

2009 Tarrant County Barnett Shale Well Revenue Estimate For Neighborhoods
By Gene Powell, Publisher/Editor, *Powell Barnett Shale Newsletter*

Summary

The *Powell Barnett Shale Newsletter* has provided some estimates of the answers to the following questions over the past two years: *What does an average gas well bring in money-wise in a 30 day period? How much can I expect to receive from one gas well for my tiny interest under my home?*

We have received numerous requests to recalculate the average Tarrant County well under a home in a neighborhood to include a more realistic price for natural gas to better reflect actual prices. To accomplish this, we have rerun the 'model' with three different price scenarios for natural gas: \$6.00/MCF; \$9.00/MCF; and \$12.00/MCF without escalation in price over the first 30 years of the life of a well. Since over 95% of Tarrant County wells have made zero condensate (oil) and since the natural gas is 'dry,' measurement in MCF (thousand cubic feet) is equal to MMBtu (million British thermal units) and no value was given for any oil production.

The other parameters of the estimated income for a Tarrant County royalty owner are: 25% royalty, .22 acre lot size, and a one well 65-acre drilling unit.

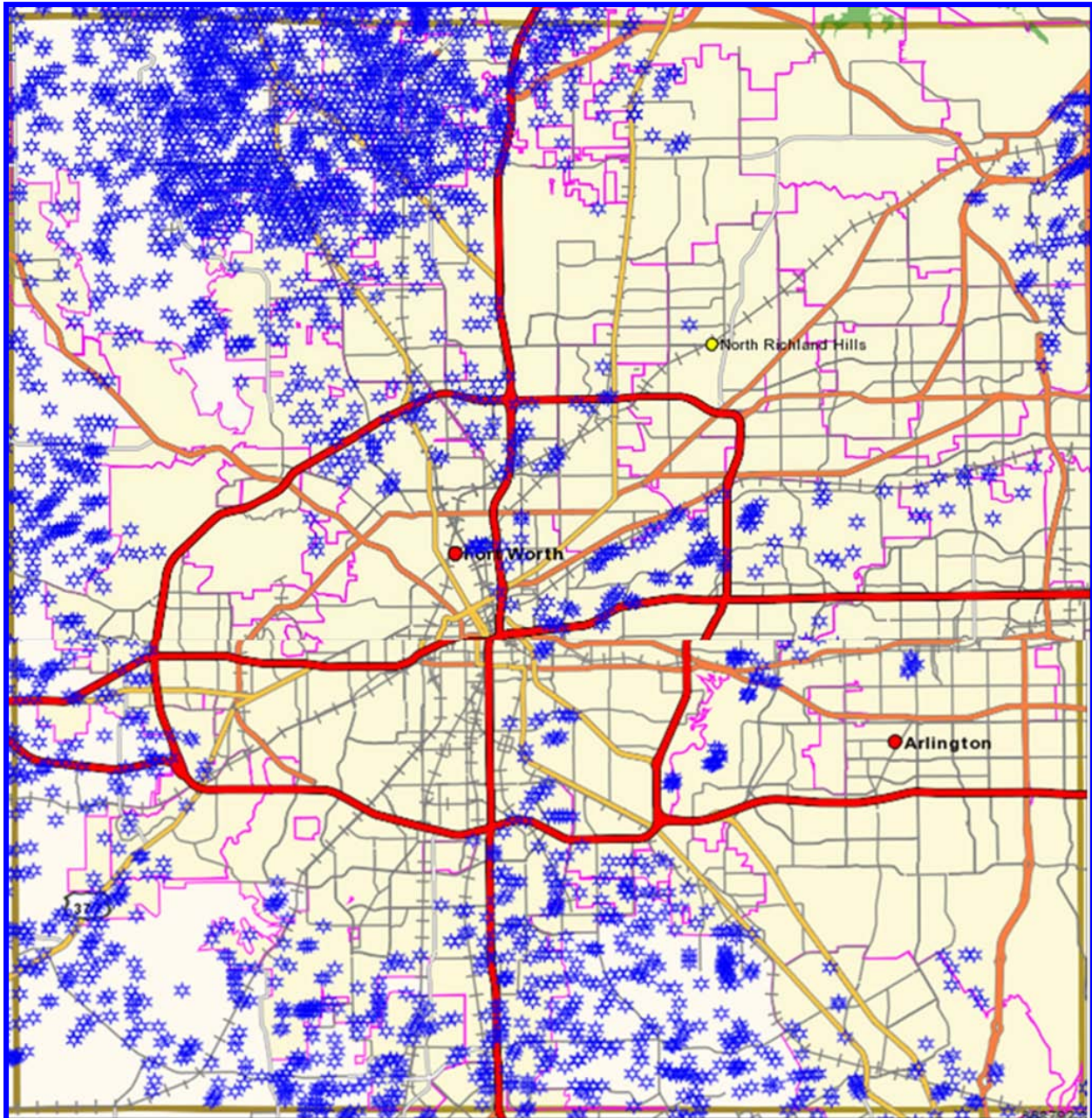
We believe most Barnett Shale horizontal wells will be refractured within the first seven years of production, increasing the production back up considerably and increasing our 'model' estimate. Currently, 'older' horizontal wells (2003 – 2006) are expected to recover about 20 - 25% of the gas-in-place while recovery increases to up to 30% for 'newer' wells (2007 – 2009) that are significantly higher than the county average - especially those simultaneously fractured in groups of two or more wells.

