

# THE CURRENT OIL & GAS SLUMP—THREE LESSONS FROM THE PAST



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The oil & gas industry has faced an unprecedented scenario over the past few weeks—demand falling due to the COVID-19 virus and a glut in supply due to Saudi Arabia and Russia's inability to reach an agreement on production quotas. Yet, while the COVID-19 virus brings with it challenges the world has never previously faced, when it comes to price crashes we have been here before—during the 2008/2009 financial crisis and the oil & gas price crash of 2015/16. In this paper and sourcing data from Enverus, we look at three lessons from the past and how they might be applied to today's low price environment. In order to do this though, it's important to understand how the industry reacted in 2008/2009 and 2015/16.

## THE 2008/2009 FINANCIAL CRISIS— A MISSED OPPORTUNITY?

It seems like another world to imagine oil prices at \$140/bbl and HH natural gas at over \$12/MMBtu, but that was the case prior to the 2008/2009 financial crisis. This also coincided with the first US unconventional shale play—the Barnett Shale.

Between 2007 and 2009, the Lower Barnett saw well spacing tightening from 1,000' to 700'. Proppant intensity rose steadily by ~10%, while fluid intensity fell by ~8%. When activity fell in 2009, well spacing, proppant intensity, and fluid intensity all declined (figure 1), as operators sought to salvage their remaining acreage and generate returns to keep trading. The average spud to completion time (figure 2) also dropped by ~30% in mid-2009 as prices bottomed out, although completion to production times increased until leveling off in 2010.

What could be seen here was the dual importance of well spacing and cycle times in low price environments, with returns taking precedence over recovery. Yet the fact that cycle times remained relatively constant represented a missed opportunity for optimizing returns. The minimal build-up of drilled but uncompleted (DUCs) wells also limited operators in being able to effectively manage expenditure on expensive completions.

# THE 2015/2016 PRICE CRASH—ADJUSTING OPERATIONS TO OPTIMIZE RETURNS

The oil & gas landscape was very different in 2015/2016. Oil prices had re-stabilized in the \$60 to \$80 range and unconventional onshore plays had taken off. Activity on the Eagle Ford, in particular, brings with it a number of useful insights.

