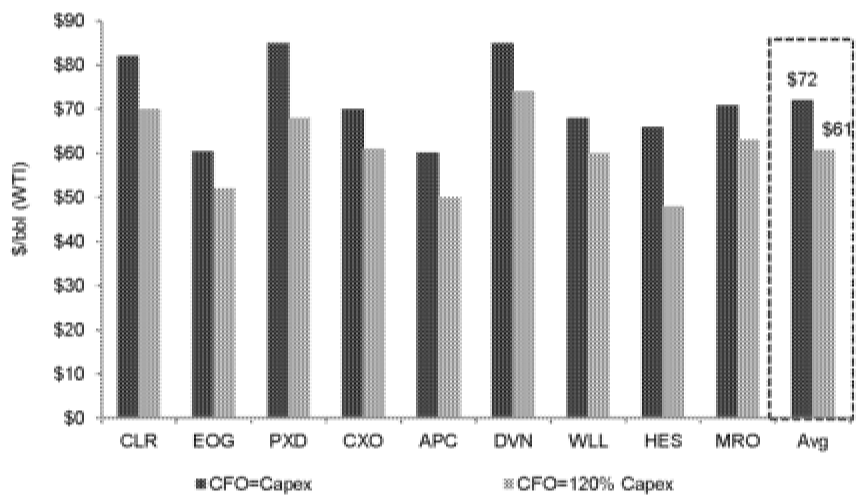
Incentivizing the US producer

As mentioned previously, the 500 Mb/d call on US onshore growth in 2017 will begin to ramp in the 2H16. We estimate that as early as late 2016 ~350 Mb/d of US onshore crude production will be needed vs. 1Q16 production levels. Assuming the need for an incremental 350 Mb/d of YoY growth in US Lower 48 oil production starting in the 2H of 2016 there is a clear need for WTI price to incentivize incremental activity. While US onshore production has continued to climb in the first half of 2015 as producers have decelerated from high 2014 exit rates, we expect that production will peak in 2Q15, with 2H15 trending slightly lower. In the absence of incremental activity, we anticipate that 2016 crude production growth in the Lower 48 would be down 200 Mb/d YoY.

In order to incentivize a resumption in drilling activity sufficient to generate this level of growth, we estimate the need for WTI at $65-$70/bbl. While some have pointed to single well economics as a justification for why growth/returns could work at $50 or $55/bbl, we believe ***corporate level cash flow will be the determining factor*** for go forward activity levels.

Figure 45: Oil price to generate 35% of prior peak growth in 2016-17



Source: Deutsche Bank

In order to estimate the oil price necessary to support the proper level of corporate cash flow, we made the following assumptions: 1) well costs 20% lower than late-2014 vintage cost estimates, 2) 1Q15 operating cost assumptions, 3) base case assumes capex in line with 2016 operating cash flow (CFO), 4) 2016 volume growth at 35% of pre-collapse growth rate (ie. price necessary to support ~350 Mb/d in the US vs. the prior pace of ~1,000 Mb/d). Within these constraints, companies in our coverage universe averaged an average need of $60 - $85/bbl to restart and maintain the onshore "growth machine". There is clearly a large degree of uncertainty surrounding this number, driven both by varied preferences of individual companies and significant uncertainty around the eventual scale and pace of efficiency and productivity gains.

From a matter of timing, we see the need for a moderate increase in activity levels beginning in the third quarter of 2015. Given the general preference for