Refracturing in the next few years could increase the revenue of the 'model' we have estimated to perhaps double, especially if the cycle of refracturing is continuous through the decades. It could double or even triple the life of the wells. **This would also double or even triple the estimated income of the 'model' shown.**

Another factor which needs to be addressed is that the unit size for a horizontal well continues to drop which increases the income to the average royalty owner. **Simultaneous fracturing of multiple wells has led to wells now being drilled with some laterals less than 400 feet apart in some instances which could provide for a much lower unit size than the 65-acre unit size used in our 'model'.** It is easy now to visualize unit sizes where two or three wells could be in a drilling unit of 65 acres. **This would double or even triple the estimated revenue projected in our 'model'.**

The estimated average income to a homeowner with mineral interests in a drilling unit under the parameters of our examples herein do not include any refracturing or more than one well in the 65 acre drilling unit.

The development of the Barnett Shale gas will take several more decades of drilling wells to cover Tarrant County. **As of October 1, 2009, there were 322,436 leases of record in Tarrant County so at least 1/3 of the county still has not yet been leased. Many of the existing leases have not been drilled as there were only 2,298 Barnett Shale producers in the county as of May 1, 2009. Many more gathering lines will need to be laid in order for more leasing and the subsequent drilling to occur. A map of Barnett Shale producers as of May 1, 2009, illustrates the area 'gaps' in the county where there are no producers.**



Horizontal drilling began in earnest in Tarrant County in 2003 with a few wells. At some point in two or three more decades, producers will begin to look for 'windows' of gas they have not yet drained and figure out ways to reach them. The point is that in the future almost all the generations that own minerals will be blessed with the development of their gas to

their enrichment and the benefit of our nation. We hope to see these 'model' estimates of revenues to be very conservative and low.

Discussion

The PBSN staff has created the following estimate for an average horizontal well for Tarrant County. It is critical, when evaluating the data from the PBSN Barnett Shale Production & Revenue Estimate that the many variables involved in such projections must be considered for each individual well. Some major variables in production and revenue projections:

- The technology used to drill and complete the well
- Average daily production in the peak production month
- A wide fluctuation in the price of gas
- The royalty amount
- The size of the drilling unit or community lease
- The actual well production decline in the first five years vs. projected hyperbolic decline
- Ad valorem tax
- Severance tax

These are just a few of the variables.

