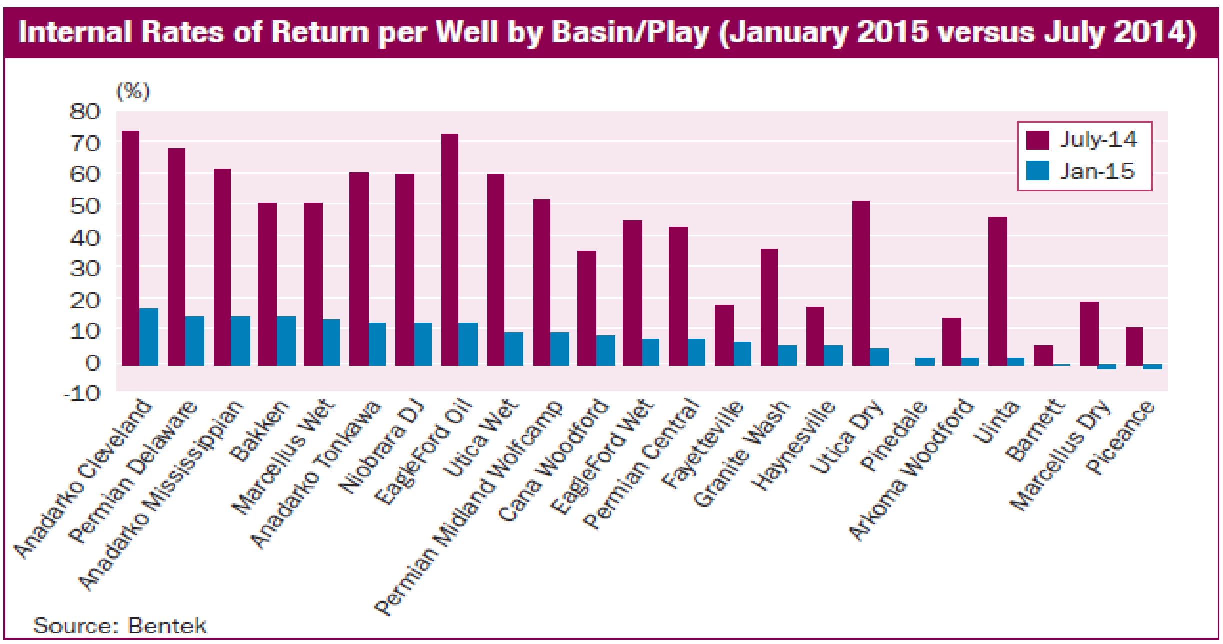
Shale economics challenged as prices plummet

The plunge in crude oil prices over the past six months has led to a predictable deterioration in well economics across key US oil and gas basins, with virtually all major plays now earning average internal rates of return of less than 20% – a scenario that contrasts sharply with July 2014, when many were generating IRRs well in excess of 50%.

According to January estimates from Platts unit Bentek Energy, average IRRs for twenty-four major US oil and gas plays have all sunk below 20%, while returns for a small handful of predominantly dry gas plays have even slipped into negative territory.

The top five most economical plays in the current price environment, according to Bentek, are the Anadarko Cleveland, the Permian Delaware, the Anadarko Mississippian, the Bakken, and the Marcellus Wet, all with IRRs north of 14%. All five, with the notable exception of the wet gas regions of the Marcellus, are oil-rich plays featuring oil cuts of 45% or higher.



Meanwhile, the five weakest basins – the Arkoma Woodford, the Uinta, the Barnett, the Marcellus Dry, and the Piceance – are predominantly gas-rich plays, with the notable exception of the Uinta. Average IRRs in the Arkoma Woodford and Uinta are estimated to be just over 2% and just under 2%, respectively, while returns for the Barnett, Marcellus Dry, and Piceance plays are currently negative, Bentek found.

By comparison, IRRs for the majority of US oil and gas plays were well above 20% as of July 2014, according to Bentek data. For instance, average returns in the Anadarko Cleveland, Permian Delaware, Anadarko Mississippian, Anadarko Tonkawa, Niobrara DJ, Eagle Ford Oil, and Utica Wet plays were all 60% or greater, while only the Fayetteville, Haynesville, Pinedale, Arkoma Woodford, Barnett, Marcellus Dry, and Piceance plays had average IRRs of under 20% in July.

It is worth noting, however, that despite the across-the-board decline in IRRs from July 2014 to January 2015, three of the top six most economical plays are located within the Anadarko Basin, which spans large swathes of western Oklahoma, southeastern Colorado, western Kansas and the northeastern portion of the Texas Panhandle. These three plays are the Anadarko Cleveland, where IRRs average roughly 18%; the Anadarko Mississippian, with IRRs of approximately 15%; and the Anadarko Tonkawa, where Bentek estimates IRRs to average just over 13%.

