CLOSE THE DOOR - SLUMPING REFINED PRODUCT DEMAND, ECONOMICS, AND FIRE FORCE REFINERY CLOSURES

November 18, 2020

It has been nearly a year since the novel coronavirus was first detected in China — that's right, a year. In that time, we have seen significant parts of the world come to a near standstill, become all too familiar with video conferencing, and canceled family vacations and business travel. The fact that many of us have been stuck at home has wreaked havoc on the U.S. refining industry, with plummeting utilizations and some facilities shutting down, either temporarily or permanently. And, depending on how the U.S. transportation sector rebounds from the pandemic in 2021 and beyond, more refinery closures may be on the horizon. Today, we look at the U.S. facilities that are shutting down and tally up the capacity lost so far.

It's been an extraordinarily challenging period for refineries, refinery owners, and yes — the folks that operate and maintain these complex and important facilities. We've been blogging about it all, including in Strange Brew in late March, where we explained that even before the initial coronavirus outbreak in Wuhan Province started to grab headlines around New Year's Day, refineries in the fourth quarter of 2019 and first two months of 2020 had been incentivized to shift their refined products output toward diesel, which can be used to help make IMO 2020-compliant low-sulfur bunker. Then, in our three-part Baby Break It Down series in April and May, we detailed what refiners were doing to reduce their overall output and minimize their gasoline and jet fuel production to help return refined-product demand and supply into closer balance.

More recently, in Where Are You Going, we noted that refiners produced less diesel, motor gasoline, and jet fuel in the second quarter than any quarter in recent memory, and their refining margins were sharply lower than the historical range — a one-two punch that hit their bottom lines hard. The situation improved somewhat this summer and early fall, but it's still tough out there. Last week, Shell announced that it will be shutting down the company's 240-Mb/d Convent, LA, refinery after failing to find a buyer for the facility, which first came online (under Texaco's ownership) in 1967. The planned closure of Convent marks the seventh refinery shutdown to be announced since June 2019.

Let's take a look at the refineries that have announced closures since last summer:

- **Philadelphia Energy Solutions – Philadelphia, PA:** One of the few non-COVID-related "casualties," Philadelphia Energy Solutions closed its 335-Mb/d Philadelphia refinery following a major fire in June 2019. The refinery had been an East Coast staple since the late 1800s, but had faced numerous challenges in recent decades due to poor financial performance. The fire ended up being the last straw and forced the permanent shutdown of the facility.
- **Marathon Petroleum Corp. – Martinez, CA:** MPC idled the 161-Mb/d Martinez, CA, refinery in April 2020, citing the sharp reduction in transportation fuel demand in Northern California tied to COVID-19. In August, the company announced that the shutdown would be permanent and it would be evaluating a conversion of the facility into a renewable diesel plant and terminal. On Marathon's most recent earnings conference call, the company noted the conversion project was looking favorable.

- **Marathon Petroleum Corp. – Gallup, NM:** MPC idled the 26-Mb/d Gallup, NM, refinery in April 2020, again due to the impacts of the pandemic. As the company did with the Martinez refinery, Marathon announced in August that the shutdown would be permanent.
- **HollyFrontier – Cheyenne, WY:** HollyFrontier Corp. (HFC) announced in June 2020 that it would be shutting down the company's 48-Mb/d Cheyenne, WY, refinery and converting the facility into a renewable diesel manufacturing plant. The refinery processed its last barrel of crude oil in August and the capital project for the conversion has been started.
- **Phillips 66 – Rodeo & Santa Maria, CA:** In August 2020, Phillips 66 (P66) announced that it would be closing its 160-Mb/d Rodeo, CA, refinery and its associated Santa Maria, CA, facility by 2023. The refinery will be converted into a renewable diesel manufacturing plant.
- **PBF Energy – Paulsboro, NJ (Partial):** In late October 2020, PBF announced that it would be shutting down a significant portion of the Paulsboro, NJ, refinery and integrating the remaining units with its nearby Delaware City, DE, refinery. The result of this partial shutdown/integration project will be a net loss of approximately 80 Mb/d of high-conversion capacity.
- **Shell – Convent, LA:** As we noted above, Shell announced last week that it would be permanently shutting down its 240-Mb/d Convent, LA, refinery by year-end. Shell had put the facility up for sale earlier this year, but it could not find a suitable buyer.