The model we have run is just an estimate based on our choice of parameters and represents nothing that should be used as an expectation or prediction of any well. It is a large ballpark estimate and nothing more. None of the information should be considered as legal, financial, consulting or any other professional advice. Consult your attorney, financial advisor or other professional consultants to determine how well estimates may affect your company and/or you individually.

Although we have performed many of these analyses, we had the basic model run using the [Drillinginfo.com](#) OMSYS™ Exploration & Production Economics Report system to calculate the model and the estimate of 25% royalty. PBSN chose all the parameter variables for the production estimate.

The size of recent drilling units for a horizontal well in Tarrant County has been highly variable from 20 acres on up. We used a 65-acre drilling unit in our model. Not much has been published on the projected unit size. Chesapeake Energy's October 2007 Fort Worth Barnett Shale report¹ projects 60-acre spacing for the company's projected 2,700 wells. We also recognize smaller and many larger drilling units so we chose 65 acres for the drilling unit size. Numerous larger drilling units are for more than one well and therefore will see increases in production as more wells are drilled; the model can be multiplied by the number of wells to be drilled. Early

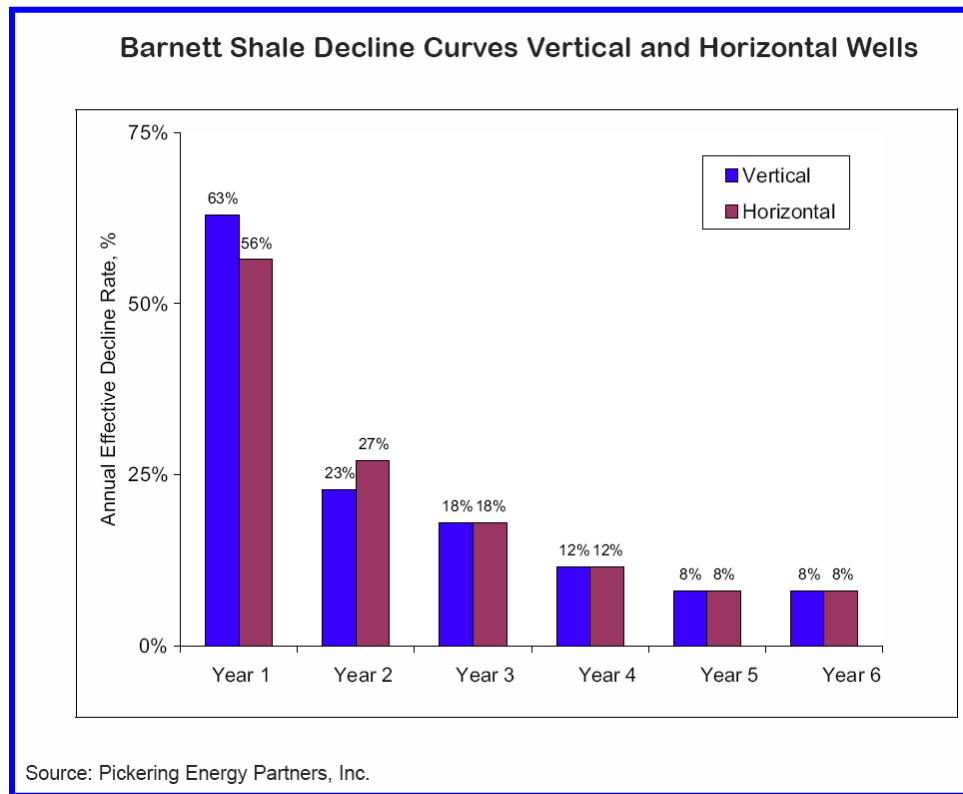
¹ Chesapeake Energy October 2007 Investor Presentation, page 13 of 42 *Fort Worth Barnett Shale*
http://media.corporate-ir.net/media_files/irol/10/104617/OctobeInvestorPresentation100207.pdf

results show wells simultaneously fractured (simo-fraced) have significantly higher production than wells fractured individually.