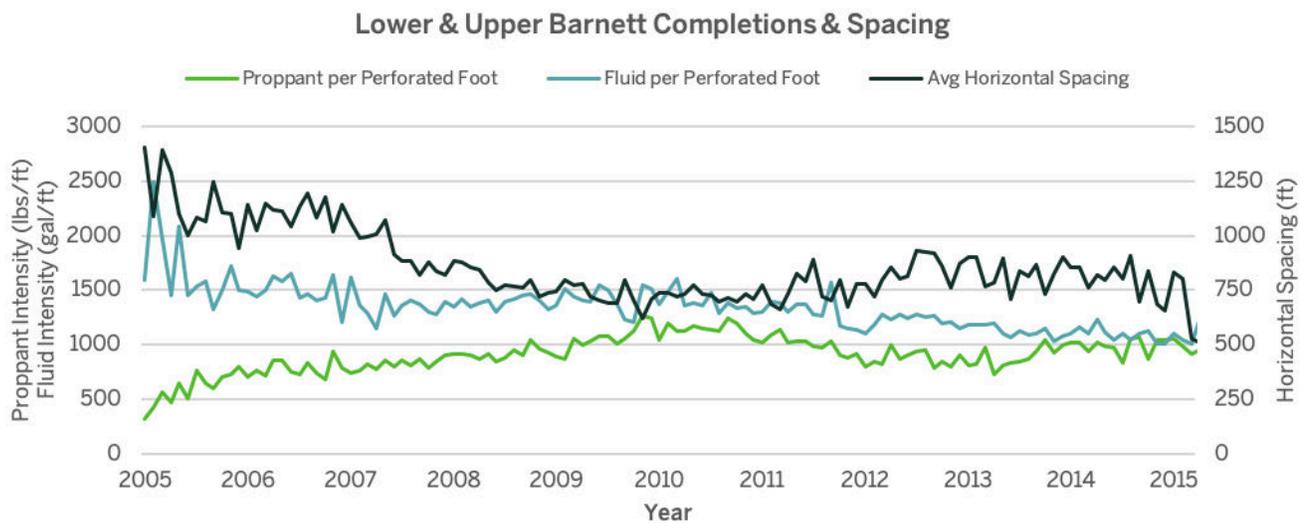


Figure 1

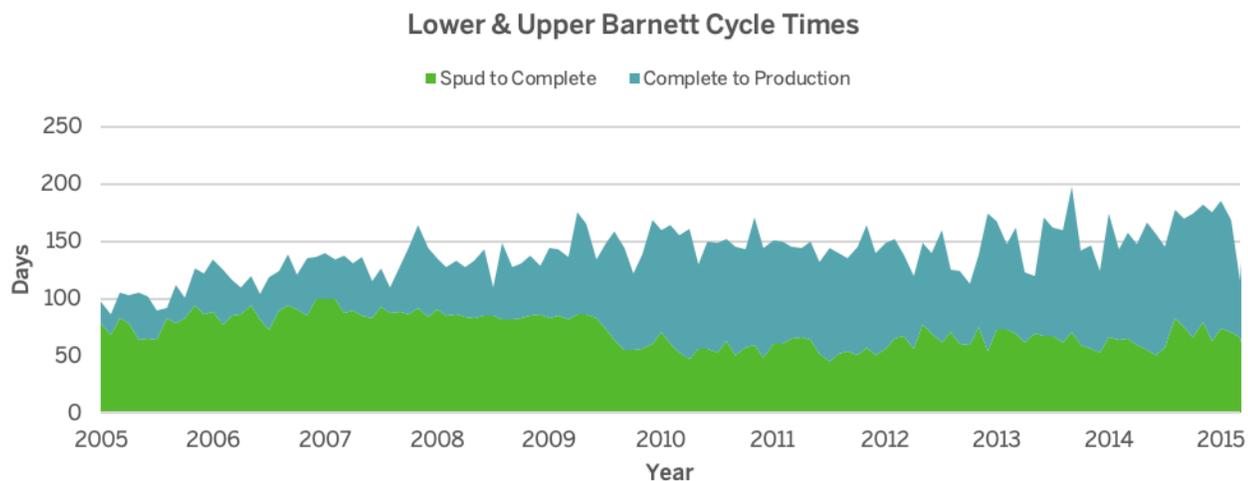


Figure 2

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In the years prior to 2015/2016, the Eagle Ford exhibited rapidly decreasing well spacing from ~800' in 2012 to ~500' in 2015. This coincided with a 50% increase in proppant intensity and a 30% increase in fluid intensity. Following the oil price collapse, however, well spacing levelled off at ~500', and proppant and fluid intensity climbed before finally levelling off around mid-2017 (figure 3). Well spacing began to rise slightly again, only after mid-2017, due to the focus on free cash flow generation over volumes growth.

Whereas there were few improvements in spud to completion times, completion to production times improved from 2014 to 2017 but reversed slightly afterwards as prices rebounded. Overall, cycle times fell then proceeded to rise.

Taking into consideration the parallels with today and the threat to shale, the 2015/2016 crash shows the importance of rapidly adjusting operations to optimize returns and cash flow. Wider spacing, fit-to-purpose completions, and reduced cycle times seen in data from 2019 show the importance of considering full cycle economics during operations to lower breakeven costs. In addition, the stagnation on completion and spacing design since 2015/16 suggests that there is additional room to improve returns and lower breakevens.