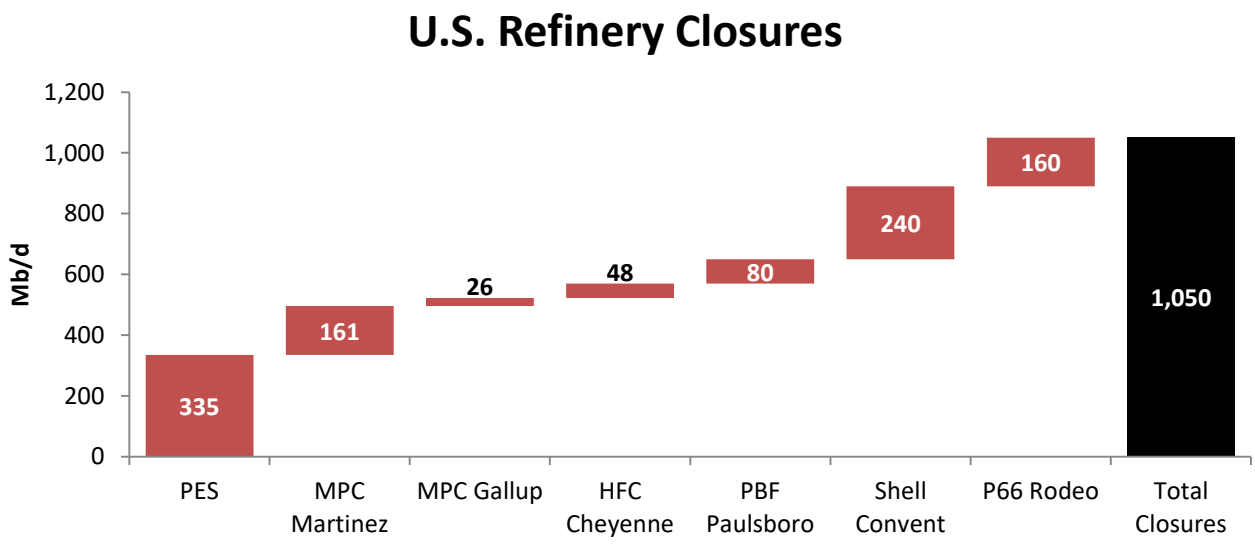

Figure 1. Announced U.S. Refinery Closures Since June 2019. Sources: Company Announcements

These seven refineries represent a collective 1,050 Mb/d of capacity (see Figure 1 above). That represents less than 6% of total U.S. installed capacity as of the beginning of 2020, but the regional-market impacts vary quite widely. Taking the capacity shutdowns and separating them into PADDs, we looked at the closures on both a percent-of-PADD capacity and percent-of local-demand basis.

- In PADD 1 (East Coast), the closure of the PES refinery and the partial shutdown and integration efforts at PBF's facilities represent 34% of the total refining capacity in PADD 1 (blue bar to far left in Figure 2). Since the PADD 1 region has higher demand for refined products than supply, this loss of capacity will ultimately need to be replaced by increased shipments from the Gulf Coast up the Colonial and Plantation pipelines or via increased waterborne imports. Some

barrels also could enter the market on the Laurel Pipeline from Ohio, now that bidirectional service on the pipeline to Altoona, PA, has been approved.

- In PADD 3 (Gulf Coast), the shutdowns of the Shell Convent and Marathon Gallup refineries represent only 3% of the refinery capacity in the region. The results of these shutdowns will have different impacts due to the locations of these facilities. On the Gulf Coast, the refineries produce more fuel than is needed for local market consumption, requiring excess product to be transported to other domestic markets or exported. Shell Convent's closure will likely reduce refined-products exports from the Gulf Coast, since excess production is currently placed on the water. However, Marathon Gallup's closure requires increased shipments into the Albuquerque and Four Corners markets from refineries in El Paso, TX, and the Texas Panhandle, since the Gallup refinery was the only source of local supply in that region.
- In PADD 4 (Rockies), the closure of HollyFrontier's Cheyenne, WY, refinery represents the loss of 7% of the PADD's capacity. This shutdown will require the displaced supply to be met through increased shipments from refineries in the Texas Panhandle and Kansas into eastern PADD 4.
- In PADD 5 (West Coast), the loss of the two refineries — MPC's Martinez, CA, facility and Phillips 66's Rodeo/Santa Maria complex — represent 11% of capacity. This should drive increased imports of gasoline and jet fuel, while potentially limiting the amount of diesel exports from PADD 5, at least in the near term.

