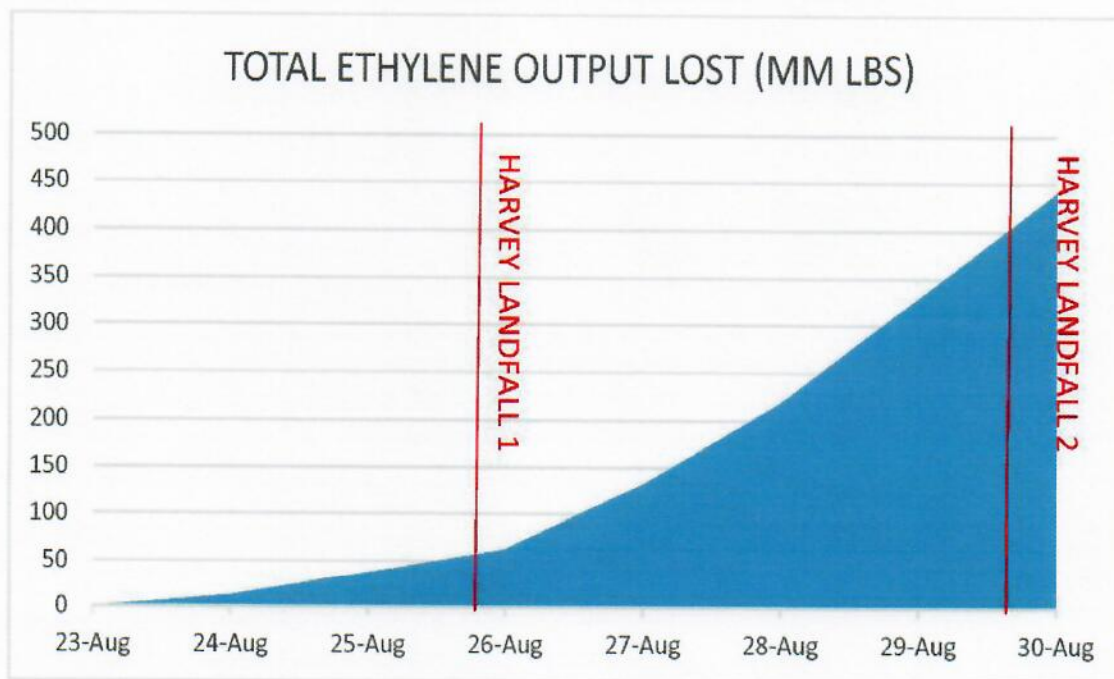
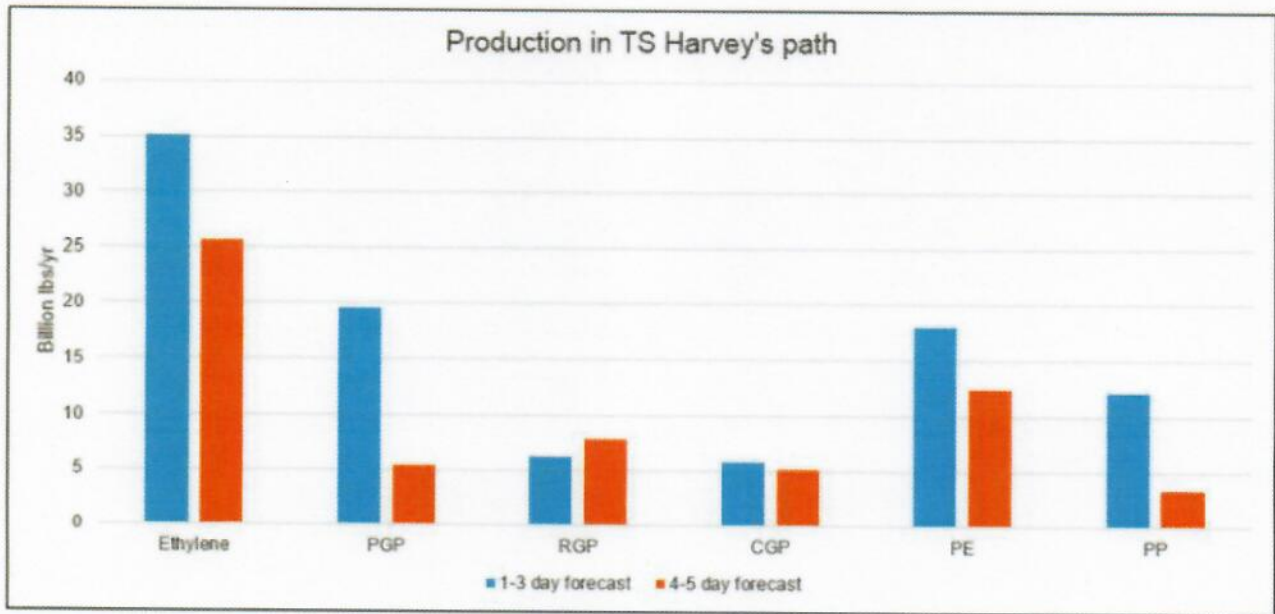