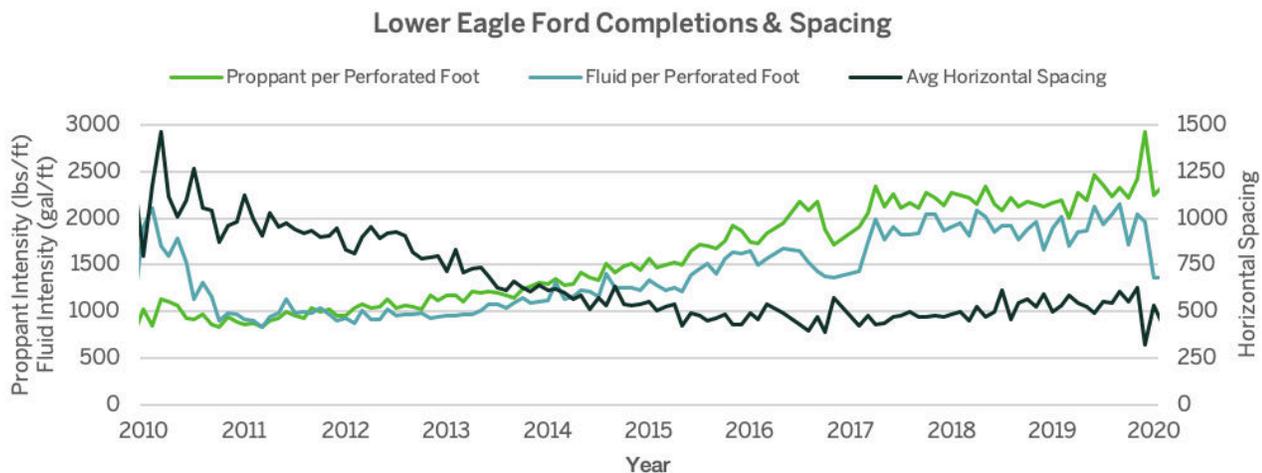


Figure 3

## LESSONS IN TODAY'S LOW PRICE ENVIRONMENT

So how can the past influence our decision-making today? There are a number of lessons to be drawn from previous experiences.

# LESSON 1: SAVINGS CAN BE REALIZED BY LESS CAPITAL INTENSIVE COMPLETIONS

When the focus is on cash flow and reducing costs, the intensity of completions has an important role to play, as does adjusting operations to increase returns and cash flow.

Enverus Wellcast and Enverus Well Spacing examined the Delaware Wolfcamp A. The play has an average of ~750' horizontal spacing (7 wells per section (WPS)) and 2,250 lbs/ft proppant intensity and has seen a relatively modest reduction in spacing between 2016 and 2018 compared to other plays. Enverus estimates that substantial cost savings can be realized by reducing completions to between 1,500-2,000 lbs/ft. This was based on creating type curves for various well spacing and completion combinations with prices held at \$50/Bbl oil and \$2/MMBtu gas across all cases.

Figure 4 shows diminishing single well net present values (NPV) with larger completions at above 2,000 lbs/ft and more than six WPS. Figure 5 shows Drilling Spacing Unit (DSU) NPV with a 10% discount rate (NPV10), with diminished DSU NPV when more than six WPS.

Operators with wells currently planned at 7-8 WPS could also realize substantial capital savings and improve NPV on both a per well and DSU level by reducing completions to between 1,500-2,000 lbs/ft. Taking lessons learned from the 2015/2016 price crash, this would alleviate issues associated with re-permitting and lead to a significant shift in proved undeveloped reserves (PUDs) locations booked for reserves. It would also help reduce capital intensity at a time when easy access to capital is scarce.

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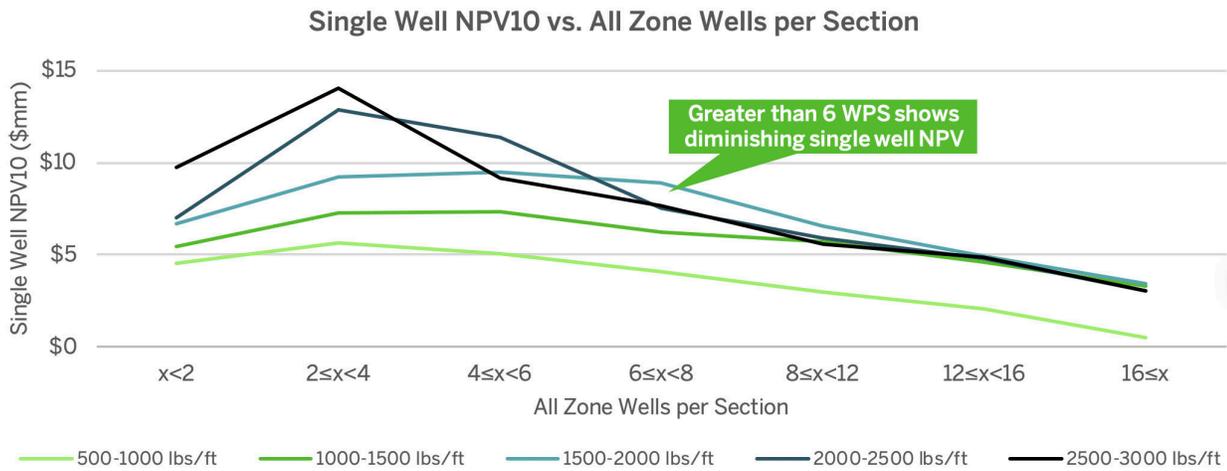


