



Haynesville Shale Creates Opportunities in the Energy Sector

Last month investment advisor Marc Faber in a Bloomberg interview noted that “natural gas is the most undervalued commodity in the world right now.” He also said he was a believer in ‘peak oil’ to the extent we have developed most of the cheap and easily recoverable high quality reserves globally, but that the world would move onto other sources of energy as economics dictates. Faber sees energy prices rising over time and also much higher inflation in the U.S. — which will be good for commodities and for small cap stocks.

In addition, last month energy investment banker Matthew Simmons discussed a disturbing trend we have mentioned – the plunging U.S. natural gas drilling rig count since last summer.

Simmons claims that at current drilling levels we could easily see natural gas production in the U.S. decline by 25% in the next 24 months. This is an incredibly steep decline in production. Simmons also noted that at current market prices most unconventional shale wells are not economic to drill and develop.

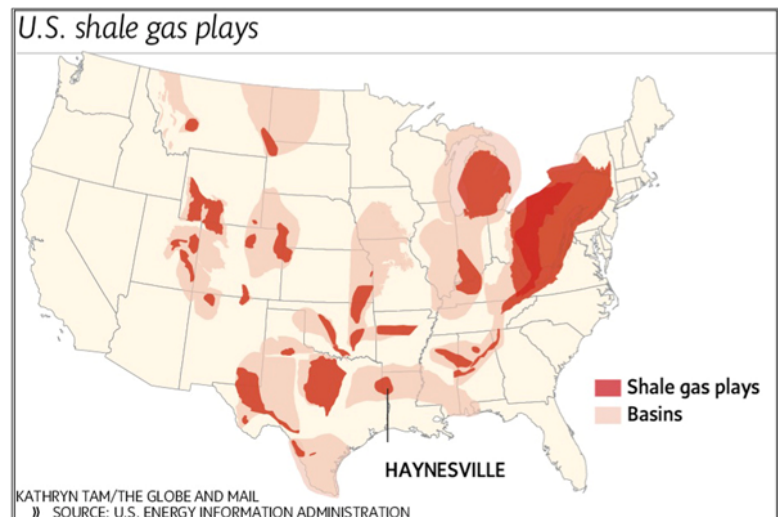
EnCana held a conference call late in the month on the Haynesville and Bossier shale prospects in East Texas and Louisiana – potentially a ‘massive natural gas resource’ for the U.S. Our LSGI Haynesville trend play is **Crimson Exploration (CXPO)**.

The Bossier formation lies just above the Haynesville formation - presenting a driller with two target shale formations at one drilling location in this basin. In the call EnCana stated they thought the Haynesville prospect would be as productive and profitable as the prolific Barnett field here in central Texas.

A quick summary of the details from the EnCana call, and recent disclosures by other firms operating in the area, include the following:

- The average initial production test for Bossier wells have been roughly 15-20 million cubic feet per day (MMcf/day). For a Haynesville well the average initial production test is around 10-15 MMcf/day.

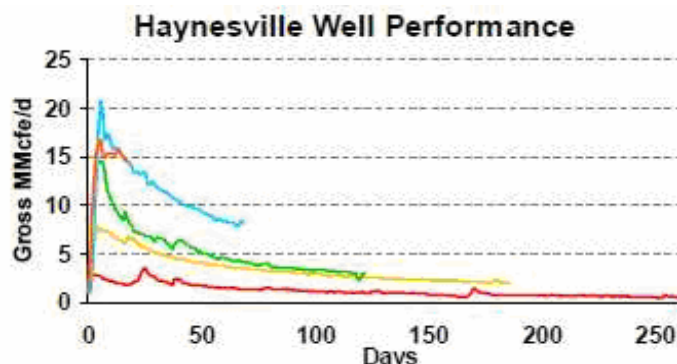
These are very young and emerging plays, in the early stages of development. These initial production rates are incredibly high, but production declines quickly. The decline curve at right for early Haynesville wells indicate the extent of decline.



- Estimated ultimate reserves are roughly nine to eleven billion cubic feet (Bcf) per well, characterized by high initial production, quick production of reserves, and high returns on investment due to the quick monetization of reserves. Few wells have more than 6 months worth of production so long term estimates of gas recoveries are still uncertain.

- Costs are roughly \$9 million per well in Louisiana, possibly \$1 million less in Texas due to the shallower wells and lower pressures in the Texas side of the play. Costs will decline to \$8 million per well as firms move along the learning curve. Louisiana has seen most of the development to date.

- Initial completion attempts used 8 frac stages, now most use 12 stages. The amount of proppant used per well has been tripled. Initial production correlates closely with the amount of proppant used. Lateral portions of the wells are roughly 3,000 to 4,000 feet in length.