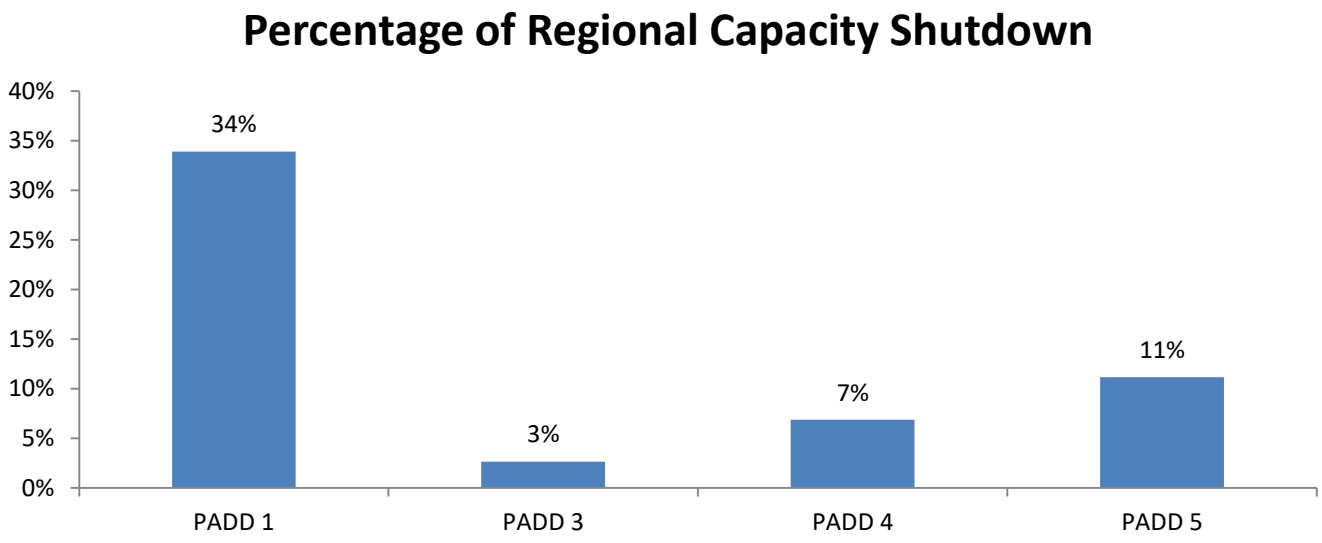

Figure 2. Refinery Closures' Shares of PADD Refining Capacity. Sources: Energy Information Administration, Baker & O'Brien Analysis

Of course, the U.S. isn't the only country losing refining capacity. Permanent closures over the past year or so have been announced in Europe and Asia as well, bringing the global shutdown total to around 1.7 MMb/d so far. This may sound like a lot of rationalization, but it only represents less than 3% of global capacity. Also, keep in mind that this is occurring at the same time that other facilities are being built. According to Baker & O'Brien's estimates, between 2020 and 2021, approximately 3.6 MMb/d of new refining capacity will be coming online. In other words, even with 1.7 MMb/d of

closures, we still end up with a net 1.9-MMb/d addition in global refining capacity. There are other refineries around the globe in temporary shutdown mode that may ultimately end up being permanent shutdowns to counteract this net addition of capacity, particularly if demand doesn't make a full rebound.

The U.S. is currently absorbing both the bad news of rising COVID-19 infection rates and hospitalizations and the good news on the vaccine front. Refinery owners face a number of important questions, beginning with: What will it all mean for transportation fuel demand in 2021 and beyond? Will the pandemic and its impacts have a lasting negative effect on demand for jet fuel, gasoline, and diesel, or will demand for transportation fuels rebound in short order to pre-COVID levels? The answers to these and other questions will help determine whether the refinery closures we've seen recently will be the last for a while, or only the beginning.

If you're interested in closely monitoring developments in the U.S. refining industry, check out U.S. Refinery Billboard, a new, weekly report from RBN and Baker & O'Brien.

Note: The article was authored by Amy Kalt of Baker & O'Brien and published on RBN Energy's Daily Energy Post on November 18, 2020.

"Close the Door" was written by Kenny Gamble and Leon Huff, and appears as the fifth song on Teddy Pendergrass's second solo studio album, Life Is a Song Worth Singing. Released as a single in May 1978, the song went to #1 on the Billboard Top R&B Singles chart and #25 on the Billboard Hot 100 Singles chart. It has been certified Gold by the Recording Industry Association of America (RIAA).