

Paradigm Shift in the Domestic Natural Gas Resource Base

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Unconventional Resources • Enhanced Recovery • Carbon Sequestration

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Perspectives on the Natural Gas Resource Base

From perceptions of scarcity and statements "we cannot drill our way out of the natural gas supply problem", today we have a surplus of natural gas, depressed wellhead gas prices and a collapsed rig market.

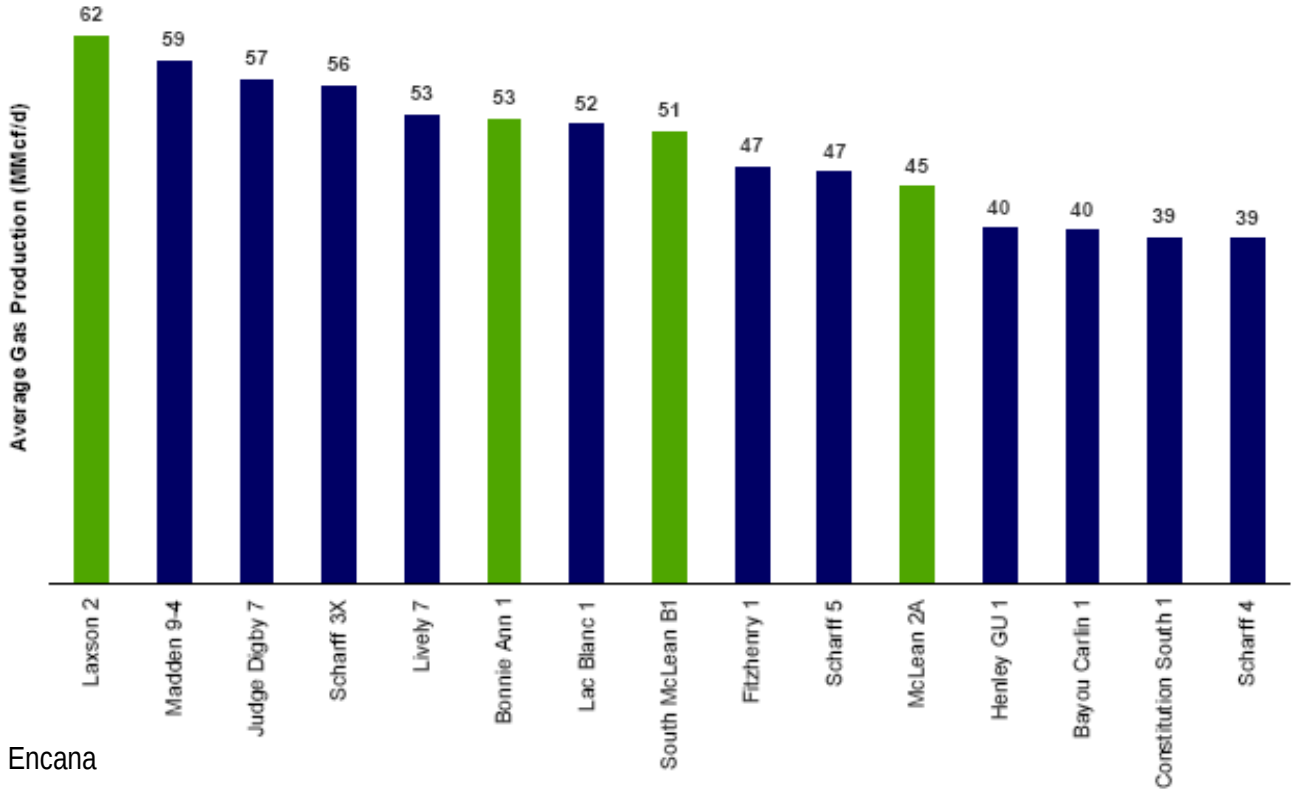
We believe that three events are behind this dramatic change:

1. The completion of the first leg of the Rockies Express Pipeline (REX), showing that the large Rockies tight gas and coalbed methane resources need not remain "locked-in" forever,
2. The development of the high productivity deep Bossier tight gas resource play of East Texas, and
3. **Most of all, the discovery and development of large gas shale resources.**

Peak Gas Production Rates: Deep Bossier Sands

The top 10% of the Bossier Sand wells have peak sustained gas production rates of 40 to 60 MMcfd.

Highest Average Gross Gas Production Rate Over Three Consecutive Months (2003 – 2008)



Source: Encana

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The Paradigm Shift

In our view, a "paradigm shift" has occurred in the ability of the domestic natural gas resource base to deliver reliable and affordable gas supplies.

