

US Onshore Crude Production Forecast – Updated March 2020

Summary

This paper provides an update to the US crude oil production forecast published in December 2019. The updated forecast is based on reduced US shale oil rig counts in 2020 and 2021. The paper then discusses the current global crude oil market imbalance caused by demand erosion and additional supply from OPEC+. The discussion on market imbalance is followed by an estimate of US crude oil production levels required to balance the market and US shale oil rig counts required in 2020 and 2021 to realize these production levels.

The updated forecast predicts US crude oil production of 12.6 MMbbl/day in 2020 and 11.6 MMbbl/day in 2021, based on US shale rig counts of 600 and 450 in 2020 and 2021 respectively. This is compared to estimates of 13.1 MMbbl/day and 12.8 MMbbl/day for 2020 and 2021 made in December 2019. These rig count reductions are insufficient to eliminate a global glut in the crude oil market through 2021, assuming an optimistic demand picture and that OPEC+ no longer serves as a market regulator. Under this scenario, global oil stocks would continue to build through 2021 and beyond and commodity prices would remain depressed.

US crude oil production would need to drop to 11.1 MMbbl/day in 2020 and 9.1 MMbbl/day in 2021 to bring the market into balance, which would require an average US shale oil rig count of 325 for 2020 and 112 for 2021, again assuming an optimistic demand picture and no intervention from OPEC+. This forecast, by necessity, contains several assumptions, but given the size of the gap, it is fair to conclude that US oil shale rig counts need to fall further than 600 and 450 in 2020 and 2021 respectively to balance the global crude oil market.

US Crude Oil Production Update

The original US crude oil production forecast was based on an US shale oil rig count of 685 for 2020, falling to 630 in 2021. These rig counts result in a forecast of average US crude oil production of 13.1 MMbbl/day in 2020, slightly above IHS (12.8 MMbbl/day), and IEA (12.9 MMbbl/day), but well short of OPEC (13.6 MMbbl/day). This production forecast is shown in Figure 1, below.