We have created only one model for this study. A lower royalty would be reduced proportionately and a higher royalty would be increased proportionately. We have used the three natural gas prices noted without any escalation in price over the next 30 years beginning January 1, 2010 - a very conservative approach.

We used an average home lot size of .22 acres, between 1/5th acre and 1/4th acre, for Fort Worth in Tarrant County. A larger lot size would obviously increase revenue while a smaller lot would decrease revenue.

Most Barnett Shale wells have a hyperbolic decline in the production rate in the first five years after which it becomes exponential - nearly flat - declining very slowly over time at about 8% - 10% per year. We have researched decline curves based on many actual wells. Our research is very close to that published by David Pursell, *Pickering Energy Partners, Inc.* in February, 2007². It is noted that *Pickering Energy* did not participate in this project although two parameters of *Pickering Energy Partners* research were used in the model to make it more objective. The research at PBSN in year-to-year decline in the Barnett Shale and average daily production in peak month is very close to studies by *Pickering Energy Partners*.



² Society Of Independent Professional Earth Scientists (SIPES) SIPES QUARTERLY VOLUME XXXXIII NUMBER 3 FEBRUARY 2007 *The Barnett Shale – Still The Hottest Natural Gas Play in the U.S.*

By David Pursell, Pickering Energy Partners, Houston <http://sipes.org/Newsletters/newsltrfeb07.pdf>

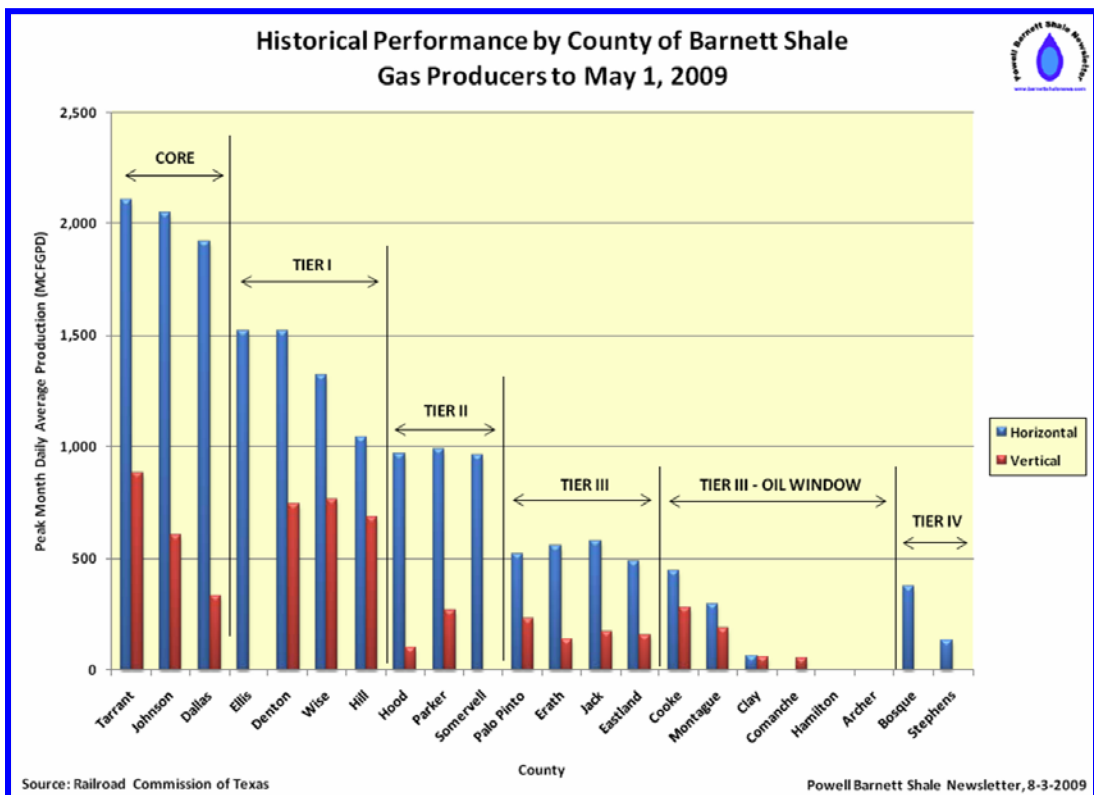
Excerpt from October 5, 2009 Powell Barnett Shale Newsletter: 2009 Tarrant County Barnett Shale Gas Well Estimates