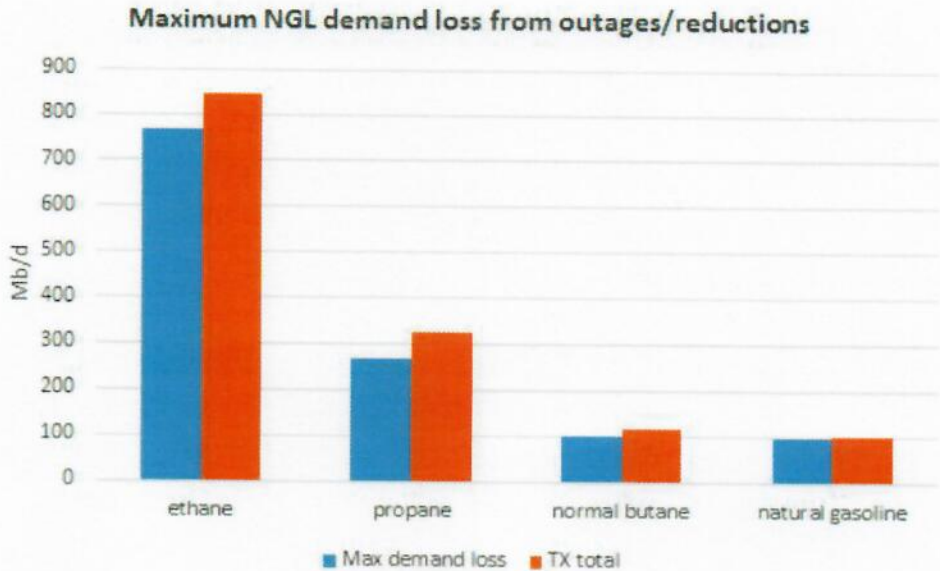


