

## Industry

9 September 2010 | 53 pages

# Natural Gas Price Summer Wrap-Up and Outlook

Equity

## Emerging Shale Plays Alter Landscape

- **Natural Gas Price Outlook** — We are revising our 2010 composite spot natural gas price forecast to \$4.50/MMBtu from \$4.75/MMBtu. Although a cold start to the year and a record-hot summer helped to tighten the supply/demand balance, continued rig efficiency improvements and a strong pace of capital outlays has driven domestic production to higher levels than originally forecast. For 2011, and assuming normal weather, we are revising our forecast to \$4.25/MMBtu from \$5.75/MMBtu. Even though we are assuming a 15% drop in the domestic gas rig count by the end of next year, with difficult yr/yr weather comps, the supply/demand balance appears looser than this year. We are reducing our “normalized” price to \$5.50/MMBtu from \$6.25/MMBtu because we believe that significant running room still lies ahead in numerous North American shale plays, providing acceptable returns at \$5.50/MMBtu and yielding ample supply to meet demand for at least several years ahead.
- **Glimmer of Hope in 2012?** — Given our current projections, 2012 provides perhaps the first glimmer of hope wherein total U.S. natural gas production peaks in the third quarter of next year at the same time that drilling to hold acreage begins to abate. Hence, our \$5.50/MMBtu forecast beginning in 2012 and going forward.
- **Longer-Term Oil Price Outlook Unchanged** — We are lowering our 2010 WTI spot oil price forecast to \$78.20/Bbl from \$81.00/Bbl. Our 2011 and normalized price forecasts remain \$85.00/Bbl and \$80.00/Bbl, respectively.
- **Adjusting estimates and price targets** — Based on our revised commodity price outlook, we have adjusted earnings, net asset value and price targets for our coverage group. On average, we have lowered 2010 EPS/CFPS estimates by 11%/4%, for 2011 by 27%/18% and for 2012 by 13%/26%. Proven reserve NAV estimates have dropped, on average, by 10% while price targets, on average, are now 7% lower.
- **Continue to Prefer Oil-Leveraged Names** — Overall, we continue to have a greater proclivity for the more oil-leveraged names. Our top picks are APC and APA.

### E&P Target Price, EPS and CFPS Revisions

	Target Price			2010 Recurring Diluted EPS			2010 Recurring CFPS			2011 Recurring Diluted EPS			2011 Recurring CFPS			2012 Recurring Diluted EPS			2012 Recurring CFPS		
	Previous	Current	% Change	Previous	Current	% Change	Previous	Current	% Change	Previous	Current	% Change	Previous	Current	% Change	Previous	Current	% Change	Previous	Current	% Change
APC	75.00	74.00	-1%	\$ 2.23	\$ 1.95	-13%	\$ 11.27	\$ 10.92	-3%	\$ 2.77	\$ 1.67	-40%	\$ 12.93	\$ 11.66	-10%	\$ 4.79	\$ 4.27	-11%	\$ 16.27	\$ 15.67	-4%
APA	130.00	130.00	0%	10.02	9.34	-7%	20.95	20.11	-4%	12.18	11.05	-9%	24.82	23.43	-6%	13.86	13.26	-4%	27.39	26.65	-3%
CNO	42.50	40.00	-6%	2.26	2.02	-11%	4.86	4.59	-6%	3.61	3.15	-13%	7.22	6.71	-7%	4.40	4.16	-5%	8.26	7.99	-3%
CHK	28.00	26.00	-7%	3.08	3.02	-2%	6.15	6.01	-2%	3.39	2.52	-26%	7.20	5.89	-18%	3.74	3.13	-16%	7.91	5.23	-34%
DWN	78.00	68.00	-13%	6.10	5.82	-5%	10.84	10.50	-3%	7.00	5.23	-25%	12.94	10.71	-17%	9.22	8.22	-11%	16.19	14.92	-8%
ECA	30.00	28.00	-7%	1.15	0.99	-14%	6.16	5.95	-3%	2.04	0.66	-68%	7.10	5.39	-24%	2.95	2.12	-28%	8.61	7.61	-12%
EOG	120.00	110.00	-8%	1.65	1.14	-31%	12.85	12.19	-5%	5.10	3.51	-31%	18.83	15.47	-18%	9.19	8.26	-10%	26.45	19.88	-25%
NFX	66.00	60.00	-9%	4.53	4.33	-4%	10.79	10.44	-3%	4.39	3.83	-13%	11.24	9.88	-12%	5.67	4.93	-13%	13.67	10.10	-26%
NOY	26.00	25.00	-4%	1.83	1.59	-13%	4.27	4.05	-5%	2.62	2.44	-7%	5.50	5.22	-5%	3.12	3.03	-3%	6.18	6.03	-2%
NBL	74.00	74.00	0%	3.74	3.52	-6%	10.44	10.04	-4%	4.23	3.80	-10%	10.83	9.30	-14%	5.62	5.21	-7%	12.95	10.08	-22%
RRC	42.00	40.00	-5%	0.56	0.49	-13%	3.63	3.50	-4%	1.36	0.77	-44%	5.32	4.26	-20%	2.48	1.79	-28%	7.88	5.31	-33%
SWN	50.00	40.00	-20%	1.74	1.63	-6%	4.50	4.50	0%	2.39	1.37	-43%	5.96	5.00	-16%	3.37	2.77	-18%	8.06	6.15	-24%
TLM	21.00	20.00	-5%	0.62	0.52	-17%	3.03	2.97	-2%	1.14	0.94	-18%	4.35	4.12	-5%	1.53	1.39	-9%	4.98	4.82	-3%

See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.