Our recent comments on the Haynesville and Crimson Exploration (CXPO) include the following:

June 24—Wednesday

The Texas Railroad Commission has received a drilling application for the drilling of the Kardell #1-14H , a vertical wildcat test well with potential horizontal legs, in San Augustine County, Texas—1.5 miles east of the East Texas town of San Augustine: [map](#).

The Kardell #1-14H well is in the Haynesville/Bossier (dual formation) plays, to be drilled by Devon Energy, total depth 18,500 feet (compare to Barnett well depths in Fort Worth of roughly 7,500 feet). Total cost of these wells are around \$8 million, horizontally drilled for several thousand feet with 12 or so frac stages.

Initial production rates from many of these wells have been 10-15 million cubic feet per day from the Haynesville or better in initial production tests (very good compared to conventional wells). The decline rate is rapid however, but Devon will get a good overview of formation thickness and potential reserves. If my calculations are correct Crimson Exploration (CXPO) has a 14% working interest in this well.

From CXPO company presentations it appears nearby wells drilled by third parties have confirmed the 'fairway' of the potential target zone underlying the Crimson holdings—and this well will most likely 'prove up' (or worst case 'condemn') the Crimson play. In general these shale wells are 'low risk' in terms of missing the target formation—the make or break nature of the wells depends on whether the well will produce enough reserves at a price to be economic while delivering a reasonable return for the investors.

At current \$4 mcf prices few unconventional wells are economic. Studies we have reviewed indicate at \$8 a mcf these shale wells can be quite profitable. For a microcap like Crimson this is a huge opportunity to partner with a major player—and a huge opportunity for shareholders.

While current natural gas prices are weak, it will take 6-9 months we expect for Devon to prepare location, spud, drill and test the Kardell #1-14H well. In the meantime, due to the better than 50% decline in natural gas drilling in the U.S. we expect deliverability by year end to be at least 5% below start of year capability, possibly more. So the well should come in as natural gas prices are firming, assuming the economy stays flat at the current depressed level.

The upside for such a small company, and a favorable risk/reward relationship, is substantial—but the risk

is also substantial, but not unreasonable. Shale wells almost always produce natural gas, the question is how much?

The Devon/Crimson Exploration TRRC permit is at the following link, along with supporting documentation: [permit](#)

June 25—Thursday

Charles Maxwell, Senior Energy Analyst at Weeden & Co., was interviewed by Bloomberg Radio yesterday. He has been an analyst in the industry for 36 years. In his opinion we will see natural gas prices bottom in the U.S. in late October or early November, which will be the bottom of this pricing cycle. Domestic natural gas storage will be full, in fact most likely at record levels, and prices will be depressed.

Maxwell claims the massive decline of natural gas drilling activity we have seen over the last year will insure that natural gas supply and demand in the U.S. become more balanced. Maxwell sees natural gas prices increasing throughout the upcoming winter and through 2010—it takes quite a bit of time to ‘ramp up’ drilling activity to reverse natural gas deliverability declines once they start.

The long term implications for investors in the natural gas sector are significant, especially as prices begin increasing this fall and continue increasing throughout 2010. As we have noted, many projects that are not profitable at \$4 a mcf gas will be extremely profitable at \$7 a mcf or more—and this profitability will be reflected in share prices.

Maxwell also claims that due to concerns about the U.S. dollar real assets will have more value in the future—his first choice for a natural gas producer would be EnCana due to their reserves and the fact they are a Canadian firm using the Canadian dollar (EnCana is too large for our portfolio—but they are a major player in the Haynesville shale and claim this will be a major focus of the company as they move forward).

The Haynesville formation is a bit shallower in the Texas leg of the Haynesville shale than in Louisiana, so drilling costs are a bit lower. While the Railroad Commission permit noted below allows the wildcat well to be drilled to 18,500 feet it is expected the ‘target zone’ will be more in the range of 9,000 to 10,000 feet or so. Devon plans on drilling a vertical well through the formation and ‘coring’ the well as we recall—then will use the data to design the horizontal leg or legs of the well and the frac treatments.

The results of this well could ‘prove up’ the value of CXPO’s leasehold interest in this area—the company focused on the Texas side of the play versus the Louisiana side. The Texas portion of the play has developed more slowly than the Louisiana side – but activity has really heated up recently.

Keep in mind the Haynesville/Bossier play has been described by EnCana as a potential huge opportunity for that company—and EnCana is a very large gas producer compared to Crimson. EnCana notes one surface location gives a company two shale targets—Bossier above, and the Haynesville formation at deeper levels.

The recent EnCana presentation on this area is worth listening to—it can be accessed on their website. EnCana’s existing wells and analysis indicate it indeed could be a huge play—especially for a small company like CXPO.

