinery byproducts, including propane, butanes, and sulfur out of refineries. The following rail lines have reported disruptions:

| Status of Texas and Louisiana Gulf Coast Rail Infrastructure as of 3:00 PM EDT 09/01/2017 | | |
|--|--|-------------------|
| Rail Company | Status | Date Stamp |
| Kansas City Southern Railway | Force majeure and an embargo on network in Texas affected by Harvey. Damage assessment has been difficult due to accessibility concerns. | 08/31/17 |
| Union Pacific | Routes through San Antonio opened up allowing for trains to be run both north and south between San Antonio and | 09/01/17 |



| | | |
|-------------|--|----------|
| | Hearne, TX. Reorganizing major rail yards at Settegast, and Englewood. Repairs complete on some infrastructure in Houston and South Texas. Cleanup operations underway at Houston yards 8/31. Repaired track between Houston and Bryan, Texas and between Houston and Angleton, Texas. Currently working on Houston-San Antonio track repairs. | |
| BNSF | Major disruptions due to washouts. Houston Subdivision has resumed service, as well as greater portion of Galveston Subdivision, along with other smaller Subdivisions. Beaumont remains closed. Train loading and unloading resumed at Pearland Intermodal Facility. | 09/01/17 |
| CSX Corp. | Closely watching weather conditions in Louisiana and the southwestern portion of its operating network. | 08/30/17 |
| YRC Freight | Houston terminal closed. | 08/29/17 |

Source: Trade Press

COLONIAL PIPELINE

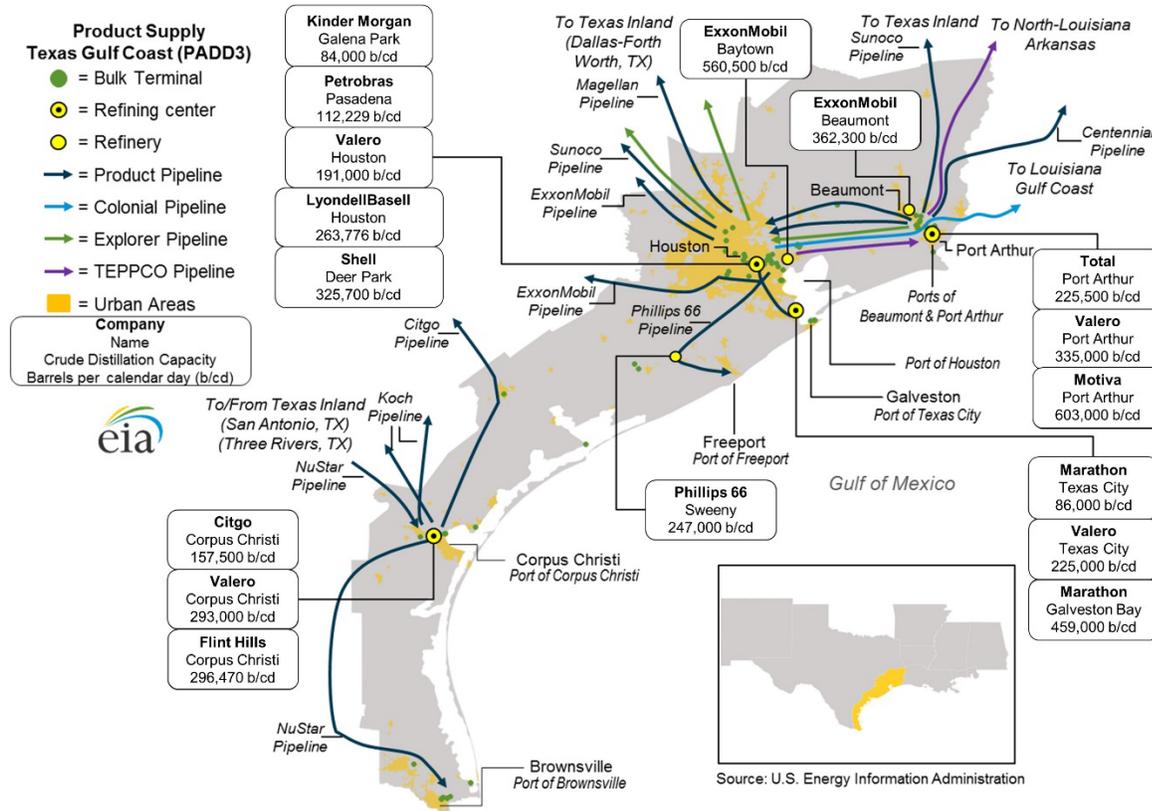
- Colonial’s Lines 1 and 2 continue to operate from Lake Charles east. Deliveries will be intermittent and dependent on terminal and refinery supply. The lines remain down from Houston to Hebert due to the storms.
- Colonial estimates that it will be able to return to service from Houston Sunday, following an evaluation of its infrastructure and successful execution of its start up plan.
- Of the 26 refineries that connect to the Colonial system, 13 are located between Houston and Lake Charles.
- Colonial is one part of the fuel delivery system, and there are multiple means of supplying the market to mitigate concerns with supply, including other pipelines, trucks, and barges.
- Colonial’s top priorities remain the safety of its personnel and integrity of its system will remain the top priorities. For more updates: <https://harvey.colonialresponse.com/>

