Testimony of
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before the
U.S. Senate Energy and Natural Resources Committee
Hearing to examine challenges and opportunities for oil and gas development in different price environments

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Chairman Murkowski, Ranking Member Cantwell, and members of the Committee, good morning and thank you for inviting me to present the analysis of Platts Analytics regarding oil and gas development in the current low-price environment.

My name is Suzanne Minter, and I am Manager of Oil & Gas Consulting at Platts Analytics, a division of McGraw Hill Financial. In this role I manage projects pertaining to global crude oil and liquids dynamics, with a focus on global upstream investments, trade flow dynamics, and supply trends. I have over 30 years of experience in the energy industry including marketing and trading natural gas, power and crude oil.

Platts Analytics provides analytics and forecasting and is a unit of Platts, the leading independent provider of information and benchmark prices for the commodities and energy markets. Customers in over 150 countries look to Platts' expertise in news, pricing and analytics to deliver greater transparency and efficiency to markets and help them make better informed trading and business decisions.

The face of US energy production has changed dramatically over the last decade with the so called "Shale Revolution". Since 2010 the US has grown natural gas production 25% from an annual average of 58 BCF/d (billion cubic feet) to an annual average of 72 BCF/d in 2015.

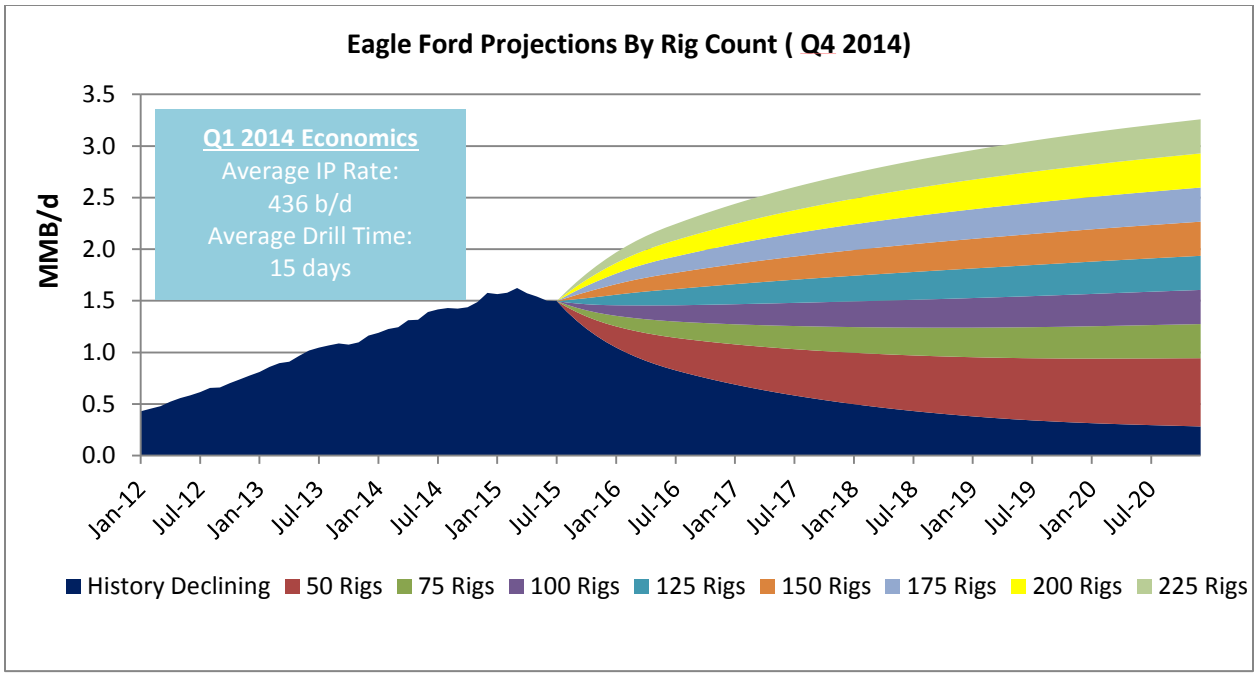
In 2012 the technology that drove natural gas growth found its way onto the oil space. Since January 2012 US oil production grew by 57% from 6.1 MMB/d (million barrels per day) to reach a peak of 9.7 MMB/d in April of 2015. As I will reference during this testimony, all energy production, be it natural gas, natural gas liquids or oil is entwined. For purposes of this testimony I will focus primarily on crude oil.