- This "paradigm shift" started in earnest twelve years ago, with development of low cost unconventional gas in the San Juan Basin, at Jonah/Pinedale and from the Powder River Basin. Presentations by our firm, Advanced Resources, entitled "The Future is Unconventional", heralded the start of this shift.
- Momentum for the "paradigm shift" was provided by horizontal drilling and intensive stimulation technology that first unlocked the Barnett Shale and then did the same, but more quickly, for the Fayetteville Shale.
- The final push has been the raising to "rock star status" of the Marcellus, Haynesville and other gas shale plays.

Evidence for the Paradigm Shift

Ten Of The Twelve Largest U.S. Lower-48 Natural Gas "Fields" Produce Unconventional Gas

Rank	Field Name	Basin/State	Type of Resource	Year 2007 Production (Bcfd)
1	San Juan Basin Gas Area (Mesaverde/Fruitland)	San Juan, NM/CO	CBM/Tight Gas Sands	3.6
2	Newark East (Barnett)	Ft. Worth, TX	Gas Shale	3.0
3	Pinedale/Jonah (Lance)	GGRB, WY	Tight Gas Sands	1.9
4	Wyodak/Big George Fairway	Powder River, WY	CBM	1.2
5	S. Piceance Basin Gas Area (Mesaverde/Williams Fork)	Piceance, CO	Tight Gas Sands	1.1
6	Hugoton Gas Area	Hugoton Basin, OK	Conventional Gas	1.0
7	Freestone Trend (Shallow Bossier)*	East Texas, TX	Tight Gas Sands	0.7
8	Carthage (Cotton Valley)	East Texas, TX	Tight Gas Sands	0.6
9	Natural Buttes (Wasatch/MV)	Uinta, UT	Tight Gas Sands	0.5
10	Wattenberg	Denver, CO	Tight Gas Sands	0.5
11	Lower Mobile Bay	Offshore GOM	Conventional Gas	0.4
12	Savell/Amoruso (Deep Bossier)	East Texas, TX	Tight Gas Sands	0.4

*Includes Firestone, Bold Prairie, Bear Creek, Dowdy Ranch and Dew.

Sources: EIA 2005 and 2007 Annual Reserve Reports; Advanced Resources Unconventional Gas Data Base.

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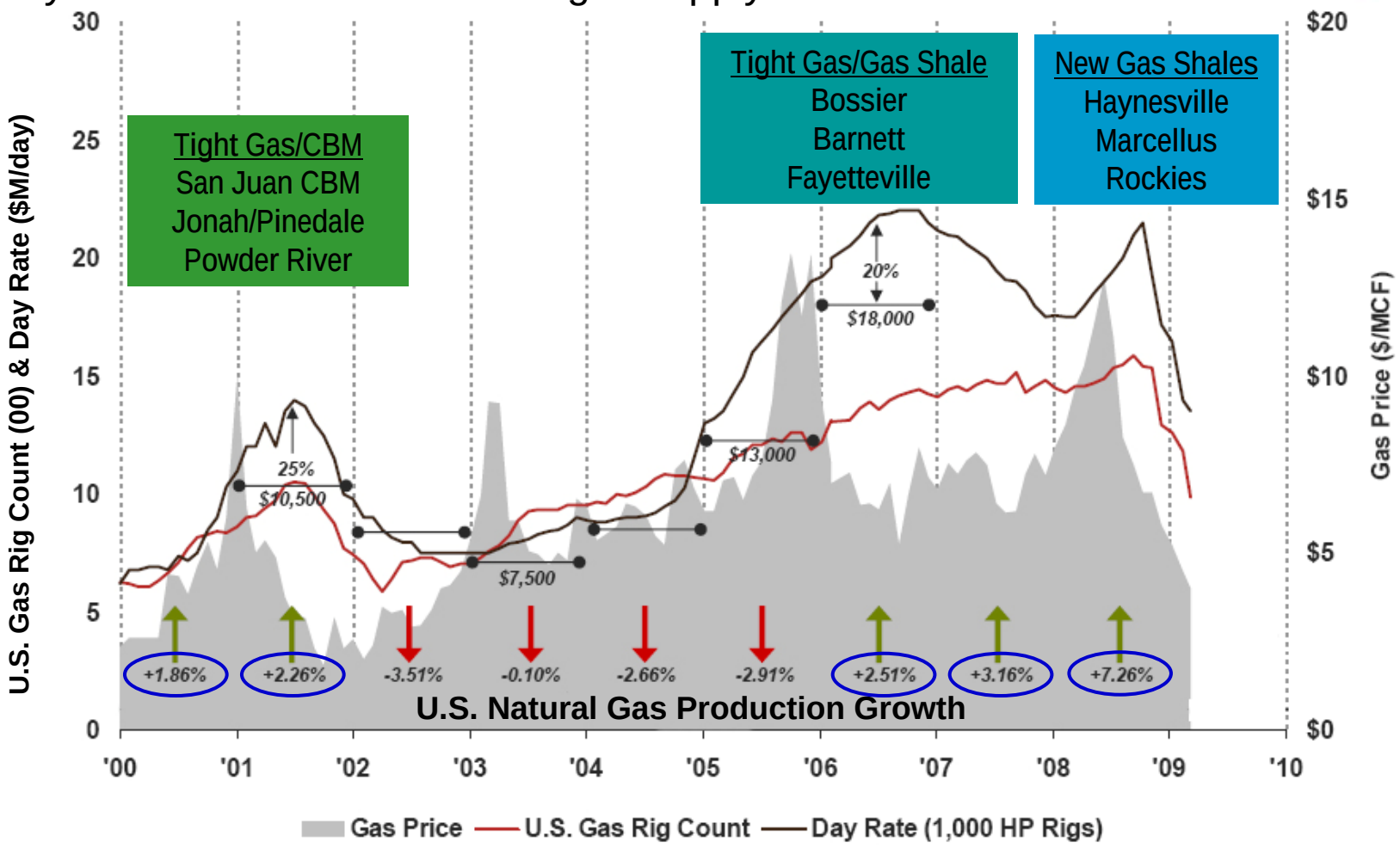
Evidence for the Paradigm Shift