Tropical Storm Harvey Update 29

Petrochemical Production Impact (Thursday updates in Red)



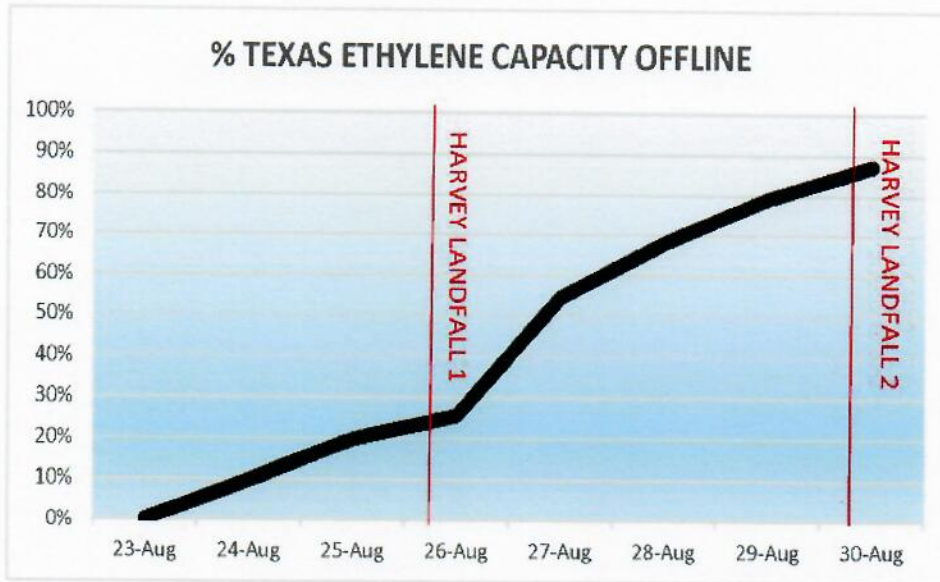
- An estimated 111 million pounds per day of ethylene production is shut, representing about 88% of Texas' total capacity, 64% of Gulf Coast capacity and 61% of all US capacity. By the evening of Wednesday Aug 30, an estimated total of about 440 million pounds of ethylene output will have been lost since Thursday Aug 24.
- Steam crackers in Texas produce 127.2 million pounds of ethylene each day, representing 73.1% of all US ethylene capacity.
- As of Wednesday evening, NGL demand loss from petrochemical plant outages or reductions as a result of the storm are totaling 765,000 b/d of ethane (90.5% of total TX demand); 270,000 b/d of propane (83.1%), 102,000 b/d of normal butane (87.2%) and 95,000 b/d of natural gasoline (95%).



Infrastructure Update (Thursday updates in Red)

- The US Coast Guard late Wednesday allowed the partial reopening of ports along the Texas coast, including those in Corpus Christi, Houston, Galveston and Freeport. The order only permits vessel traffic during daylight hours and drafts could not exceed 20 feet for Port Corpus Christi, 33 feet for Texas City, Galveston and Freeport and 37 feet for the Port of Houston. The Coast Guard said the upper Houston Ship Channel, from Morgan's Point inbound to the turning basin, will remain closed due to severe currents and hazards.
- **Union Pacific Railroad** announced on its Web site that it will be issuing embargoes, beginning with all traffic destined to Houston and surrounding areas. Customers should also consider diversions of routes where feasible, it said. Trains are being "annulled" for Sunday and Monday, at a minimum. Facility switching in Houston and surrounding areas will remain suspended for at least another 48-72 hours.

US Gulf chemical/recycling plant shutdowns (Thursday updates in red)



- **LyondellBasell** has declared force majeure on styrene from its 2.86 billion lbs/yr unit at Channelview. The olefins unit shut down earlier this week due to Harvey.
- Two explosions were seen at 2 am Central time Thursday at **Arkema's** liquid organic peroxides facility at Crosby, TX. The company said in a statement that the incident was due to unprecedented flooding that overwhelmed the site's primary power and two sources of emergency backup power. As a result, the plant lost critical refrigeration of the products on site. "Some of our organic peroxides products burn if not stored at low temperature," the company said. Ten police officers were hospitalized after inhaling fumes from the chemicals released during the incident, the Harris County Sheriff's office said. Several officers were released from hospital a few hours later.
- **Oneok** on Wednesday said its Mont Belvieu complex is operational and did not experience significant damage. However, some assets are operating at reduced rates due to "temporary refinery and petrochemical facility outages and restraints on its customers' ability to receive NGL products," the company said. Oneok has 340,000 b/d of fractionation capacity at Mont Belvieu.
- **PET/PET Feedstocks**
 - The Point Comfort site, which includes an MEG unit operated by **Nan Ya Plastics**, remains shut.
 - Details on the status of MEG shipments from **Indorama's** Clear Lake plant near Houston were unavailable. A company source on Monday said the facility had been shut.
 - **DAK Americas'** PET production in North America remains unaffected by the storm, but it continues to "evaluate contingency plans and utilize alternative logistics routes...for raw materials and customers who have been or will be impacted."
 - Work on M&G's **Project Jumbo PET** plant in Corpus Christi remained suspended; no details on possible damage to the \$1 billion project was available. Details on any impact to PET production at M&G's Apple Grove, W VA PET plant were unavailable.
- **Targa** said it shut down its Cedar Bayou fractionators late Tuesday due to "flooding that disrupted the operation of freshwater supply pumps," the company said. The fractionators have a combined capacity of 293,000 b/d.
- **ExxonMobil** begins shutting units at Beaumont, including some olefins and PE (Ethylene: 1.8 B lbs/yr, LDPE: 0.496 B lbs/yr, HDPE/LLDPE: 1.594 B lbs/yr)
- **Flint Hills Resources** is shutting down its 1.35 billion lbs/yr Port Arthur olefins unit Tuesday through Friday due to Tropical Storm Harvey: TCEQ filing
- **Enterprise Products Partners** said it plans to restart its South Plant at Mont Belvieu from Tuesday through Sep 3, according to a TCEQ filing. The plant comprises Fractionators I, II and III, which have a total capacity of 245,000 b/d.