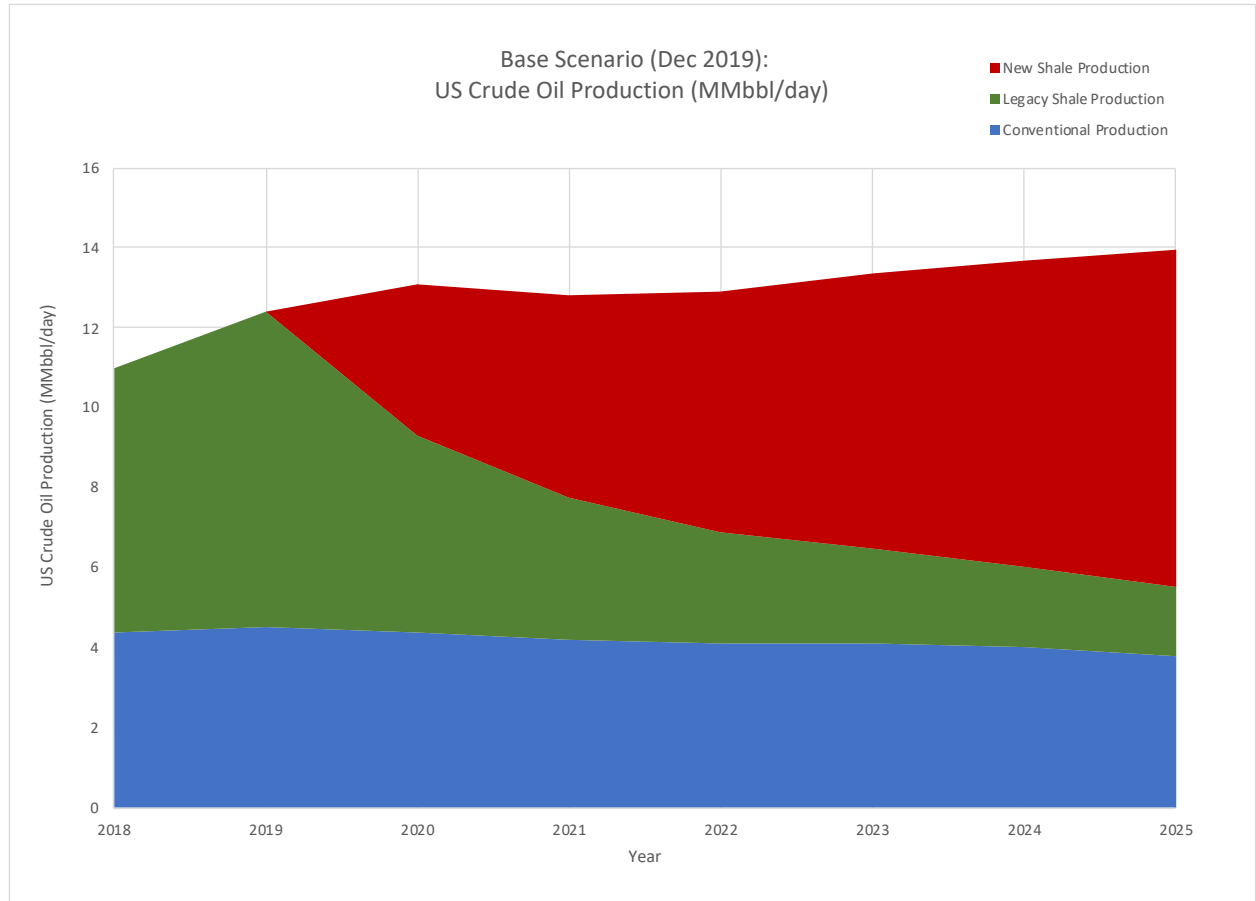


Figure 1 - US Crude Oil Production Forecast (December 2019)

Things have clearly changed since this forecast was made in December 2019. The updated forecast is based on a US shale oil rig count of 600 in 2020 and 450 in 2021¹ and sees US crude oil production peaking at 12.6 MMbbl/day in 2020, before falling to 11.6 MMbbl/day in 2021. The revised production forecast is shown in Figure 2, below.

¹ “\$32 oil. What Now?”, Spears Insider, The Drilldown. March 16th, 2020.