The big, geologically favorable unconventional gas resource plays dominate the dynamics of domestic natural gas supply.



Source: Modified by Advanced Resources from XTO Energy, 2009

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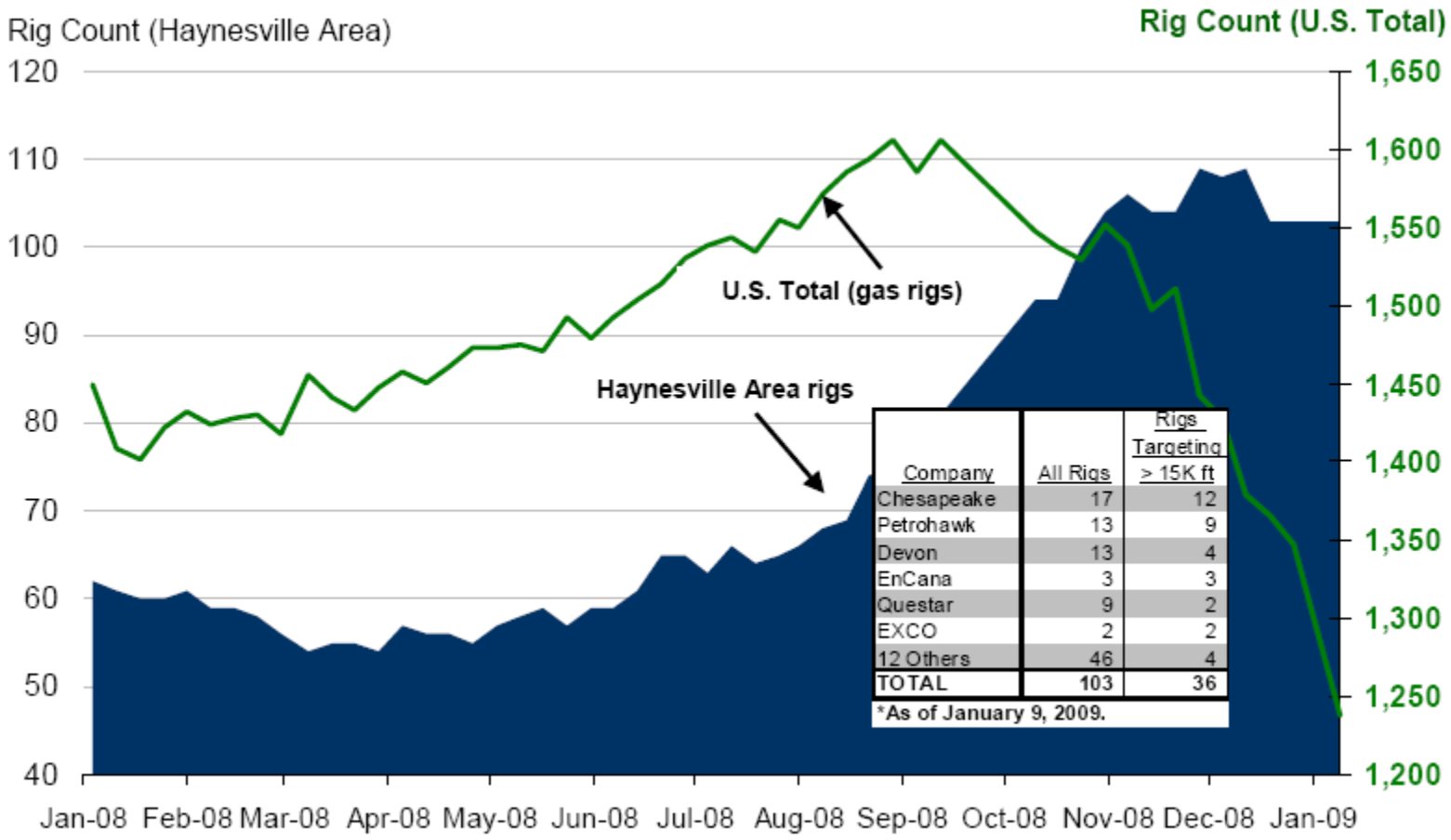
Evidence for the Paradigm Shift