We chose the following production decline for each of the first years and an 8% decline was used for the life of the well thereafter.

- Year 1 – 56%
- Year 2 – 27%
- Year 3 – 18%
- Year 4 – 10%
- Year 5 - 8%

The average ad valorem tax for oil and gas wells for north Texas is about 2.4% but because many of the wells are in Fort Worth we used a higher estimate of 2.8%. The severance tax value we used was 7.5% but if the operator applies for reduced severance tax under the Tight Gas Designation, as Tarrant County is for the Barnett Shale, then the well will receive a Type 5 Exemption. The severance tax will then be reduced to as low as 2% instead of 7.5% until the operator recoups an amount equal to 50% of the cost of the well when the severance tax will go to 7.5%. The operator must apply for this exemption and severance tax reduction.

The Powell Barnett Shale Newsletter has been evaluating wells by their daily average gas production in their peak month since 2003. We decided to use a peak month average of 2,000 MCFGPD (thousand cubic feet of gas per day) which is 2 million cubic feet of gas per day as the beginning in the calculation of the first full month's production in the engineering program. The actual peak month daily average of the 1,826 horizontal wells as of May 1, 2009, for Tarrant County was 2,298 MCFGPD (2.3 million cubic feet gas per day, the highest of all Barnett Shale producing counties:



The royalty for .22 acres in a 65 acre drilling unit @ 25% royalty is .08462% royalty.

0.22 acres ÷ 65 acre drilling unit = 0.003384615 drilling unit acres

0.0033846 acres in drilling unit acres X 25% royalty = 0.0008462 or .08462% drilling unit royalty

We have changed the normal engineering headers for this type analysis to simplify reading the columns for those unfamiliar with industry terms in the following production and revenue estimates.

It needs to be noted that since 95%+ of the Barnett Shale wells in Tarrant County produce no condensate (oil) that there are no columns for oil production or price estimates. The difference between the last two columns of Gross and Net Revenues is the payment by the royalty owners of their share of state severance taxes and ad valorem taxes. The estimates were prepared by *PBSN* using the drillinginfo.com *OMSYS™ Exploration & Production Economics Analysis* program.

Using the hyperbolic decline already noted and a beginning peak month daily average of 2 million cubic feet gas per day (2,000 MCFGPD), the engineering model generates a total of 3,006,872 MCF of gas which is 3.0 billion cubic feet in the first thirty (30) years without any refracturing.

PBSN Barnett Shale Well Production & Revenue Estimate - 25% Royalty
Peak Month Daily Average: 2,000 MCFGPD; 0.22 Acres; 65 Acre Drilling Unit
by Powell Barnett Shale Newsletter October 5, 2009
Natural Gas Price: \$6.00/MCF