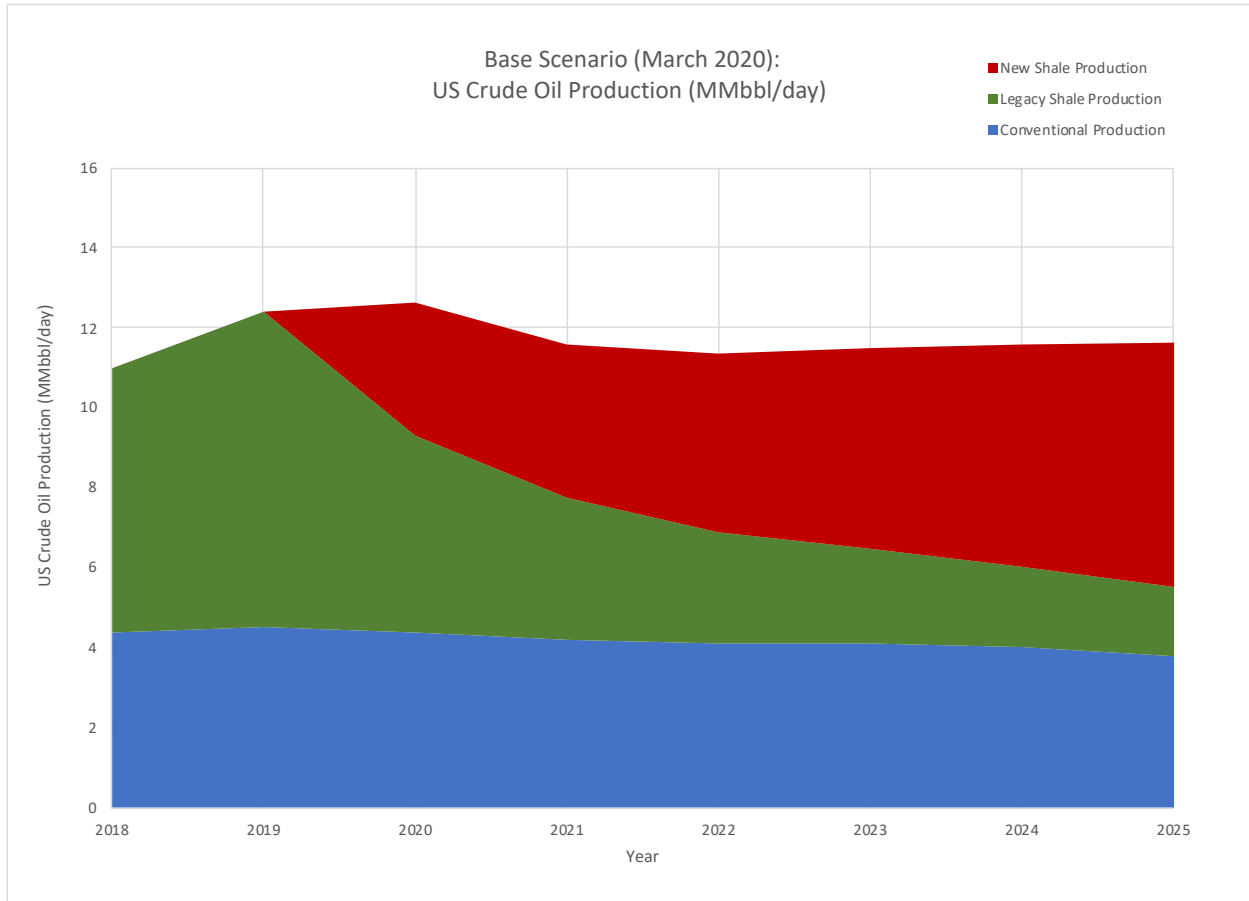


Figure 2 – US Crude Oil Production Forecast (March 2020)

Global Crude Oil Market Balance

The IEA has reduced their global crude oil demand estimate for 2020 from 101 MMbbl/day to 99.9 MMbbl/day due to COVID 19 as of their March update². This estimate assumes oil demand returns to normal in the second half of 2020, which even a few days on from the report’s publication is starting to look optimistic. It should be noted that these estimates are annual averages, which differ from the immediate demand declines of 8 MMbbl/day – 11 MMbbl/day currently being quoted in the press.

On the supply side, global production was 99.9 MMbbl/day at the end of February, with OPEC+ holding 2.7 MMbbl/day off the market through a combination of overcompliance with their 1.7 MMbbl/day production curb and involuntary production outages. If OPEC+ had adopted the proposal for an additional 0.6 MMbbl/day of production curbs, and assuming some ongoing production outages, the market would have stayed broadly balanced against the IEA demand estimate. As we know, that didn’t happen.

² “Oil Market Report”, International Energy Agency, March 9th, 2020.

The current OPEC+ supply curbs are due to expire at the end of March. If we assume that the production interruption in Libya continues, then OPEC+ has approximately 4 MMbbl/day of additional crude production capacity. If we assume it takes 90 days to bring this on stream, then that would add 2 MMbbl/day to global production in 2020 and 4 MMbbl/day in 2021 on an annualized basis. Assuming underlying declines, sanctioned projects coming on stream and involuntary supply interruptions net out over this period, a 2 MMbbl/day and 4 MMbbl/day reduction in crude oil production in 2020 and 2021 respectively would be required on an annualized basis to balance the market.

As discussed in the previous section, a 2020 average oil well land rig count of 600 would reduce projected US crude oil supply from 13.1 MMbbl/day to 12.6 MMbbl/day, an annualized decline of 0.5 MMbbl/day. This alone would not be enough to bring the market back into balance in 2020. Further reduction of the US shale oil rig count to an annual average of 450 in 2021 would reduce US Crude Oil supply to 11.6 MMbbl/day in 2021, a reduction of 1.5 MMbbl/day, which would be insufficient to balance the market in 2021. This means global crude oil stocks would continue to build through 2021, perpetuating depressed commodity prices.

US Shale as Swing Producer

There have been periods throughout the history of the oil & gas industry where Saudi Arabia and OPEC have suspended supply regulation – in 1985, 1997 and 2014. All these cases have lasted more than 12 months and so it is reasonable to expect that crude oil markets could continue without supply regulation through 2020 and into 2021.