While total working U.S. gas rigs have declined by more than half, the rig count in the Haynesville area has remained strong.



Company	All Rigs	Rigs Targeting > 15K ft
Chesapeake	17	12
Petrohawk	13	9
Devon	13	4
EnCana	3	3
Questar	9	2
EXCO	2	2
12 Others	46	4
TOTAL	103	36

*As of January 9, 2009.

Source: EnCana, 2009

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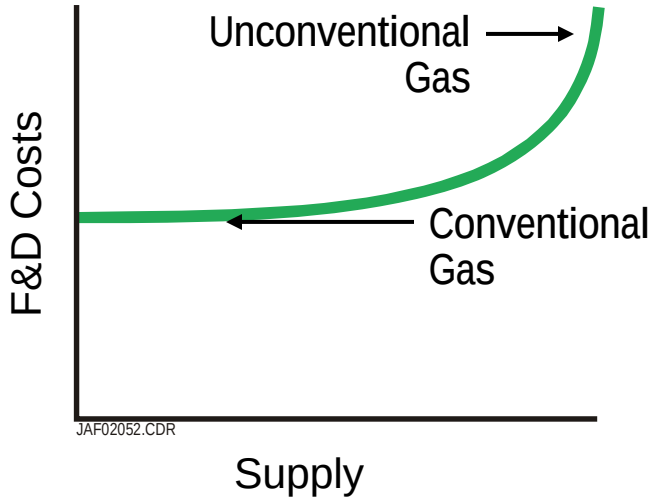
The Paradigm Shift

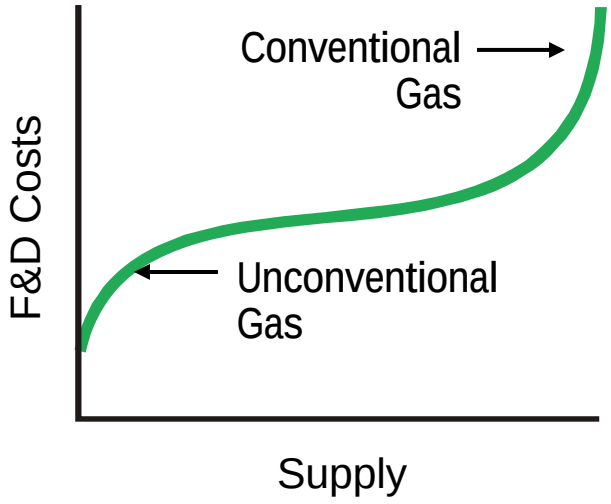
This "paradigm shift" is changing the long held belief that unconventional gas is the high cost portion of the resource base.

In our view, unconventional gas and particularly gas shales are actually the low cost portion of the resource.

Prior Perception



New Understanding



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A Closer Look at the Natural Gas Resource Base

The past several years of price and supply volatility have shed considerable light on the nature and economic viability of domestic natural gas resources.

1. ***Conventional Gas Resources.*** While the undiscovered conventional gas resource base is large, at 963 Tcf (DOE/EIA & USGS), much of it is costly and difficult to access:

   - Much of ***Onshore Conventional Gas Resource***, with 285 Tcf, is in small traps or on the margins of older fields, thus costly to develop.
   - ***Offshore Conventional Gas Resources***, with 309 Tcf, has only been able to deliver 2 Tcf per year to reserves in the past 7 years.
   - Production of ***Associated Gas,*** with 129 Tcf of resource, has steadily declined from 3 Tcf (in 2001) to 2 Tcf per year today.
   - ***The Alaskan Gas Resources***, with 169 Tcf, remains locked in place.

