

# ISSUE BRIEF:

## REFINERY CLOSURES AND RESTARTS

Preventative closures of refineries are a central tenet of the refining industry's storm preparedness protocols in advance of a storm like Hurricane Harvey. Shutdowns can take several days and are done carefully to ensure the safety of workers and surrounding communities. After shutdowns, these facilities are typically staffed with a "ride-out crew" to stay onsite to monitor safety and any potential damage resulting from the storm.

These preventative measures are effective. Harvey disrupted fuel markets by impacting 24 refineries that normally churn out a quarter of U.S. fuels. This prompted market participants to turn to inventories and send fuel over longer distances to keep feeding markets. But 20 refineries have resumed fuel manufacturing, in full or in part, in the two weeks since Harvey. As of September 13, the plants still offline represented just 4 percent of U.S. refining capacity. This is a testament to refiners' commitment to producing and supplying fuels that are critically important to the American economy.

The relatively quick resumption in output is significant given that restarting plants is much more complicated than flipping on a light switch. Restarts take time. Like shutdowns, restarts must be done slowly and deliberately, to protect the health and safety of employees, as well as communities and the environment.

Restarts after storms include securing safe access to the site, and checking the integrity of equipment, storage tanks, process units and instrumentation. They also include inspecting facilities for any storm damage, making any necessary repairs and verifying that there are sufficient feedstocks such as oil and natural gas available for processing from ports and pipelines. Inbound supplies must be able to arrive at the refinery and outbound products must have a clear route to market, so transportation infrastructure is also examined before opening.

As soon as all facilities are determined to be safe, crews move to energize electrical systems and cautiously ramp up activity in process units to begin turning raw materials into products such as diesel, gasoline and jet fuel.

When a refinery is restarted, operators proceed slowly and carefully because piping systems may have unprocessed hydrocarbons inside of them left over from the shutdown. Operators also work to identify any anomalies or changes in the system as units are brought back online. Making sure each unit is operating normally keeps the overall system safe.

Sometimes refineries must flare during shutdowns or restarts. A flare is first and foremost a safety device, essentially a safety relief valve, which a refinery uses to safely burn excess material, or hydrocarbons, which cannot be recovered or recycled. The excess hydrocarbons are safely burned in the flare, a more environmentally sound method than releasing the hydrocarbons directly into the atmosphere. Flaring is regulated by both the EPA and state environmental agencies and is minimized as much as possible.

In sum, preventative closures, as well as restarts and flaring, are part of methodical procedures designed to ensure the safety of workers, communities and the environment. The resumption in activity we have seen at Gulf Coast refineries speaks to the resilience of the industry and its commitment to fueling America's economy.

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