 **Colonial Pipeline Gulf Coast Status Map**



OTHER PRODUCT PIPELINES

- Below is a map of refineries and petroleum product pipelines in the Texas Gulf Coast for awareness.



Source: EIA: <https://www.eia.gov/analysis/transportationfuels/padd1n3/>

WAIVERS

- The table below lists fuel-related waivers issued by the U.S. Environmental Protection Agency (U.S. EPA) and State agencies.
- On August 30, U.S. EPA issued a multi-state (13 states) waiver for requirements of low-RVP conventional gasoline and reformulated gasoline (RFG). Later in the day, the waiver was expanded to include 38 states and Washington, DC.

| State Fuel Waivers as of 3:00 PM EDT 09/01/2017 | | | | | |
|---|--|-----------|-----------------------------------|----------|--------|
| State | Waiver | Issued By | Effective Dates | | Status |
| | | | Start | End | |
| Multi-state waiver | RVP standard waived for gasoline sold in affected counties where low-RVP gasoline is required (9.0 RVP or lower). Allows sale of gasoline up to 11.5 psi RVP in all east coast states located in PADD 1 – Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont, Delaware, District of | U.S. EPA | 08/30/17 Expanded: 08/31/17 | 09/15/17 | Active |

| | | | | | |
|----|--|----------|----------|----------|--------|
| | <p>Columbia, Maryland, New Jersey, New York, and Pennsylvania, Florida, Georgia, North Carolina, South Carolina, Virginia, and West Virginia; all Midwestern states located in PADD 2 - Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, Ohio, Oklahoma, Tennessee, and Wisconsin; and all Gulf coast states located in PADD 3 – Alabama, Arkansas, Louisiana, Mississippi, New Mexico, and Texas. The waiver supersedes and expands the areas covered by the August 30 waiver.</p> <p>RFG standard is also waived in the designated states and D.C. Also waived are provisions prohibiting the blending of RFG blendstock with conventional gasolines or blendstocks.</p> | | | | |
| TX | <p>RFG requirement waived in Houston-Galveston-Brazoria areas. Waiver expanded to four-county Dallas-Fort Worth RFG area 8/26. Allows the sale or distribution of conventional gasoline.</p> | U.S. EPA | 08/25/17 | 09/15/17 | Active |
| TX | <p>7.8 psi RVP standard waived for gasoline sold in 20 counties where low-RVP gasoline is required and are also under the Governor’s Disaster Declaration. Waiver expanded to 98 counties required to use low-RVP fuel 8/26. Allows sale of gasoline up to 9.0 psi RVP.</p> | U.S. EPA | 08/25/17 | 09/15/17 | Active |