| Fiscal | Gas | Gas | Gross | Gross | Net | Cash Flow |
|--------------|------------------|--------|------------------------|---------------------|-----------------------|---------------------|
| Year | MCF | \$/MCF | Revenue - 100% of Well | Revenue 25% Royalty | Gross Revenue .08462% | Net Revenue .08462% |
| 2010 | 497,996 | \$6.00 | \$2,987,976 | \$746,994 | \$2,528 | \$2,268 |
| 2011 | 275,598 | \$6.00 | \$1,653,588 | \$413,397 | \$1,429 | \$1,282 |
| 2012 | 212,699 | \$6.00 | \$1,276,194 | \$319,049 | \$1,103 | \$989 |
| 2013 | 182,508 | \$6.00 | \$1,095,048 | \$273,762 | \$946 | \$849 |
| 2014 | 166,044 | \$6.00 | \$996,264 | \$249,066 | \$861 | \$772 |
| 2015 | 152,760 | \$6.00 | \$916,560 | \$229,140 | \$792 | \$711 |
| 2016 | 140,539 | \$6.00 | \$843,234 | \$210,809 | \$729 | \$654 |
| 2017 | 129,296 | \$6.00 | \$775,776 | \$193,944 | \$670 | \$601 |
| 2018 | 118,953 | \$6.00 | \$713,718 | \$178,430 | \$617 | \$553 |
| 2019 | 109,436 | \$6.00 | \$656,616 | \$164,154 | \$567 | \$509 |
| 2020 | 100,681 | \$6.00 | \$604,086 | \$151,022 | \$522 | \$468 |
| 2021 | 92,627 | \$6.00 | \$555,762 | \$138,941 | \$480 | \$431 |
| 2022 | 85,217 | \$6.00 | \$511,302 | \$127,826 | \$442 | \$396 |
| 2023 | 78,399 | \$6.00 | \$470,394 | \$117,599 | \$407 | \$365 |
| 2024 | 72,128 | \$6.00 | \$432,768 | \$108,192 | \$374 | \$335 |
| 2025 | 66,357 | \$6.00 | \$398,142 | \$99,536 | \$344 | \$309 |
| 2026 | 61,049 | \$6.00 | \$366,294 | \$91,574 | \$317 | \$284 |
| 2027 | 56,165 | \$6.00 | \$336,990 | \$84,248 | \$291 | \$261 |
| 2028 | 51,672 | \$6.00 | \$310,032 | \$77,508 | \$268 | \$240 |
| 2029 | 47,538 | \$6.00 | \$285,228 | \$71,307 | \$246 | \$221 |
| 2030 | 43,735 | \$6.00 | \$262,410 | \$65,603 | \$227 | \$203 |
| 2031 | 40,236 | \$6.00 | \$241,416 | \$60,354 | \$209 | \$187 |
| 2032 | 37,017 | \$6.00 | \$222,102 | \$55,526 | \$192 | \$172 |
| 2033 | 34,056 | \$6.00 | \$204,336 | \$51,084 | \$177 | \$158 |
| 2034 | 31,331 | \$6.00 | \$187,986 | \$46,997 | \$162 | \$146 |
| 2035 | 28,825 | \$6.00 | \$172,950 | \$43,238 | \$149 | \$134 |
| 2036 | 26,519 | \$6.00 | \$159,114 | \$39,779 | \$138 | \$123 |
| 2037 | 24,397 | \$6.00 | \$146,382 | \$36,596 | \$127 | \$113 |
| 2038 | 22,446 | \$6.00 | \$134,676 | \$33,669 | \$116 | \$104 |
| 2039 | 20,650 | \$6.00 | \$123,900 | \$30,975 | \$107 | \$96 |
| Total | 3,006,872 | | \$18,041,244 | \$4,510,311 | \$15,537 | \$13,937 |

PBSN Barnett Shale Well Production & Revenue Estimate - 25% Royalty
Peak Month Daily Average: 2,000 MCFGPD; 0.22 Acres; 65 Acre Drilling Unit
by Powell Barnett Shale Newsletter October 5, 2009
Natural Gas Price: \$9.00/MCF