Figure 4

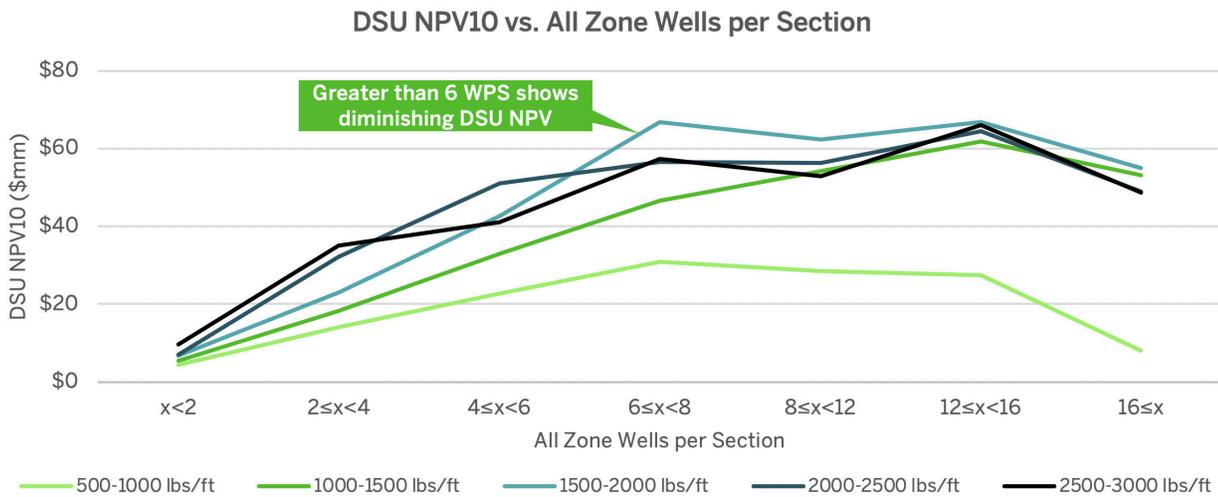


Figure 5

## LESSON 2: REDUCING THE NUMBER OF WELLS PER SECTION CAN LEAD TO ECONOMIC IMPROVEMENTS

As illustrated above, Enverus data show that reducing WPS can lead to significant economic improvements, with a reduction of between 4-6 WPS (1,320'-880') paying significant dividends if operators wish to continue in the ~2,250 lbs/ft completion design range. Optimal well spacing is crucial when oil prices are low alongside completion size combinations. When Enverus examined internal rate of return (IRRs) for the various well spacing and completion size combinations (figure 6), the near term case for smaller completions is again evident at the current spacing of around 7-8 WPS.

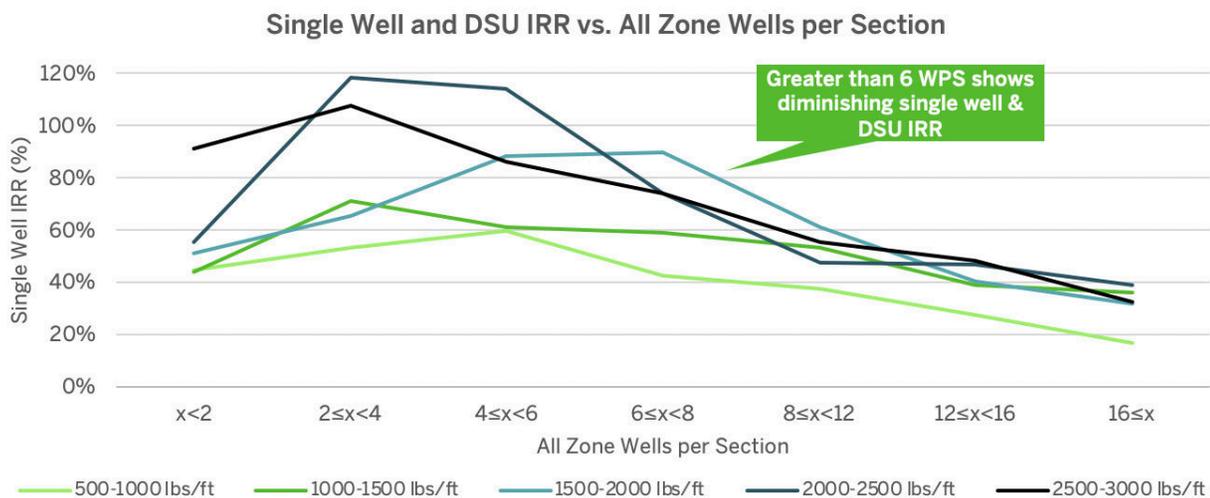


Figure 6

Looking long term, operators can see a significant upside in IRR and NPV with wider well spacing of around 4-6 WPS. This gives operators more room to optimize with larger completions where necessary as well as allowing for more standoff distance to parent wells.