An interesting summary on this young and potentially ‘massive’ play is in a Globe & Mail article this morning: [article](#) The EnCana call is at the following link: <http://www.encana.com/investors/presentationsevents/>

In the last CXPO earnings conference call they discussed this well and plans as follows:

. . . our capital activity this year will be focused almost exclusively on our Haynesville Shale project at east Texas, but we have approximately 12,000 net acres in St. Augustine and Sabine counties.

As a lot of you who follow that play know, there has been just a very dramatic increase in activity in the area that we are located in, we are surrounded by pretty large independents, names that you would recognize. There has been a two vertical wells drilled, one on the west side of our acreage, one on the north side of our acreage directly offsetting us. They have tested, they have cored and tested some of those wells. They are vertical, they're not horizontal. There are also legacy wells that help set up our play there in those counties that have the Haynesville shale present. So we are very excited about the prospects there and encouraged by the increase in industry activity all around us. There have been a couple of horizontal wells drilled just to the west of our acreage, and those wells have, I don't think the test results have been publicly released yet, but it is our understanding that those test results have been very encouraging so we are very excited about the play.

We anticipate drilling our first well with a very large independent some time this summer. We are working on that now, and looking forward to testing our acreage and seeing what, if it is as good as we believe it is . . .

At a Haynesville industry conference held on June 1st, which included Chesapeake and Petrohawk and other producers, a representative of EnCana discussed the positive results in the Haynesville prospect:

We believe that our land [in the Haynesville shale] is quite prospective and as a result increased our capital program in 2009 by some \$290 million, bringing our total anticipated spend in 2009 to \$580 million. With that we are going to do a few things. We are going to drill 50 wells; that is going to help us evaluate the play. It is also going to allow us to test some concepts. . . . So we increased our spend because -- a couple of reasons. One, we have some very encouraging results, both ours and industry's. We have shown some of the initial IPs on this particular plot in the green and the orange circles.

In addition, our costs are coming down. Costs are still a very large focus for EnCana. We are not as active in the play yet as our counterparts here with Chesapeake and Petrohawk, but we are ramping up. We started the year with five rigs, and are now at eight rigs, and expect to exit the year with around 15 operated rigs. With that we expect that we will continue to see good performance in cost. Right now are our average well costs are around the \$9 million range for drill and complete costs. We are quite encouraged because our execution performance, which has really led to the bulk of our cost savings, has improved dramatically. We started with 65 days on average and now our last few wells are more in the low 40 range.

So that is -- long-term we hope to get into the 35- to 40-day range for our single wells there. That will position the cost quite nicely compared to what we are seeing here. In addition, we expect to see some deflation enter the cost picture later this year.

IPs are also very encouraging. We are seeing IPs average well over 10 million a day. Most of the wells are rate constrained, so we kind of look at rates and pressures to give you an idea of the sense of the play. But generally we do believe that EnCana's land position is very well positioned relative to the well results and our performance is very much in line with industry. So it looks like the Haynesville is going to be a very large play for industry and for EnCana. We are very encouraged by what we see so far . . .

At the June 1st conference Chesapeake had the following to say about natural gas production and pricing as they relate to Haynesville shale economics:

AUBREY MCCLENDON: None of us know where gas prices are going of course in the next day or week. But I think we all would probably say 700 gas rigs in the US and -- how many in Canada right now? 65 or so. Lowest since 1999, is that? Really incredible.

But I think everybody here would agree 700 rigs is not enough to sustain 60 Bcf of production, which is where we have been at. So the question is, where does production level off? Our internal modeling -- and it takes into account the success that these companies are having in shales, and increases in technology -- that if you kept 700 flat you would get down to 52 Bcf a day sometime late 2010 or early 2011.

I think an 8 Bcf drop from where we are today is probably way too much, particularly with an economy that is likely to get better. So we think a gas price has to reflect or be high enough to bring back probably another 300 to 400 rigs to get to the 1,000 to 1,100 mark.

What will surprise people is gas prices will start to move higher way before you think they should. Just because they went from \$13 to \$3, it took nine months to do it, 10 months to do it. It didn't happen in a day or a week. So the market will begin to explore a gas price that will stabilize the rig count at 700, and then begin to bring it back up. It will begin to move in \$0.20, \$0.30, \$0.50 moves that will mystify all of us because we will say we have too much gas, we have too much gas.

But you are looking into a future where you're going to have too little gas a year from now, and so you have got to begin to make that transition from \$3.50 gas to \$7.50 gas or \$8 gas . . .

June 18—Thursday

. . . . Crimson Exploration (CXPO) also had a shareholder meeting last week. We did not attend, but discussed several issues with the company prior to the meeting after the last earnings call.