| Fiscal | Gas | Gas | Gross | Gross | Net | Cash Flow |
|--------------|------------------|--------|------------------------|---------------------|-----------------------|---------------------|
| Year | MCF | \$/MCF | Revenue - 100% of Well | Revenue 25% Royalty | Gross Revenue .08462% | Net Revenue .08462% |
| 2010 | 497,996 | \$9.00 | \$4,481,964 | \$1,120,491 | \$3,793 | \$3,402 |
| 2011 | 275,598 | \$9.00 | \$2,480,382 | \$620,096 | \$2,144 | \$1,923 |
| 2012 | 212,699 | \$9.00 | \$1,914,291 | \$478,573 | \$1,654 | \$1,484 |
| 2013 | 182,508 | \$9.00 | \$1,642,572 | \$410,643 | \$1,420 | \$1,273 |
| 2014 | 166,044 | \$9.00 | \$1,494,396 | \$373,599 | \$1,291 | \$1,158 |
| 2015 | 152,760 | \$9.00 | \$1,374,840 | \$343,710 | \$1,188 | \$1,066 |
| 2016 | 140,539 | \$9.00 | \$1,264,851 | \$316,213 | \$1,093 | \$980 |
| 2017 | 129,296 | \$9.00 | \$1,163,664 | \$290,916 | \$1,006 | \$902 |
| 2018 | 118,953 | \$9.00 | \$1,070,577 | \$267,644 | \$925 | \$830 |
| 2019 | 109,436 | \$9.00 | \$984,924 | \$246,231 | \$851 | \$764 |
| 2020 | 100,681 | \$9.00 | \$906,129 | \$226,532 | \$783 | \$702 |
| 2021 | 92,627 | \$9.00 | \$833,643 | \$208,411 | \$720 | \$646 |
| 2022 | 85,217 | \$9.00 | \$766,953 | \$191,738 | \$663 | \$595 |
| 2023 | 78,399 | \$9.00 | \$705,591 | \$176,398 | \$610 | \$547 |
| 2024 | 72,128 | \$9.00 | \$649,152 | \$162,288 | \$561 | \$503 |
| 2025 | 66,357 | \$9.00 | \$597,213 | \$149,303 | \$516 | \$463 |
| 2026 | 61,049 | \$9.00 | \$549,441 | \$137,360 | \$475 | \$426 |
| 2027 | 56,165 | \$9.00 | \$505,485 | \$126,371 | \$437 | \$392 |
| 2028 | 51,672 | \$9.00 | \$465,048 | \$116,262 | \$402 | \$360 |
| 2029 | 47,538 | \$9.00 | \$427,842 | \$106,961 | \$370 | \$332 |
| 2030 | 43,735 | \$9.00 | \$393,615 | \$98,404 | \$340 | \$305 |
| 2031 | 40,236 | \$9.00 | \$362,124 | \$90,531 | \$313 | \$281 |
| 2032 | 37,017 | \$9.00 | \$333,153 | \$83,288 | \$288 | \$258 |
| 2033 | 34,056 | \$9.00 | \$306,504 | \$76,626 | \$265 | \$238 |
| 2034 | 31,331 | \$9.00 | \$281,979 | \$70,495 | \$244 | \$219 |
| 2035 | 28,825 | \$9.00 | \$259,425 | \$64,856 | \$224 | \$201 |
| 2036 | 26,519 | \$9.00 | \$238,671 | \$59,668 | \$206 | \$185 |
| 2037 | 24,397 | \$9.00 | \$219,573 | \$54,893 | \$190 | \$170 |
| 2038 | 22,446 | \$9.00 | \$202,014 | \$50,504 | \$175 | \$157 |
| 2039 | 20,650 | \$9.00 | \$185,850 | \$46,463 | \$161 | \$144 |
| Total | 3,006,872 | | \$27,061,866 | \$6,765,467 | \$23,306 | \$20,906 |