After reaching a recent peak in June, 2014 of $107.73, North American crude prices, generally benchmarked as West Texas Intermediate (WTI), fell 76% to reach a low of $26.05 in February 2016. The first leg of this overall move lower was a precipitous drop in pricing from $107.73 to $42.03 that occurred from June, 2014 to March, 2015. In a mere 250 days, prices fell 55% from a multiyear average of $96.93 (Average prices assessed by Platts from January 2012 to June 2014). As we look at the current global energy market, it is clear that this price collapse is indicative of global over supply. However, the rapidity and steepness of this price action caught

many in the producing and investment community off guard and caused dramatic changes in producer behavior and balance sheets.

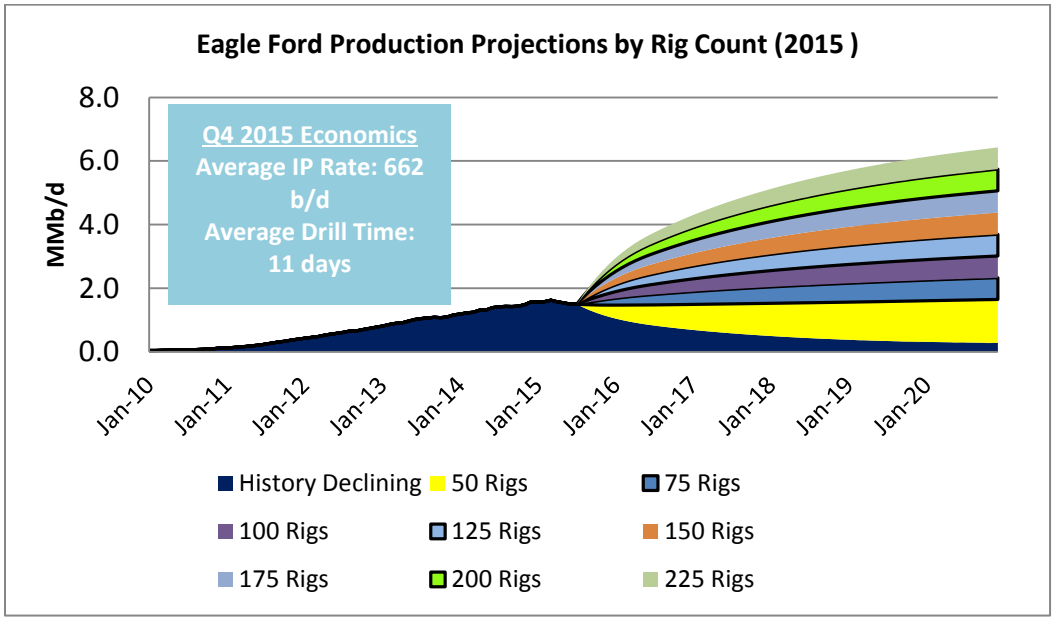
As a result of this price movement, producers have been forced to cut Capital Expenditure (CAPEX) plans dramatically. 2015 saw average CAPEX cuts by producers of 35% as they reduced their drilling plans and slashed the rig fleet. As of April 2016, the US rig count stands at 443, an all-time recorded low, down 80% from the all-time peak of 2,144 achieved in October, 2014. After a 14-month persistently low-priced environment, producers entered 2016 with further estimated CAPEX cuts of 40%. Clearly it is not just the producer that suffers in this environment but all associated services that are impacted by the rig count. The most amazing piece of this entire story though, is that despite the annihilation of the rig count, US crude production has yet to show dramatic declines. The U.S. Energy Information Administration (EIA) estimates that US production peaked in April of 2015 at 9.7 million barrels per day (MMB/d) and currently is estimated to be at 9.2 million b/d – a decline of 500,000 b/d or 5%. This phenomenon was made possible by the fact that as they cut CAPEX, producers were able to capture huge cost savings from the services sector (Platts Analytics estimates there was an average cost savings of 35% across US producing basins in 2015). At the same time, they recognized impressive gains in technology. A quantifiable explanation of "technology gains" can be described as follows:

I will use the Eagle Ford Basin of Texas as an example. Currently the Eagle Ford accounts for 13% of US crude production. In October, 2014 the rig count in the Eagle Ford peaked at 209 rigs. At that time, the average initial production (IP) rate for a well in the Eagle Ford was 436 barrels of crude per day and the average time it took to drill a well was 15 days. At that time, those 209 rigs, should they have remained in the basin, and continued to drill at that rate of one well every 15 days, would have ultimately produced 3.3 MMB/d of crude in the Eagle Ford by 2020.



Source: Platts Analytics

In 2015 as producers cut their rig fleets, the rigs remaining now sit on the best known acreage. Resultantly, the average IP rate in the Eagle Ford increased by 50% to 662 barrels of crude per day and average drill times have fallen by 25% to 11 days. As a result, the current rig count of 49 in the Eagle Ford could theoretically hold production flat at the current estimated level of 1 MMb/d, so long as those 49 rigs stay in the basin through 2020 and continue to drill one well each every 11 days with an IP rate of 662 barrels each. This also means, that when recovery occurs, the Eagle Ford would only require 125 rigs to create the 3.3 MMB/d previously projected by 2020 that had once required 209 rigs to produce.



Source: Platts Analytics

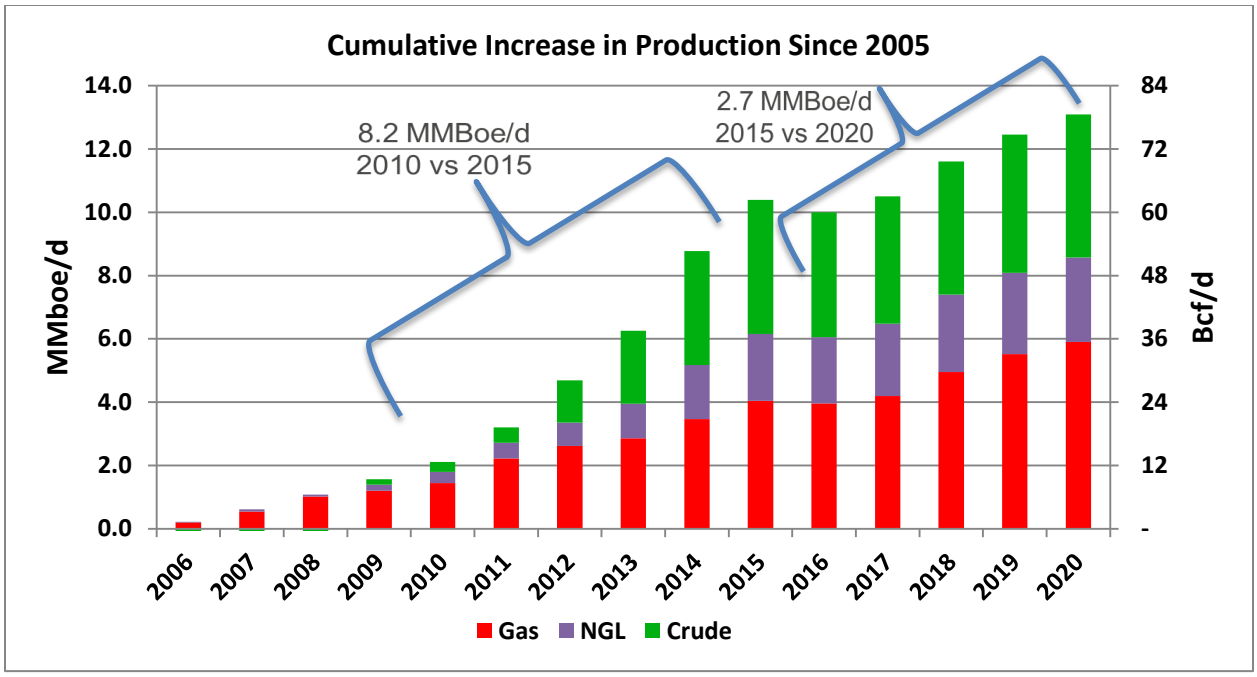
The contingency on these types of production scenarios is that all wells drilled are completed and brought on line in a linear fashion. Data analyzed by Platts Analytics from Rig Data shows that not all wells being drilled are producing oil immediately. In this new reduced CAPEX environment, producer behavior has changed dramatically, even beyond the slashing of the rig fleet.