- The following Waste Management facilities remained closed on Wednesday: Sam Houston Tran VII Landfill, WRS Transfer Station, Green Shadows Landfill, AF Landfill, Fairbanks Landfill, Newton (Baytown Landfill and Beaumont materials recovery facility (MRF). The Westside MRF will reopen at and at 8 am on Sep 1; the Gasmer MRF will reopen at 10 am on Aug 31; the Clay Road MRF will reo Aug 31; no contaminated loads will be accepted at any of these facilities. The Atascocita Landfill reop Aug 30.
- **Huntsman** shut down all operations at Port Neches, Chocolate Bayou, Conroe, Dayton, Freeport company's plants at Geismar are operating normally. Huntsman's olefins unit at Port Neches can pro lbs/yr of ethylene, 18 million lbs/yr of CGP, 1.17 billion lbs/yr of ethylene oxide, 80 million lbs/yr of eth million lbs/yr of propylene glycol and 525 million lbs/yr of propylene oxide.
- One of **Equistar's** two olefins units at Channelview shut overnight Monday. Each unit has an eth billion lbs/yr. The other unit continues to operate.
- **DuPont** shut its 1.5 billion lb/syr olefins unit at Orange on Monday.
- **EPD's** 85,000 b/d Frac VII at Mont Belvieu shut down late Sunday due to an equipment trip, acc filing. Three of EPD's six propylene fractionators have shut down. The six splitters have a combined t of 95,000 b/d. EPD stated all of its storage facilities at Mont Belvieu are either "in service or limited s" said in a statement Monday afternoon.
- VCM Plant Outages
 - **OxyVinyls** at La Porte, TX and at Deer Park, TX
- PVC Plant Outages
 - **OxyVinyls** at Deer Park, TX and at Pasadena, TX
- **Chevron Phillips** is shutting down "certain operations" at its Sweeny olefins facility, the compan three olefins units with a combined capacity of 4.35 billion lbs/yr of ethylene and 1.16 billion lbs/yr of
- Indorama shut down its 300 million lbs/yr ethylene oxide unit at Clear Lake on Sunday due a trip caused by Harvey: TCEQ filing.
- **American Acryl** shuts down its 308 million lbs/yr acrylic acid unit at Bayport on Sunday, according to a community hotline message.
- **Ineos** has shut its Olefins 1 and Olefins 2 units at Chocolate Bayou throughout Sunday morning and afternoon. The plants have a combined ethylene production capacity of 4.1705 billion lbs/yr.
- **Chevron Phillips** is shutting down its entire Cedar Bayou facility on Sunday through September 6 due to Tropical Storm Harvey, according to a TCEQ filing. The facility has an an ethylene production capacity of 1.84 billion lbs/yr, 1.01 billion lbs/yr of PGP, 1.35 billion lbs/yr of HDPE, 620 million lbs/yr of LDPE and 210 million lbs/yr of LLDPE.
- **Shell Deer Park** is shutting down its Deer Park facility Sunday due to "inclement weather and flooding conditions," according to a community hotline. The facility has an ethylene production capacity of 2.3 billion lbs/yr 1.61 billion lbs/yr of CGP and 1.595 billion lbs/yr of cumene.