PBSN Barnett Shale Well Production & Revenue Estimate - 25% Royalty
Peak Month Daily Average: 2,000 MCFGPD; 0.22 Acres; 65 Acre Drilling Unit
by Powell Barnett Shale Newsletter October 5, 2009
Natural Gas Price: \$12.00/MCF

| Fiscal | Gas | Gas | Gross | Gross | Net | Cash Flow |
|--------------|------------------|----------------|------------------------|---------------------|-----------------------|---------------------|
| Year | MCF | \$/MCF | Revenue - 100% of Well | Revenue 25% Royalty | Gross Revenue .08462% | Net Revenue .08462% |
| 2010 | 497,996 | \$12.00 | \$5,975,952 | \$1,493,988 | \$5,057 | \$4,536 |
| 2011 | 275,598 | \$12.00 | \$3,307,176 | \$826,794 | \$2,858 | \$2,564 |
| 2012 | 212,699 | \$12.00 | \$2,552,388 | \$638,097 | \$2,206 | \$1,979 |
| 2013 | 182,508 | \$12.00 | \$2,190,096 | \$547,524 | \$1,893 | \$1,698 |
| 2014 | 166,044 | \$12.00 | \$1,992,528 | \$498,132 | \$1,722 | \$1,545 |
| 2015 | 152,760 | \$12.00 | \$1,833,120 | \$458,280 | \$1,584 | \$1,421 |
| 2016 | 140,539 | \$12.00 | \$1,686,468 | \$421,617 | \$1,457 | \$1,307 |
| 2017 | 129,296 | \$12.00 | \$1,551,552 | \$387,888 | \$1,341 | \$1,203 |
| 2018 | 118,953 | \$12.00 | \$1,427,436 | \$356,859 | \$1,234 | \$1,107 |
| 2019 | 109,436 | \$12.00 | \$1,313,232 | \$328,308 | \$1,135 | \$1,018 |
| 2020 | 100,681 | \$12.00 | \$1,208,172 | \$302,043 | \$1,044 | \$937 |
| 2021 | 92,627 | \$12.00 | \$1,111,524 | \$277,881 | \$961 | \$862 |
| 2022 | 85,217 | \$12.00 | \$1,022,604 | \$255,651 | \$884 | \$793 |
| 2023 | 78,399 | \$12.00 | \$940,788 | \$235,197 | \$813 | \$729 |
| 2024 | 72,128 | \$12.00 | \$865,536 | \$216,384 | \$748 | \$671 |
| 2025 | 66,357 | \$12.00 | \$796,284 | \$199,071 | \$688 | \$617 |
| 2026 | 61,049 | \$12.00 | \$732,588 | \$183,147 | \$633 | \$568 |
| 2027 | 56,165 | \$12.00 | \$673,980 | \$168,495 | \$582 | \$522 |
| 2028 | 51,672 | \$12.00 | \$620,064 | \$155,016 | \$536 | \$481 |
| 2029 | 47,538 | \$12.00 | \$570,456 | \$142,614 | \$493 | \$442 |
| 2030 | 43,735 | \$12.00 | \$524,820 | \$131,205 | \$454 | \$407 |
| 2031 | 40,236 | \$12.00 | \$482,832 | \$120,708 | \$417 | \$374 |
| 2032 | 37,017 | \$12.00 | \$444,204 | \$111,051 | \$384 | \$344 |
| 2033 | 34,056 | \$12.00 | \$408,672 | \$102,168 | \$353 | \$317 |
| 2034 | 31,331 | \$12.00 | \$375,972 | \$93,993 | \$325 | \$291 |
| 2035 | 28,825 | \$12.00 | \$345,900 | \$86,475 | \$299 | \$268 |
| 2036 | 26,519 | \$12.00 | \$318,228 | \$79,557 | \$275 | \$247 |
| 2037 | 24,397 | \$12.00 | \$292,764 | \$73,191 | \$253 | \$227 |
| 2038 | 22,446 | \$12.00 | \$269,352 | \$67,338 | \$233 | \$209 |
| 2039 | 20,650 | \$12.00 | \$247,800 | \$61,950 | \$214 | \$192 |
| Total | 3,006,872 | \$12.00 | \$36,082,488 | \$9,020,622 | \$31,075 | \$27,874 |