From review of the quarterly and annual reports of publically traded companies, it is estimated that 40% of the cost of a multimillion dollar well goes into the actual drilling of the well and 60% of the cost goes into the completion of that well, the process of piping and hydraulic fracturing, or "fracking," that allows for production to actually begin. Platts Analytics estimates that since 2015, a decreasing amount of wells drilled have been completed, and that in between 50-75% of wells are being completed. Producer presentations and quarterly reports of publically traded companies are stating that those producers with still-intact and relatively healthy balance sheets are completing enough wells to hold production flat during 2016 and are intentionally creating an inventory of drilled but uncompleted (DUC) wells that they will carry into 2017 in hopes of completing them in a higher price environment thereby recognizing greater revenues in the future. This DUC inventory will have significant implications for production and the price recovery in the near to midterm.

Platts Analytics estimates there are currently in excess of 6,500 DUC wells in inventory as of December 2015. (Due to lag in reporting of state level data, this is the most recent estimate we are able to compile.) As mentioned, there is reason to believe that this DUC inventory has increased dramatically in the last six months and will continue to do so over the next six months.

Approximately 2,500 DUC wells reside in Texas alone and those are presumed to be oil wells in the Eagle Ford and Permian basins. Assuming an average IP rate of only 500 barrels per day, it can be deduced that if producers made the decision to complete all of those wells at one time, Texas alone could introduce 1.25 MMB/d of oil into the global market. This oil, sitting in the ground, with the potential to hit the market in a short period of time (an estimate of current completion time is an average of 30 days) is known as "spare capacity." Platts Analytics believes that in the current global energy producing community, the US has the greatest amount of spare capacity.

It is very important to consider that the US energy story is 1) not only a crude story, and 2) not only a US story. In the last decade, the US has introduced 8.3 MMBoe/d (million barrels of energy equivalent per day) into the global market when one considers production of crude, natural gas and natural gas liquids. Even in the current environment of dramatically slowed producer activity and low prices, Platts Analytics believes the US producer is on target to introduce an incremental 2.7 MMBoe/d into the global markets by 2020. For reference, we estimate that the global market is approximately 145 MMBoe/d, so while introduction of these barrels was not extraordinarily large from a percentage basis, the time and the rate in which this energy entered the market appears to have stressed the system in ways unimagined.



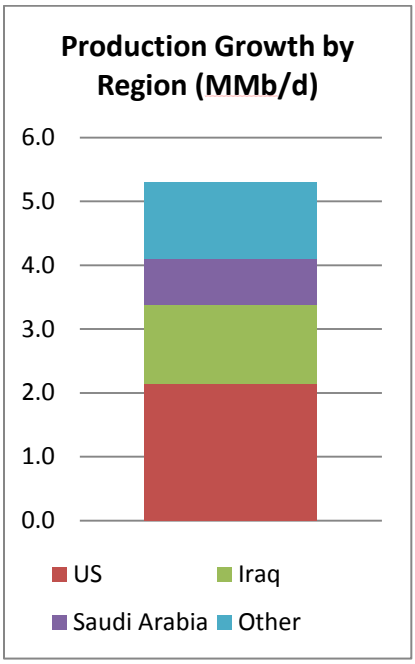
Source: Platts Analytics NG Market Call Long Term, NGL Market Call, and Crude Oil Market Call

While production numbers are the "headline number" and what drive producer profits and revenues, it is important to realize that barrels of crude produced are merely feedstock that will be refined and turned into product to be consumed both here in the US and abroad. While the lifting of the export ban in December 2015 is only a recent event, the US has been an exporter of crude via refined products created for decades and became a net exporter of crude via refined products in 2012.