		(Tcf)	(Tcf)
1. Lower-48 Non-Associated Conventional Gas			594
	Onshore Undiscovered	(114)	
	Onshore Inferred	(171)	
	Offshore Undiscovered	(260)*	
	Offshore Inferred	(49)	
2. Associated Conventional Gas			129
3. Alaska			169
TOTAL UNPROVED			892
4. Proved Conventional Gas Reserves			71
TOTAL RESOURCE BASE			963

*Includes 55 Tcf in Atlantic and Pacific Offshore and 21 Tcf in Eastern GOM offshore currently without access.

Conventional Gas Resource Base

The most complete information on the conventional gas resource base is from U.S. DOE/EIA and U.S. Geological Survey.

- 892 Tcf of combined undiscovered and inferred reserves, as of 1/1/2007.
- 71 Tcf of proved conventional gas reserves.

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Offshore (GOM) Natural Gas Resource Base

Unable to add more than 2 Tcf per year of new reserves, offshore GOM conventional natural gas reserves have declined by half and production has fallen by over 6 Bcfd, since 2001.

Proved Reserves (Tcf)			
	Shallow Water	Deep Water	TOTAL
Base Year			
2001	15.9	11.3	27.1
Recent Years			
2005	9.4	8.0	17.4
2006	8.2	6.7	14.9
2007	7.5	6.5	14.0

Annual Production (Bcfd)			
	Shallow Water	Deep Water	TOTAL
Base Year			
2001	9.7	3.7	13.4
Recent Years			
2005	5.1	2.8	7.9
2006	4.5	3.0	7.5
2007	4.6	2.8	7.4

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A Closer Look at the Natural Gas Resource Base

2. ***Unconventional Gas Resources.*** Driven by advances in geologic understanding and progress in extraction technology, the recoverable unconventional gas resource base has continued to grow.

   - The undeveloped unconventional gas resource base is 917 Tcf, up from 366 Tcf a dozen years ago* (based on updated resource assessments by Advanced Resources).
   - Proved unconventional gas reserves are 140 Tcf, up from 48 Tcf in 1996*.
   - This large and growing resource base has enabled unconventional gas to provide 29 Bcfd in 2008, up from 13 Bcfd in 1996.

*During this two year period, approximately 55 Tcf of tight gas, 18 Tcf of CBM and 7 Tcf of gas shale was been produced.

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The Unconventional Gas Resource Base is Dominated by a Dozen Large Resource Plays

		Undeveloped Resources
Gas Shales		470
	Big Five*	439
	Others	31
Tight Gas Sands		357
	Big Five**	179
	Others	178
Coalbed Methane		90
	Big Two***	54
	Others	36
	TOTAL	917

*Includes Barnett, Fayetteville, Woodford, Haynesville and Marcellus Gas Shales.
**Includes Pinedale/Jonah (Lance, Green River Basin), Mesaverde/Williams Fork (Piceance and Uinta Basins), Bossier/Cotton Valley (East Texas Basin).
***Includes Powder River Basin and San Juan Basin CBM.
Source: Advanced Resources Int'l., 2009

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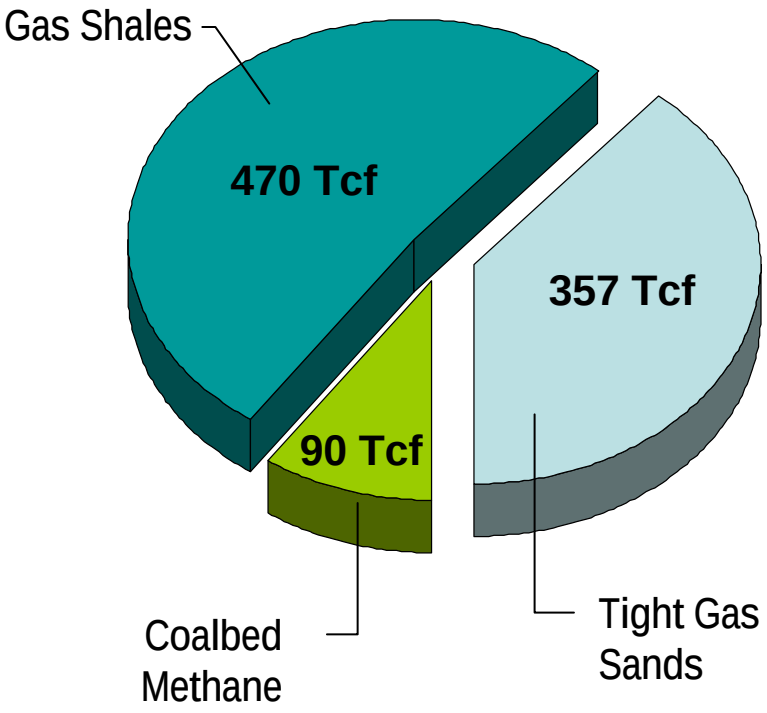
However, Today Only a Portion of the Unconventional Gas Resource Base is "High Quality"

Advances in science, geological knowledge and extraction technologies will be essential for converting lower quality resources to affordable natural gas supplies.