- The following polymer plants are reported down because of Harvey's approach
 - Braskem Seadrift (PP)
 - Dow Seadrift (PE)
 - LyondellBasell Matagorda (PE)
 - LyondellBasell Victoria (PE)
 - LyondellBasell Chocolate Bayou (PE)
- **Equistar's** 2.5 billion lbs/yr Corpus Christi olefins unit was shut Thursday as part of a site-wide shutdown ahead of the storm. Equistar activated severe weather plans at its Chocolate Bayou, Matagorda and Victoria manufacturing sites and its Equistar Markham Pipeline Facility.
- **MarkWest Energy Partners** shut down its 225 million lbs/yr Javelina ethylene facility Thursday evening.
- **Formosa** shut its entire Point Comfort site Thursday in preparation for the storm's arrival.
- **OxyChem** was shut its entire Ingleside site Thursday in preparation for the storm's arrival.
- **Ineos Phenol's** 1.98 billion lbs/yr cumene unit in Pasadena will remain shut, pending repairs to a propylene leak, until after the threat of Harvey recedes. The leak was reported August 21.

US Gulf Coast refinery shutdowns/curtailments (Thursday updates in red)

- **Marathon Petroleum** is restarting its 80,000 b/d Texas City refinery Wednesday through September 13, according to a TCEQ filing.
- **Total** has shut down its 225,000 b/d refinery at Port Arthur
- **Motiva** is shutting down its 600,000 b/d Port Arthur refinery due to area flooding.
- **Valero** is restarting its 115,000 b/d Corpus Christi East, 210,000 b/d Corpus Christi West and 100,000 b/d Three Rivers refineries.
- **Valero** shut down its 292,000 b/d Port Arthur refinery late Tuesday.
- **Flint Hills'** 60,000 b/d Corpus Christi East refinery is restarting from Tuesday evening through September 6, according to a TCEQ filing.
- **Marathon Petroleum** is shutting down its 450,000 b/d Galveston Bay refinery due to Harvey.
- **Magellan Midstream Partners** late Monday suspended all inbound and outbound refined products and crude oil (including Longhorn and BridgeTex) transportation services on its pipeline systems in the Houston area. Magellan provided pipeline transportation services to Marathon's Galveston Bay and Texas City refineries.
- **Petrobras** is taking down its 100,000 b/d Pasadena refinery on Sunday due to "severe weather," according to a TCEQ filing.
- **ExxonMobil's** 560,000 b/d Baytown refinery is reducing rates due to the shutdown of the Houston Ship Channel, the company said. Units that have been shut down include the 100,000 b/d crude unit, 65,000 b/d catalytic reformer and 52,000 b/d coker.
- **ExxonMobil** is shutting down several units at the 350,000 b/d Beaumont refinery due to high waters caused by Tropical Storm Harvey. The 240,000 b/d crude unit and 45,000 b/d coker have already been shut down.
- **Shell** is shutting down its 340,000 b/d Deer Park refinery Sunday due to "inclement weather and flooding conditions," according to a community hotline.
- **Citgo's** 157,000 Corpus Christi refinery shut down at midday Thursday.
- **Flint Hills** is restarting its 230,000 b/d Corpus Christi West refinery Tuesday through September 6, according to a TCEQ filing

- **NuStar Energy** shut its Corpus Christi terminal Thursday. NuStar has more than 3.6 million barrels of total storage in Corpus Christi, including 3.1 million barrels of crude oil storage and 577,000 barrels of refined product storage.
- **Magellan Midstream Partners** suspended operations late Wednesday at its Corpus Christi terminal and 100,000 b/d condensate splitter.
- **LyondellBasell** reduced rates at its 280,000 b/d Houston area refinery.