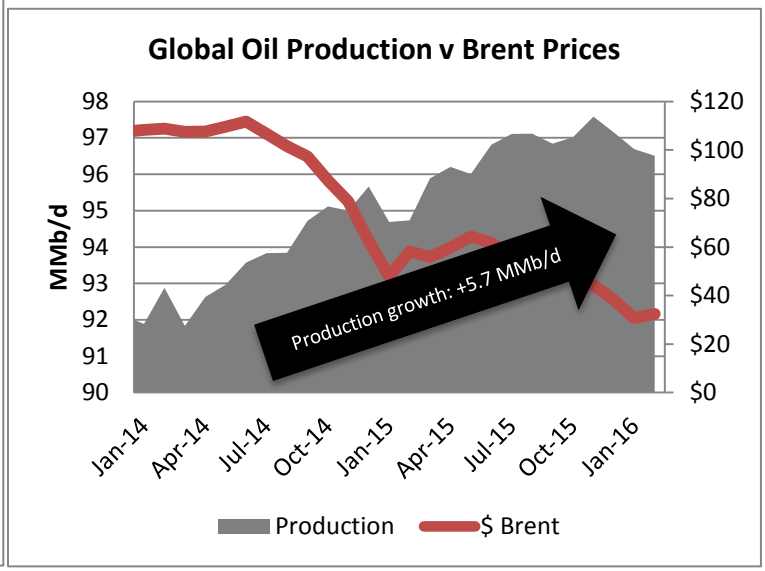
As startling as the collapse of crude prices has been, what is even more telling of the global oversupply of energy is the accompanying collapse of refined product prices recognized by refiners. On an annual average in 2015, refiners at the US gulf coast, which represents approximately 75% of US refining capacity, recognized average margins of $9.35 for each barrel of crude refined. This represents an increase of 8% over 2014 averages of $8.64. However, feedstock costs, (as proxy to WTI) fell over 60% during that same time period. This price phenomenon, coupled with swelling refined product inventories, (per the EIA, refined product inventory currently sits at 827 million barrels, near an all-time high and 85 million barrels higher than this period last year and 132 million barrels or 20% higher than the 5 year average) clearly illustrates that even though prices for products fell significantly during this period, global markets did not appear willing or able to absorb what was being created. This trend in collapsing refined product margin appears to be accelerating, as witnessed by the fact that 2016 year-to-date margins at the US gulf coast, have averaged a mere $3.11 per barrel versus $10.69 for the same period in 2015.

Since January 2014, the International Energy Agency (IEA) estimates that global crude and liquids supply has grown by 5.8 MMB/d with US production accounting for 2.1 MMb/d of the total. Saudi Arabia is estimated to have contributed .7MMB/d, Iraq 1.2 MMB/d and other nations in aggregate 2.1 MMB/d. At first consideration, this inverse relationship between low

prices and higher production may appear illogical, but upon further consideration of the economic decisions that drive production here in the US versus the rest of the globe, it may not be as illogical as it appears and actually defines the brunt of the problem for the US producer who is attempting to survive in an oversupplied global environment.



Source: IEA, data as of February 2016



Source: Platts, IEA

Here in the US, there are an estimated 9,000 individual entities that are producing energy. These parties behave in their own best interest. As oil prices fell, producers kept producing, and will continue to do so as long as it makes economic sense for their balance sheet. As previously mentioned, efficiencies like cost savings from the service sector, coupled with potential financial hedges that may have been put in place, have allowed the US producer to keep producing at prices lower than anyone would have assumed possible. Now that we have existed in this low-price environment for an extended period of time, the US producer is starting to show strain to its balance sheet and accordingly, production is beginning to decline and is expected to continue to do so in the near term. The independent US producer is unique in the global energy market in that it is driven solely by individual profit. At the same time it contributes a minority share of production, approximately 13% of total global liquids supply. Also notable is that energy only contributes a small portion of overall GDP in the US.