	Total Undeveloped	High Quality	Lower Quality
Gas Shales	470	209	261
Tight Gas Sands	357	173	184
Coalbed Methane	90	49	41
TOTAL	917	431	486

Source: Advanced Resources Int'l., 2009

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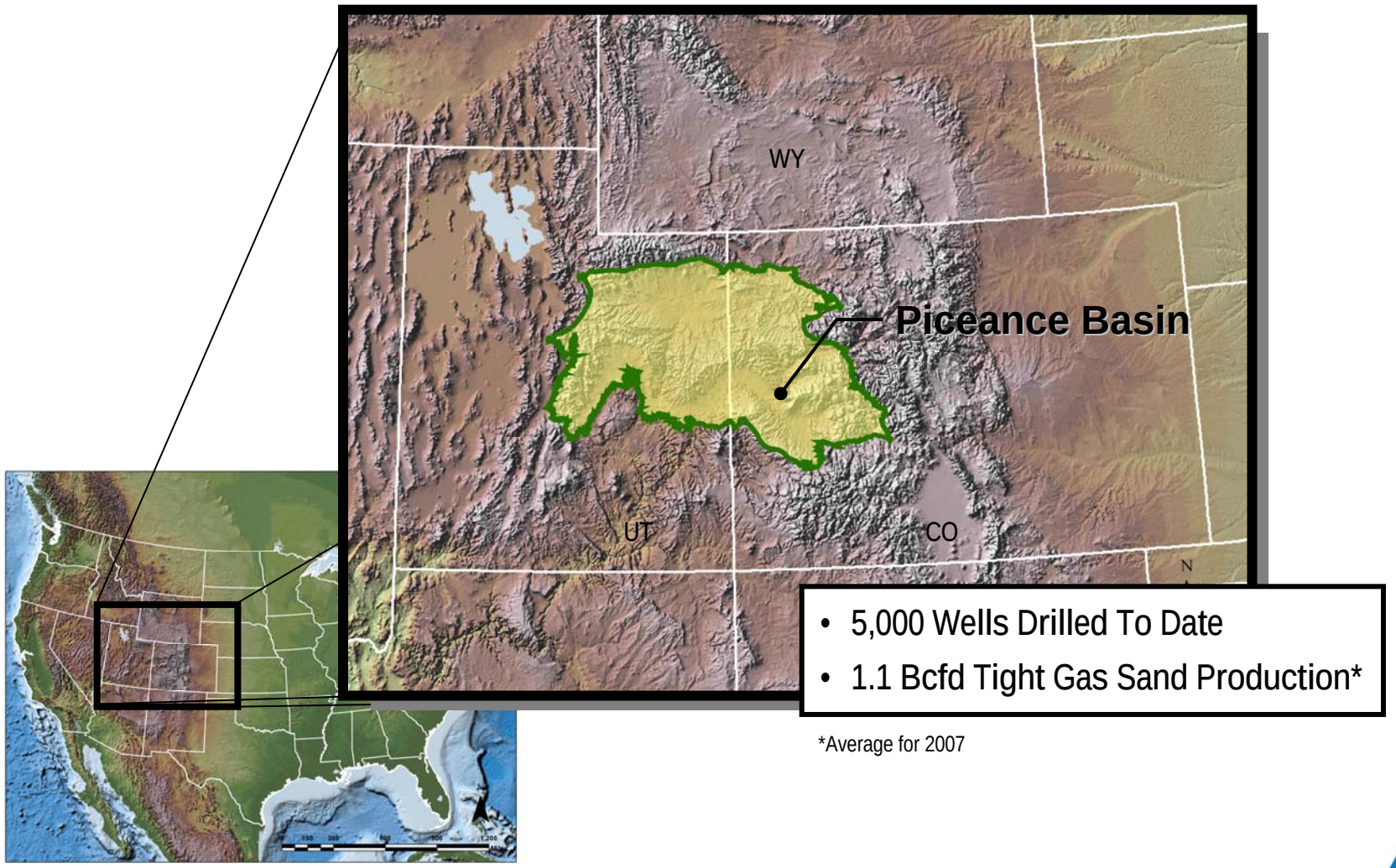
Resources for the Future

The size and quality of domestic unconventional gas resources have increased sharply in the past dozen years.