Sources: [U.S. Department of Transportation](#); Governor Office Websites

- Eight states have declared state emergencies due to Harvey. These declarations automatically waive select Federal Motor Carrier Safety Regulations (FMCSRs), including hours-of-service (HOS) regulations, for motor carriers hauling resources to aid in restoration efforts. The declarations exempt FMCSR in every state along the motor carrier’s route as long as the final destination is with the declared disaster areas in Texas or Louisiana.
- In addition, the Federal Motor Carrier Safety Administration (FMCSA) declared that issued a Regional Emergency Declaration exempting FMCSRs in the States of Texas and Louisiana. On August 31, the FMCSA expanded the Regional Emergency Declaration to additional states and Washington, DC.
- The table below summarizes emergency declarations and HOS waivers issued by states.



| State Emergency Declarations and HOS Waivers as of 3:00 PM EDT 09/01/2017 | | | | |
|---|---|----------------------------------|----------|--------|
| State | Details | Effective Dates | | Status |
| | | Start | End | |
| Regional (Multi-State) | Regional Emergency Declaration and FMCSR waiver issued by FMCSA. Applies to Alabama, Arkansas, Colorado, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maryland, Mississippi, Missouri, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Tennessee, Texas, South Carolina, Virginia, Washington, D.C. and West Virginia | 08/25/17 Expanded 08/31/17 | 10/26/17 | Active |
| Texas | State of Disaster declared for Aransas, Austin, Bee, Calhoun, Chambers, Colorado, Brazoria, DeWitt, Fayette, Fort Bend, Galveston, Goliad, Gonzales, Harris, Jackson, Jefferson, Jim Wells, Karnes, Kleberg, Lavaca, Liberty, Live Oak, Matagorda, Nueces, Refugio, San Patricio, Victoria, Waller, Wharton, and Wilson counties. | 08/23/17 | TBD | Active |
| Louisiana | State of Emergency declared. | 08/23/17 | TBD | Active |
| Kentucky | HOS waiver issued for transporters of food, water, medicine, fuel and other commodities within the affected areas to aid in emergency response of affected areas. All economic requirements normally associated with interstate motor transportation for all vehicles providing relief supplies to affected areas. | 08/28/17 | 09/27/17 | Active |
| Alabama | State of Emergency/HOS waiver issued for petroleum products and petroleum-related supplies, goods, and services in and through the State. | 08/30/17 | 09/29/17 | Active |
| Georgia | State of Emergency/HOS waiver issued for petroleum products through the State. | 08/30/17 | 09/20/17 | Active |
| Kansas | Governor acknowledged state of emergency in Texas and declared that licensing rules, registration and fuel tax permits, and oversize vehicle permit fees are waived for motor carriers | 08/30/17 | 09/20/17 | Active |



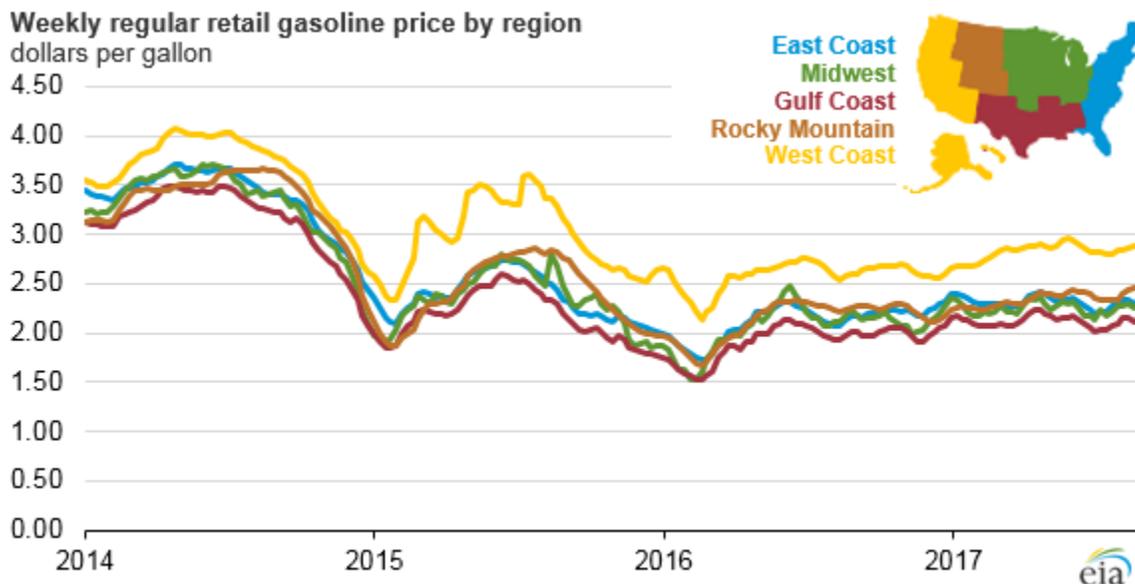
| | | | | |
|----------------|--|----------|----------|--------|
| | and persons operating motor vehicles directly participating in the relief and restoration effort. | | | |
| South Carolina | State of Emergency/HOS waiver issued for petroleum products through the state. | 08/31/17 | 09/30/17 | Active |
| North Carolina | State of Emergency/HOS waiver issued for petroleum products, and emergency relief supplies and services through the state. | 08/31/17 | 09/30/17 | Active |