One report on the annual meeting was posted online, which confirms a lot of the information we were told, is as follows (we cannot confirm the veracity of the report, but it follows what we have been told and what was said in the recent earnings conference call):

I attended the Crimson shareholders meeting last Friday. I liked what they had to say. Allan Keel gave a presentation on their Haynesville shale play. Here are a few key take aways from the meeting:

- Current acreage position of 12,000 net acres in the northern part of San Augustine & Sabine County
- Seeking a partner to acquire ~50% of its current position in the play and form AMI to acquire additional leasehold inside the AMI
- Most of the area has been leased up but small infill acreage is available for lease
- Other E&Ps in the project area are Devon, Encana, Chesapeake, Southern, Cabot and St. Mary
- Prospective target formations include the Travis Peak, James Lime, Mid-Bossier, Haynesville Shale and Cotton Valley (Haynesville Lime)
- Main target formation are the Jame Lime and Haynesville shale
- Estimated EUR: Haynesville 6-8 bcf and James Lime 3-4 bcf
- Estimated IP rates: Haynesville 10-20 and James Lime 5-10 mmcf/day
- Potential for 100 well locations
- Resource potential on 12,000 acres: 1 Tcf
- Other operators have reported positive well results and significantly de-risked Crimson's project
- Crimson/Devon plan to spud a vertical test well in the next month
- A 12 inch gas pipeline crosses leasehold with 50 mmcf/day of available capacity

Overall, very few outside investors attended the meeting. Imo, positive well results from a Crimson/Devon drilled well should get them some attention. . . .

May 8—Friday

. . . A real debate has erupted over the viability of shale gas reserves and economics, with heavyweights on both sides taking swings. Matthew Simmons notes that “Shale gas is mostly hype – it depletes fast, is not easy to produce, and basin plays have uneven quality” - and he is real skeptical that these reserves will be as productive as many hope. Others point out that a breakeven cost of \$8 mcf is needed to make these economic—so at current \$4 mcf prices most of these plays will not get developed as they should. Which could lead to a 'slingshot' effect in natural gas pricing.

On the other side are the likes of Aubrey McClendon, CEO of Chesapeake Energy Corporation. Keep in mind when you read his comments, made two weeks ago at an industry conference, that he was also bullish last spring—just before he had a \$1 billion margin call on his company's stock. He is a big promoter of shale plays, and has spent Chesapeake's capital on the thesis that these formations will be economic and prolific producers:

So how many rigs then does it take to maintain that steady state?

I don't think anybody knows for sure, but our modeling is it is probably somewhere in the 1200, 1300, 1400 range. I know for sure it is not 800, it is not 700, and it is darned sure not 600.

So I think what is going to happen is that we will have a balanced market at some point in the next six to nine months. It will be balanced for one minute of one day, and then we will be screaming into a scenario, a market where I think gas prices have to rise enough to incentivize enough drilling to keep 85% of that 85% of conventional production online. And again, I don't know exactly what that gas price is, but I think about the old rule of thumb that I still think makes sense today, which is whatever your finding costs are, if you multiply that by three, and that is probably pretty close to what kind of a Nymex price you need to run your business.

So plays that are \$2.50 and \$3.00 an Mcf in terms of finding costs probably have to be in that \$7.50 to \$9.00 range, and our models that Chesapeake tell us and my gut tells us that's the kind of gas price that we probably need to get to to be able to maintain enough rigs out there to keep production at 54, 55, 56 Bcf.

The problem I -- the thing I cannot answer is I don't know how to get us off the yo-yo. I don't know how to stop going from 13 to 3 and back up again. If somebody can figure that out, you will do quite well in this world. . . .

On the Barnett Shale:

I think you have heard other commentators on the industry talk about where this production is today. We think it's probably seen its best. The rig count is down 60% or so. Our own rig count is down almost that much from 43 to 20. We will probably keep that there for quite some time. So I think the Barnett has had its best day in terms of peak deliverability of about 5 Bcf a day and would expect production declines to kick in here once the backlog of drilling and completion activity works itself out. That will probably take longer here than anywhere else in the country, but I think it will certainly happen by the end of the year.

On pricing and demand:

And along those lines, I just finished with the view that I've probably not been more convinced except for 1999 that there is going to be a turnaround in gas prices than I am today. . . . And that set the stage for what happened from 2000 to 2007 where this industry struggled every year to maintain production. There were many years we did not, and the consequence was you could always count on about \$1.00 per year of higher gas prices. And so that brings us to where we are today where I think that we have reached a real dividing line in the history of the industry.

Yes, there will be some volatility. Yes, we have to figure out how to hit a gas price that incentivizes enough conventional rigs to come back. But I do think the shales permanently change the way all of us will approach our business going forward. I think it also gives us freedom as an industry to start talking about things that I think can possibly change the course of our nation's history really. I hate to try -- I mean I'm hesitant to overstate the case here.

We agree with his take that at the current drilling rate natural gas production will decline, quite quickly due to the depletion rate of many reserves. His 1,200 to 1,400 break even rate is above what First Energy forecast—and is well above the current 741 rig count. Gas production is heading down, by the fourth quarter, and throughout 2010 in our opinion.