Two examples help illustrate how advances in geological understanding and progress in well completion technology are continuing to expand the domestic natural gas resource base.

S. Piceance Basin: Williams Fork/Mesaverde Tight Gas Sand Play



- 5,000 Wells Drilled To Date
- 1.1 Bcfd Tight Gas Sand Production*

*Average for 2007

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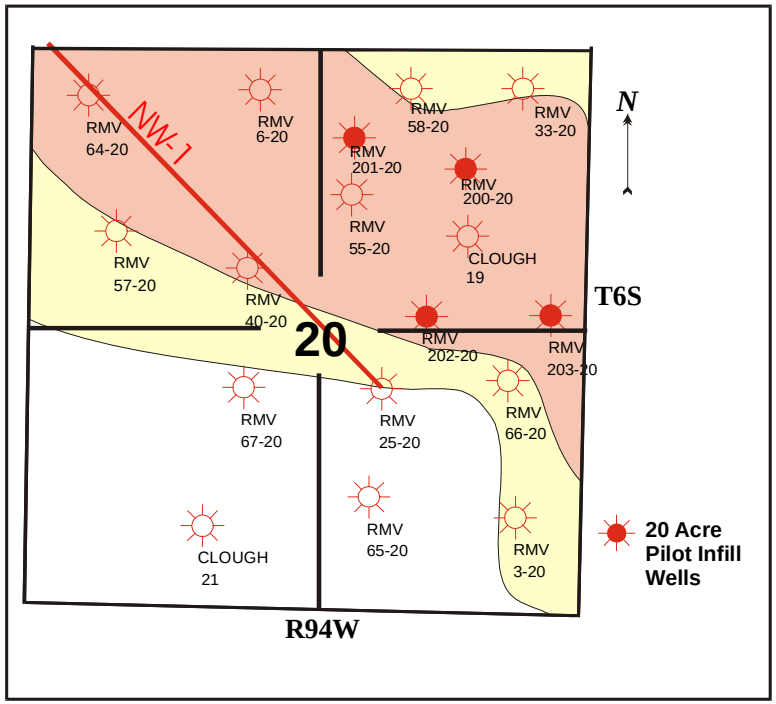
Intensive Resource Development S. Piceance Basin: Williams Fork/Mesaverde Tight Gas Sands

Intensive resource development, at spacings of 10 acres/well, could further increase the recoverable tight gas resources of the S. Piceance Basin.

Intensive Field Development Pilot, Sec. 20, Rulison Field*



*For wells drilled through 1997.

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Expected Results from Intensive Resource Development (Sec. 20, T6S-R94W, Rulison)

Date	No. of Wells	Well Spacing (Acres/Well)	Avg. Recovery/ Well (Bcf)		EUR/ Section (Bcf)
			Cum. To Date	EUR	
Initial Wells	4	160 A/W	1.8	2.2	9
1995	4	80 A/W	1.7	2.2	9
1996-1998	8	40 A/W	1.2	1.6	13
1997-2000	16	20 A/W	1.1	1.6	25
Latest	32	10 A/W	0.6	1.7	54
Total	64		1.0	1.7	110