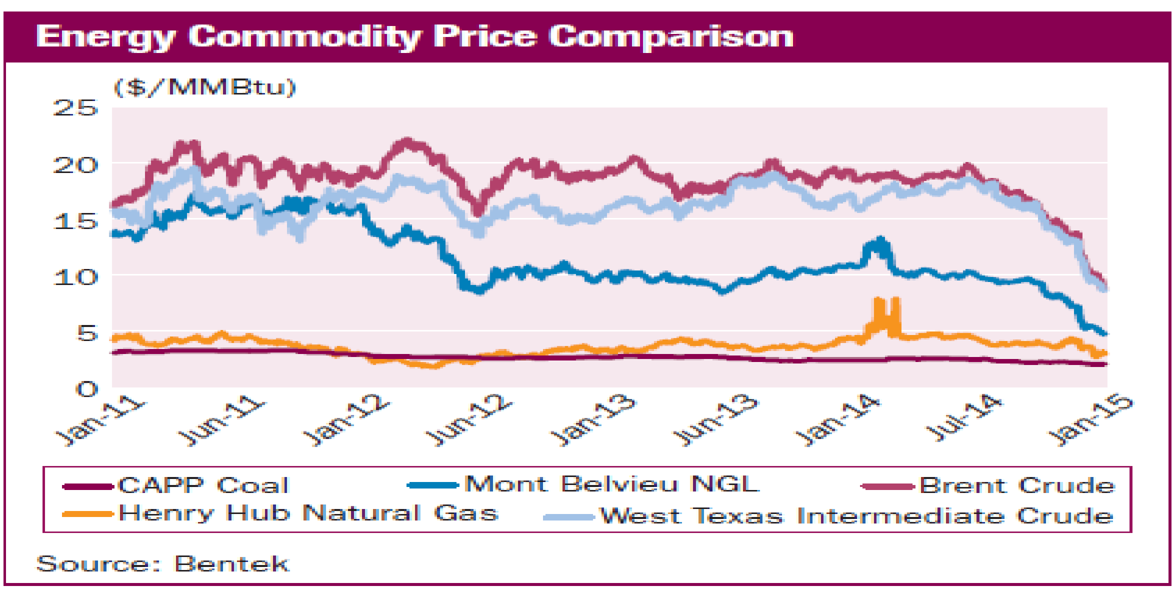
To calculate representative IRRs for different basins, Bentek used 12-month forward average oil and gas prices for the regional pricing points associated with each play and 12-month forward average prices at Mt. Belvieu for NGLs. It also assessed play-by-play production data including drilling and completion costs, operating expenses, initial production rates, BTU content, decline curves, production taxes and royalty rates.

Shifts in capital spending, allocation

The culprit behind U.S. shale's deteriorating economics, of course, is the collapse in crude oil prices and the commensurate decline in NGL prices, which tend to move in lockstep. Brent crude, currently trading just north of $50 a barrel, is off roughly 55% from its June 2014 highs due to a combination of rising U.S shale output, demand-side weakness in Europe and Asia, and Saudi Arabia's reluctance to cut OPEC production to support prices.

As a result, U.S. shale plays that were once highly profitable have become marginal at best, prompting several producers to slash capital spending budgets and, in some cases, idle rigs in their less profitable plays.

Bakken-focused Continental Resources, for instance, said in December that it planned a 48% reduction in its 2015 nonacquisition capital expenditure budget from $5.2 billion to an anticipated $2.7 billion, while Eagle Ford-focused Sanchez Energy on Wednesday announced it would cut its capital budget for the year by 60%. Both companies cited the violent and unrelenting decline in crude oil prices as the primary reason behind their capex revisions.



Still, despite plans to almost halve its capex, Continental foresees its 2015 production increasing by 16%-20% compared to last year. Sanchez, meanwhile, forecasts a roughly 40% year-over-year increase in production, which is expected to average between 40,000 and 44,000 boe/d. That both companies are expecting such robust output growth despite slashing capital spending speaks to the tremendous efficiency gains U.S. shale producers have made over the past few years.

Energy producers tend to allocate capital to their highest rate of return projects, especially in a challenging commodity price environment such as the current one. Therefore, producers with the flexibility to switch between liquids-rich and dry gas plays are, on average, more likely to continue their drilling programs in the most economical oil- and NGL-rich basins, given the still-wide price differential – on an energy-equivalent basis – between oil, NGLs, and dry gas.

While the broader picture – that there has been an across-the-board decline in returns from U.S. shale plays over the past six months and that oil- and NGL-rich plays are, on average, still more economical than dry gas plays – is clear, a few data points from Bentek's analysis may stand out as puzzling to some.

The first is that Marcellus Dry gas production is generating a negative average IRR, while less economic, dry gas plays such as the Fayetteville and the Haynesville are earning average IRRs of 6% or higher. This is largely because of less favorable pricing in the Marcellus Dry regional hub compared to regional pricing points for the Fayetteville and the Haynesville, according to Peter Compton, a senior energy analyst with Bentek.

The second point is that Marcellus Wet average IRRs are nearly 15% in the current price environment, making it the only play in the top five with virtually no oil production, despite output that consists of roughly 30% NGLs and more than 65% dry gas, according to Bentek data. This can be explained largely by the wet gas portion's superior drilling economics and its linkage to more favorable regional pricing hubs relative to the Marcellus Dry, Compton said.

The third data point that may strike some as perplexing is the Uinta's inclusion among the five least economical plays currently, despite its high oil content of roughly 55%. According to Bentek data, average IRRs for the Uinta have fallen precipitously from nearly 50% in July to less than 2% currently, representing one of the sharpest IRR percentage declines across all basins.

The main reason for this, according to Compton, is weak pricing for Uinta crude, which is largely a function of the basin's remote location, high transportation costs, and lower quality output. Uinta crude, referred to as 'waxy,' has a high paraffin content and does not flow unless heated, which reduces its transport options and, therefore, its desirability and the price it fetches.

But not all Uinta basin producers are struggling. Ultra Petroleum, the Houston-based independent producer that is counting on its recently acquired Uinta acreage to drive stronger earnings and cash flow growth, says its Uinta operations are highly profitable.

At a wellhead price of $60 per barrel, the company estimates IRRs ranging from 100% to nearly 500% for its Uinta asset, depending on well costs and reserve size, according to its most recent investor presentation.

— Arjun Sreekumar

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