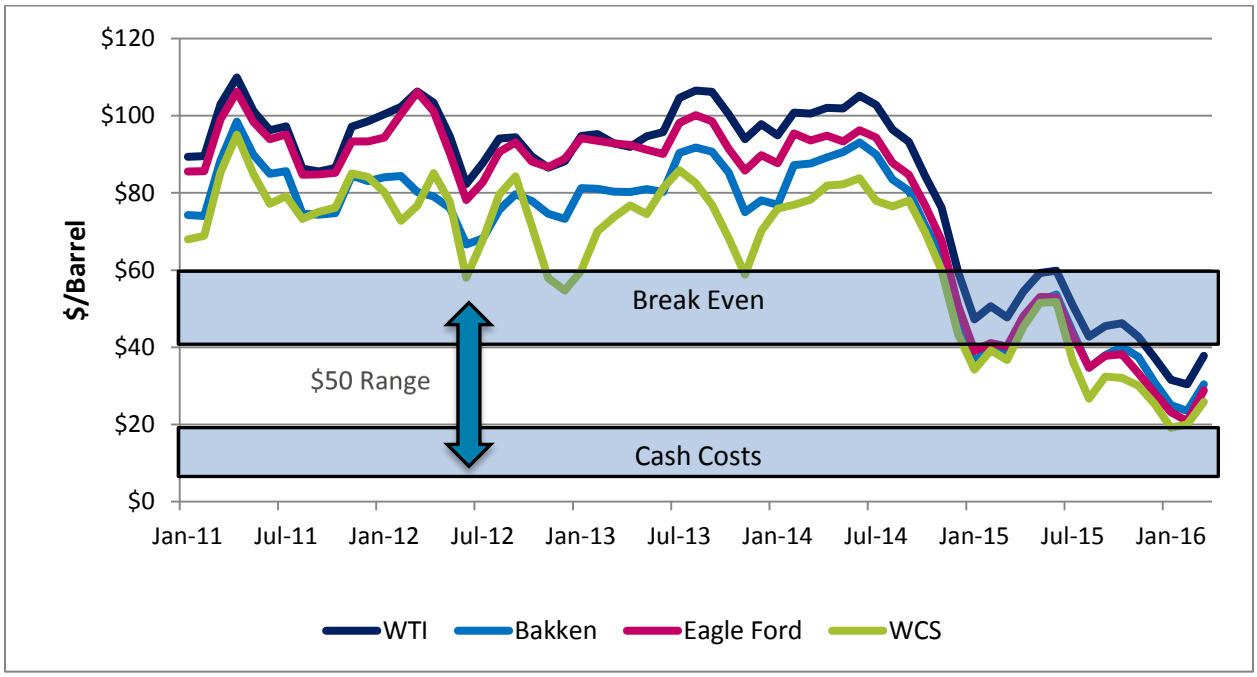
As a general rule, National Oil Companies (NOC) on the other hand, produce for revenue, not profit. When one considers the GDP profile/impact of energy production of OPEC nations it should become apparent that the economic decisions that drive production in these regions are not the same as those of the independent US producer.

Despite the fact that the US producer has illustrated that its technological prowess has allowed it to remain profitable from a balance sheet stand point, the reality is, the US producer still has to purchase or lease the land it drills. This is in direct contrast to an NOC who not only owns the