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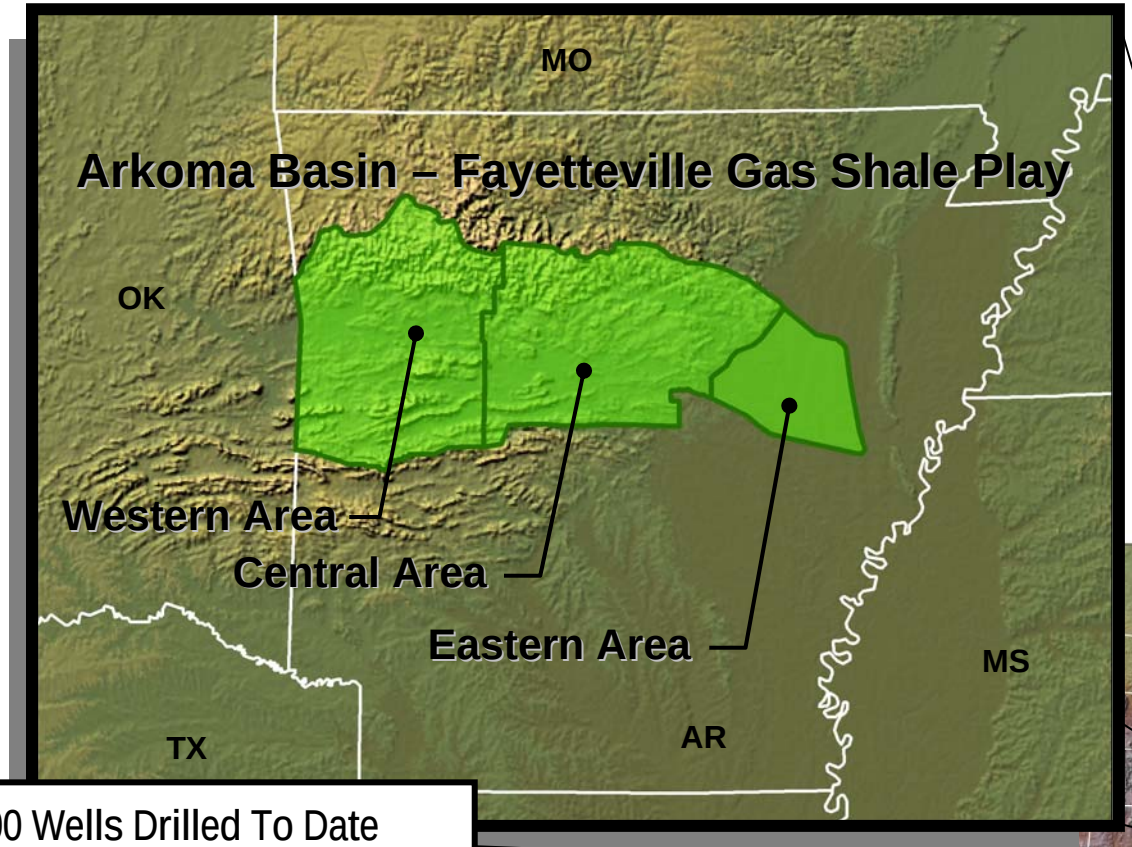
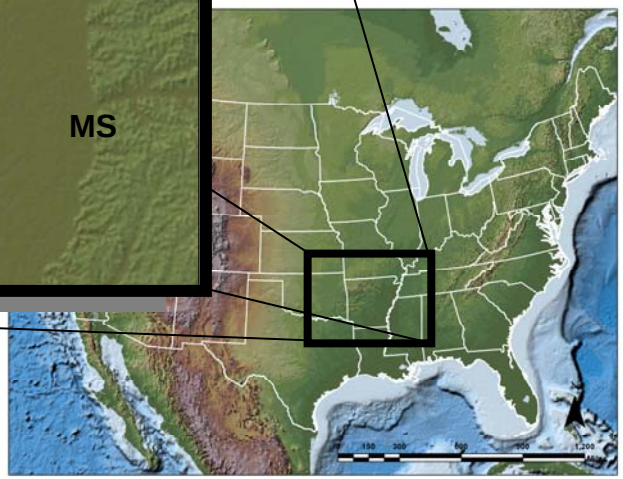
Arkoma Basin: Fayetteville Gas Shale Play





- 1,000 Wells Drilled To Date
- 1 Bcfd Gas Shale Production*

*End of 2008

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Fayetteville Shale: Improving Well Performance

With use of longer laterals, more frac stages, and more intensive perforation clusters (plus 3-D seismic), the performance of Fayetteville Shale wells has increased by more than two-fold.

Time Frame	Wells on Production	Average IP Rate (Mcf/d)	First 30-Day Rate	First 60-Day Rate	Average Lateral Length
1st Qtr 2007	58	1,260	1,070	960	2,100
2nd/3rd/4th Qtr 2007	197	1,770	1,490	1,290	2,500-3,190
1st Qtr 2008	75	2,340	2,150	1,940	3,300
2nd/3rd Qtr 2008	180	2,710	2,360	2,110	3,650
4th Qtr 2008	74	3,350	2,800	2,700	3,850

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Resources for the Future

Today's natural gas resource base estimates are merely a "snapshot in time."

New unconventional gas plays, more intensive development of already discovered plays, and advances in extraction technology will increase recoverable resources.

The statement "we do not yet know the true size and nature of the unconventional gas resource base" is as true today as when it was made a dozen years ago.*

*Kuuskraa, V.A., Schmoker, J.W., and T.S. Dyman, "Emerging U.S. Gas Resources—Conclusion, Diverse Gas Plays Lurk in Gas Resource Pyramid," OGJ, June 8, 1998, pp. 123-30.

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