GASOLINE PRICES

- The map below summarizes changes in gasoline prices by state over the past week.

GASOLINE PRICES

- The Energy Information Administration (EIA) released an assessment on the impact of Hurricane Harvey to Labor Day weekend gasoline prices. On August 28, the U.S. average retail gasoline price was \$2.40 per gallon (gal), the second-lowest price on the Monday before Labor Day since 2004. However, prices on that date do not yet reflect the full effects of Hurricane Harvey.



Source, U.S. Energy Information Administration, Gasoline and Diesel Fuel Prices, <https://www.eia.gov/todayinenergy/detail.php?id=32752>

- The U.S. Gulf Coast typically has the lowest retail gasoline prices in the country because it is home to approximately 50% of U.S. petroleum refining capacity. The Gulf Coast also produces more gasoline than it consumes, and regional state taxes on gasoline tend to be relatively low.
- Low crude oil prices are the main reason for relatively low gasoline prices, because gasoline prices in the United States typically follow the Brent crude oil price. As of August 29, the Brent crude oil spot price was \$51 per barrel (b), about \$34/b lower than the previous five-year average for the same day, but nearly \$3/b above the price from the same time last year. As

gasoline demand has increased, relatively high gasoline production and above-average inventory levels have placed downward pressure on prices.

- As of May 2017, U.S. Federal Highway Administration data indicate that year-to-date vehicle travel was up by 21.2 billion miles (1.7%) compared with the same period in 2016. Weekly product supplied (a proxy for demand) surpassed the five-year average the first week of March and has since trended near the previous five-year high.

DOE Strategic Petroleum Reserve Status (from the Office of Fossil Energy)

| DOE Strategic Petroleum Reserve Site Status <i>(as of 8/31/2017)</i> | | | | |
|---|--------------------|---------------------|----------------|------------------|
| | Bayou Choctaw Site | West Hackberry Site | Big Hill Site | Bryan Mound Site |
| Commercial Power Availability | Available | Available | Available | Available |
| Drawdown Capability | Drawdown Ready | Drawdown Ready | Drawdown Ready | Drawdown Ready |

- In response to the impacts from Hurricane Harvey, the U.S. Secretary of Energy has authorized the Strategic Petroleum Reserve (SPR) to negotiate and execute an emergency exchange agreements with three refiners to provide 4.5 million barrels of crude oil. Authorized exchanges are summarized in the table below.

| Requesting Refinery | SPR Draw Down Site | Amount Authorized (up to) |
|--|--------------------|---|
| Phillips 66 Lake Charles Refinery (First request) | West Hackberry | 200,000 barrels sweet crude; 300,000 barrels sour crude |
| Phillips 66 Lake Charles Refinery (Second request) | West Hackberry | 200,000 barrels sweet crude; 300,000 barrels sour crude |
| Marathon Petroleum Company | Bayou Choctaw | 3,000,000 barrels sweet crude |
| Valero Marketing and Supply Company | Bayou Choctaw | 500,000 barrels sweet crude |