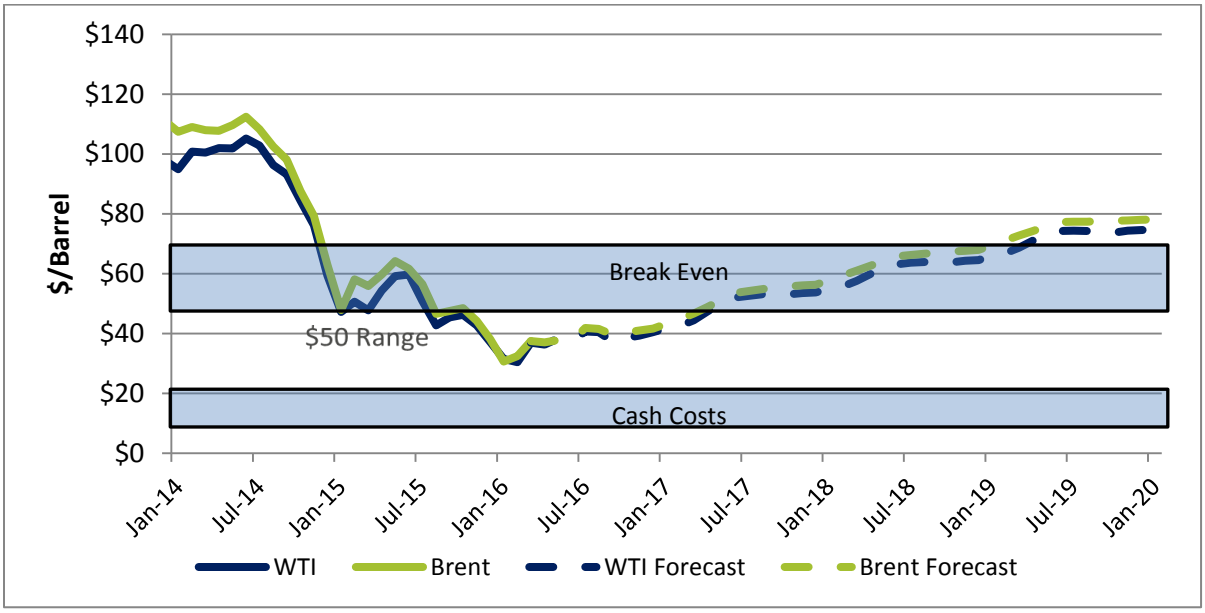
land and therefore the production that is extracted from it, but also often owns a refining complex that creates refined barrels that US refined barrels compete with in the global market place. Aside from this difference though, the revenues that are raised from energy production and sales are what funds the majority of these countries' national economies. Given the fact that they are currently receiving 25% of the revenues per barrel of oil produced as they were as recently as June 2014, basic math says these counties need to create and sell more volumes at current low prices in order to keep their economies viable.

As previously alluded to, the recent surge in global energy growth appears to have overwhelmed recent demand growth. While it is apparent we are currently sitting in a globally oversupplied world from an energy perspective, one has to believe that the energy markets will balance, more than likely in the near term as a supply-side response. Once that balance appears in the marketplace, going forward, natural demand growth will require that additional production be introduced back into the marketplace to meet demand.

In the near/mid-term, it will be the US producer that is the marginal supplier and price setter into the global market. Given the fact that it is believed that the US holds the largest spare capacity to produce incremental oil in the form of the growing DUC inventory which holds reserves that can be brought on line in a short period of time, it is the US producer, and their financial determination of what price point is adequate for their balance sheet, that will dictate the time and price that US production will be reintroduced in to the market. Clearly current prices have slowed production activity and we believe that many US producers are operating near cash costs. As explained previously, for the US producer who is ultimately driven by profit, not revenue, this type of behavior is unmaintainable for an indefinite amount of time. Resultantly, Platts Analytics oil price forecast expects a price recovery in the back years to incentivize production to come back on line.



Source: Platts/Platts Analytics



Source: Platts/Platts Analytics Oil Market Call April, 2016

Despite the fact that energy production is an expensive undertaking, we currently estimate that the prices needed by the US producer to complete their DUC inventory may be much lower than our global competitors believe or would like it to be. As previously mentioned, the DUC inventory is a result of wells that have been drilled, which results in "sunk" costs of 40% of drilling costs. Therefore, a producer may decide to complete his well at lower prices than previously required or expected in order to 1) recapture that "sunk" cost and 2) generate cash flows and revenue. While each producer will behave differently than the next, it seems realistic to assume that when producers are able to recognize WTI pricing in the mid $40-$50 range they will bring incremental volumes back in to the market place.

Platts Analytics expects there to be an ebb and flow in the recovery, both pricewise and volumetrically. If too much production hits the market all at once, we will quickly find ourselves in an oversupply situation once again. If the US producer is the one to introduce too many incremental barrels into the market place, we may see a surge in global barrels at the same time as all parties involved compete for market share. Until we find balance and a way to manage supply growth with global demand growth, the recovery for all will be tenuous. However, due to spare capacity and the unique economic environment which drives producer activity, it may very well be that the US producer is best positioned to lead the recovery and bolster economic growth.