US shale oil is the natural marginal barrel, given its short investment cycle times and relatively high production costs. To bring the market into balance, US crude oil production would need to drop to 11.1 MMbbl/day on an annualized basis in 2020 and 9.1 MMbbl/day on an annualized basis in 2021, down from 12.4 MMbbl/day in 2019. For this to occur, the US shale oil industry would have to restrict its production growth in 2020 to 1.8 MMbbl/day, or 8,800 new production wells, and 0.6 MMbbl/day, or 3,200 new production wells in 2021. This production profile is shown in Figure 3, below.

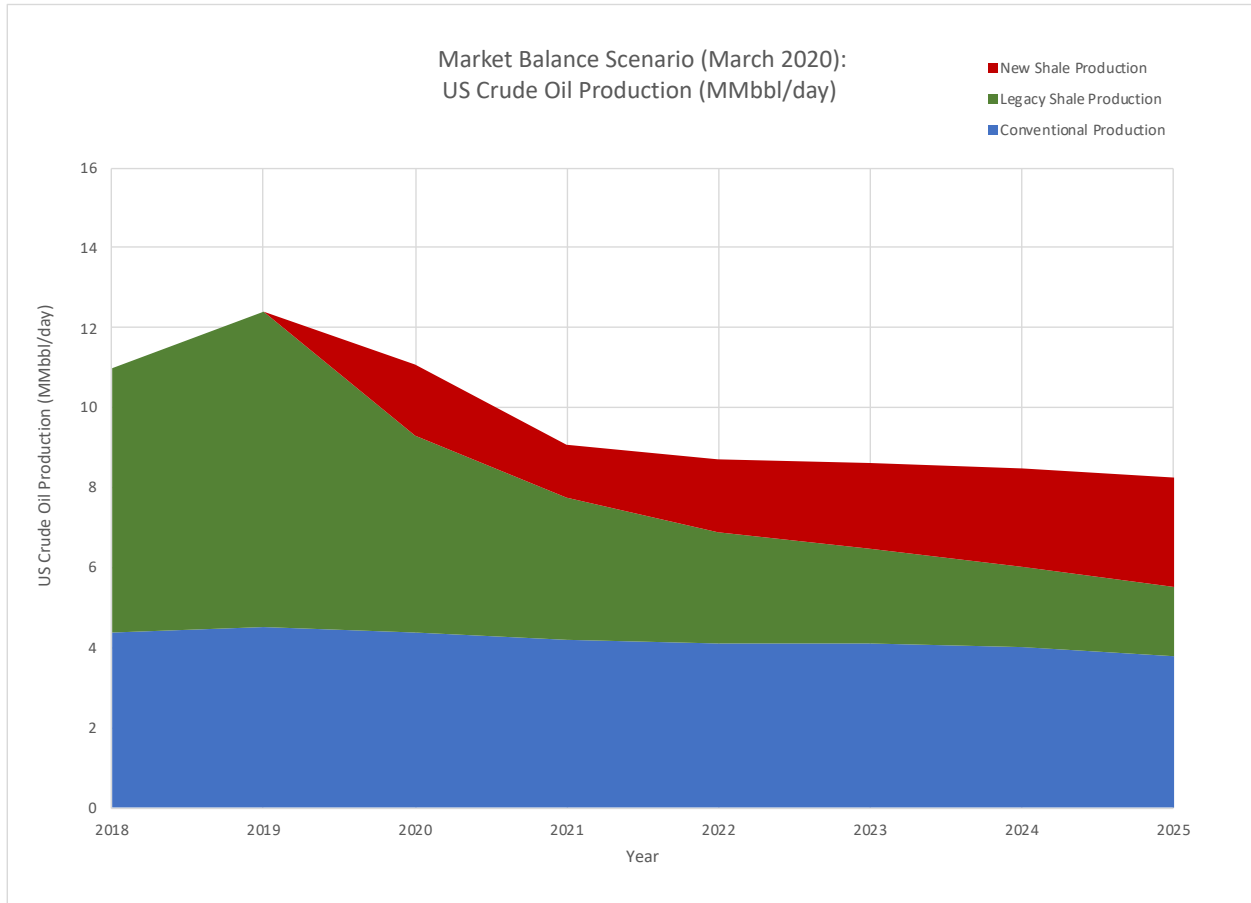


Figure 3 - US Crude Oil Production Forecast (Global Market Balance)

These production levels imply a 2020 US shale oil rig count of 325 and a 2021 US shale oil rig count of 112 on an annual average basis, rather than the current estimate of 600 and 450 in 2020 and 2021 respectively. The US shale oil rig count and rig and new well count under the balanced scenario is shown in Figure 4, below.