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Larger well spacing also shows consistently lower breakeven oil prices. In the near term, holding well spacing constant at 7-8 WPS, a shift from 2,000-2,500 lbs/ft to 1,500-2,000 lbs/ft would offer a drop of approximately \$3/Bbl in breakeven price. In the long term, assuming completions hold steady at roughly 2,000-2,500 lbs/ft, a shift from current well spacing trends of 7-8 WPS to 4-6 WPS would offer a drop of approximately \$6/Bbl in breakeven price (figure 7). Both are significant breakeven drops at a time of low prices.

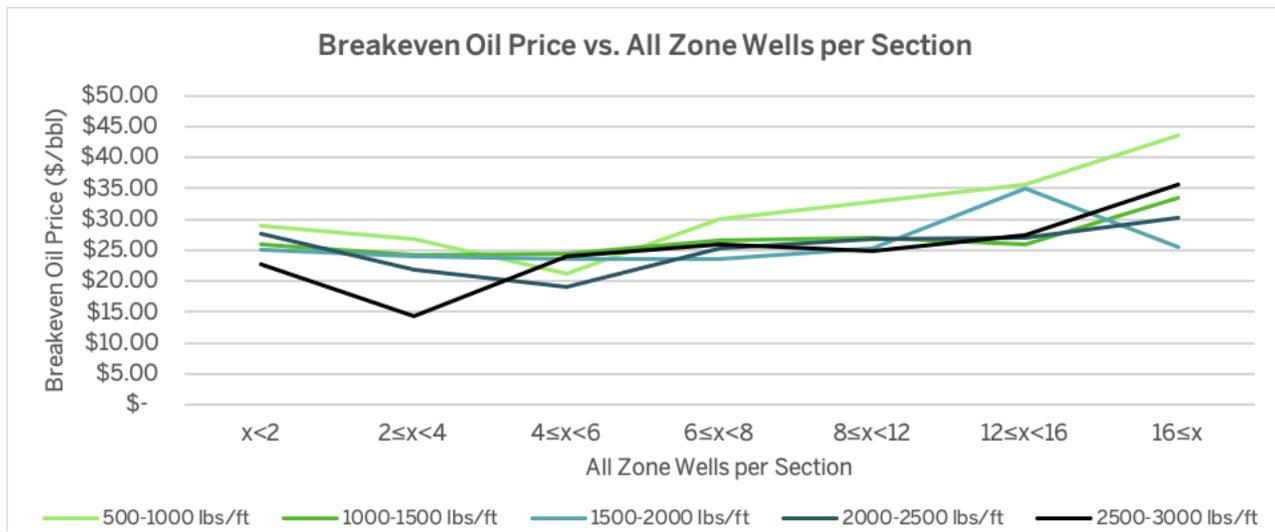


Figure 7

In the long term, a shift in the thinking of onshore planning towards wider well spacing would help insulate the industry against price volatility by allowing operators to alter completions sizing rather than entire development programs. However, the downside of this is stranding some resources and increasing the rates at which acreage is drilled.

### LESSON 3: THE IMPORTANCE OF ACCELERATING CYCLE TIMES

Previous experiences also illustrate the importance of production cycle times. A focus on cycle times, particularly between completion and production, will help reduce delays between capital investments without associated cash flows, boosting returns, and helping lower breakevens. Yet, as seen in figure 2, spud to completion times dropped by around ~30% from mid-2009 onwards with the 2008/2009 crisis highlighting the missed opportunity of not increasing cycle times to optimize returns. The same was the case in 2015/16 where cycle times fell slightly in the first two years after the crash. Full cycle economics is key.

Enverus data on cycle times in the Delaware Wolfcamp A Lower suggest recent improvements in cutting down the time between completion and first production. However, the continued challenge of appropriately managing DUC inventories continues to skew spud to completion values higher, thus somewhat offsetting the completion to production gains from a spud to production standpoint.

**The 2008/2009 financial crisis and 2015/16 price crash offer valuable lessons on adjusting development strategies to suit the long term realities of oil & gas markets. Given the wealth of data the industry has created since the early days of unconventional, Enverus platforms offer powerful insights for operators, investors, and contractors trying to understand what it takes to weather the storm and come out stronger. To find out more about our innovative data platforms during these times of uncertainty, contact us today.**

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