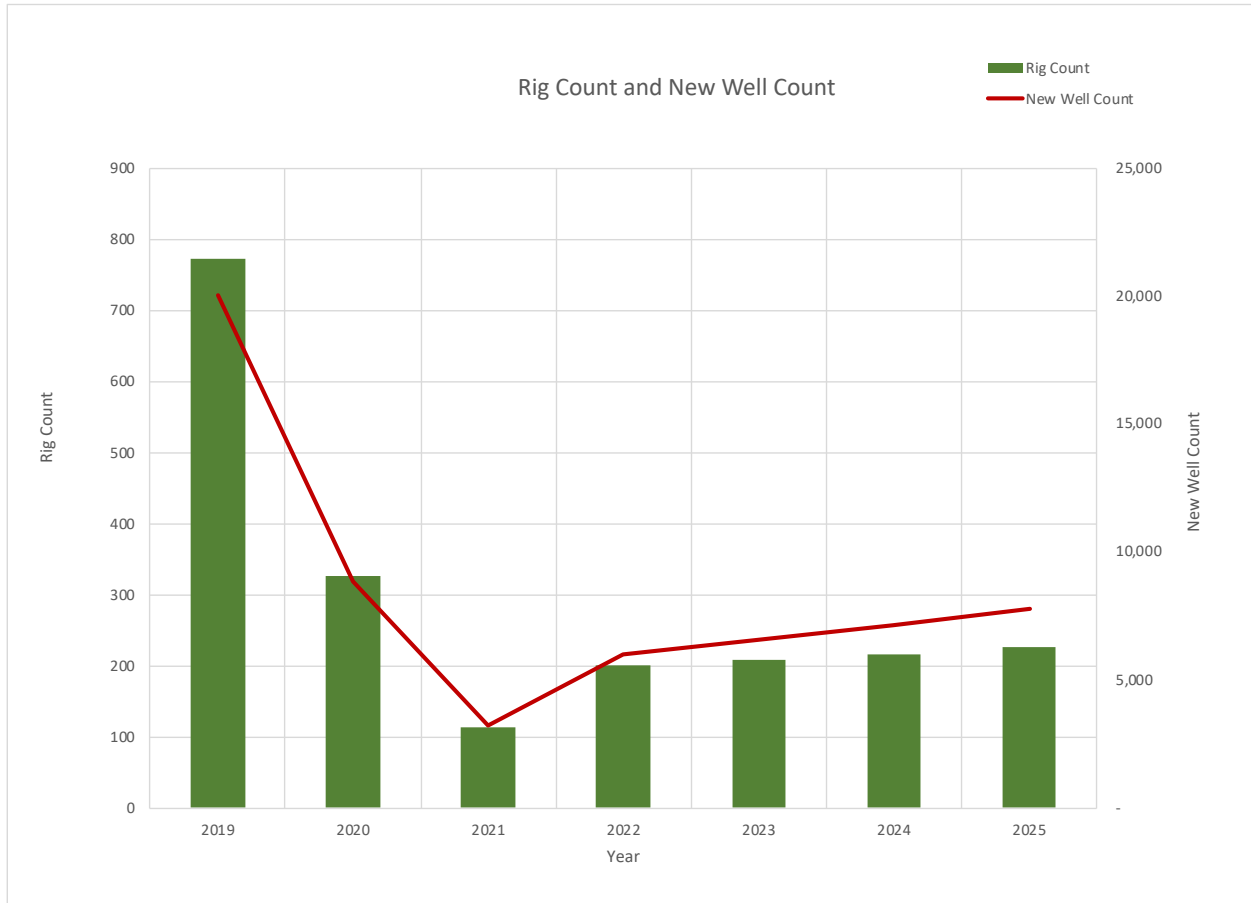


Figure 4 - US Shale Oil Rig Count (Global Market Balance)