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## Emerging Shale Plays Alter Landscape

**Despite the record hot summer this year, the market remains well oversupplied and we are revising our 2010 natural gas price forecast to \$4.50/MMBtu from \$4.75/MMBtu.**

**In 2011, the supply-demand balance appears even looser, assuming normal weather, and we are revising our 2011 price projection to \$4.25/MMBtu from \$5.75/MMBtu.**

**We project coal-to-gas switching levels next year to roughly match 2009 and far exceed this year's levels.**

**We are reducing our "normalized" composite spot price to \$5.50/MMBtu from \$6.25/MMBtu because we believe that significant running room still lies ahead in numerous North American shale plays.**

We are revising our 2010 full-year composite spot natural gas price forecast to \$4.50/MMBtu from \$4.75/MMBtu. Although a cold start to the year and a record-hot summer helped to tighten the supply/demand balance relative to 2009, continued rig efficiency improvements and a strong pace of capital outlays augmented by third party joint ventures has driven domestic production to higher levels than originally forecast. At the same time, given the average WTI price quarter-to-date and recent economic data, we are lowering our full-year WTI spot oil price forecast to \$78.20/Bbl from \$81.00/Bbl (See Figure 1).

Looking ahead to 2011, and assuming normal weather, we are revising our full-year composite spot natural gas price forecast to \$4.25/MMBtu from \$5.75/MMBtu. Even though we are assuming a 15% drop in the domestic natural gas rig count by the end of next year, difficult year-over-year weather comps make the supply/demand balance appear looser than this year and more in line with 2009, wherein prices averaged ~\$3.80/MMBtu. Our 2011 WTI spot oil price forecast remains at \$85.00/Bbl. See Figure 1.

A key variable in our price determination is the level of coal-to-gas switching that is required to absorb excess natural gas supply so that storage does not exceed "full" heading into winter. We estimate coal-to-gas switching boosted electric generation demand by ~1.1 Tcf in 2009 with this figure projected to come in at ~0.6 Bcf this year but then around 1.0 Tcf in 2011. Our higher price forecast relative to 2009 is in part the result of a higher coal price outlook (\$65/ton Central Appalachia in 2011).

Until evidence emerges that a significant tightening in the supply/demand balance is on the horizon, we are reducing our "normalized" composite spot price to \$5.50/MMBtu from \$6.25/MMBtu. We believe that significant "running room" still lies ahead in numerous North America shale plays wherein economic returns acceptable to the industry will exist at the \$5.50/MMBtu level, yielding ample supply to meet demand for at least the next several years. Thus, we continue to believe that the argument for the marginal cost of supply outside of these shale plays to ultimately set the price of natural gas will not be valid at any point in the foreseeable future. Having said that, given our current projections, 2012 provides perhaps the first glimmer of hope wherein total U.S. natural gas production peaks in the third quarter of next year at the same time that drilling to hold acreage begins to abate. The combination of these factors working together forms the basis of our \$5.50/MMBtu forecast for 2012 and beyond. Our normalized WTI spot oil price beyond 2012 remains \$80.00/Bbl.

Figure 1. Historical and Projected Commodity Prices

Year	Citi Investment Research		Street Consensus**	
	Oil (\$/Bbl.)	Natural gas (\$/MMBtu)	Oil (\$/Bbl.)	Natural gas (\$/MMBtu)
<b>2003</b>	<b>\$31.14</b>	<b>\$5.49</b>		
<b>2004</b>	<b>\$41.41</b>	<b>\$5.69</b>		
<b>2005</b>	<b>\$56.44</b>	<b>\$8.35</b>		
<b>2006</b>	<b>\$66.11</b>	<b>\$6.42</b>		
<b>2007</b>	<b>\$72.35</b>	<b>\$6.64</b>		
<b>2008</b>	<b>\$99.69</b>	<b>\$8.36</b>		
Q1	43.21	4.27		
Q2	59.72	3.49		
Q3	68.13	3.09		
Q4	76.03	4.26		
<b>2009</b>	<b>\$61.77</b>	<b>\$3.78</b>		
Q1	78.84	5.15		
Q2	77.88	4.22		
Q3E	76.00	4.15	77.86	4.90
Q4E	80.00	4.50	78.55	5.35
<b>2010E</b>	<b>\$78.20</b>	<b>\$4.50</b>	<b>\$78.17</b>	<b>\$4.94</b>
<b>2011E</b>	<b>\$85.00</b>	<b>\$4.25</b>	<b>\$81.50</b>	<b>\$5.58</b>
<b>2012E</b>	<b>\$90.00</b>	<b>\$5.50</b>	<b>\$83.32</b>	<b>\$6.01</b>

\*Quarterly consensus figures may not equate to the full-year average due to a fewer number of analysts providing quarterly estimates.

\*\* First Call Commodity Price consensus forecasts as of 9/2/10

Crude oil: WTI Cushing spot wellhead price average.

Natural gas: 12 U.S. region spot wellhead price average.

Sources: Thomson One, FirstCall, Citi Investment Research and Analysis Estimates

## Despite the Increase in Production, Storage Injections Fell Year over Year...

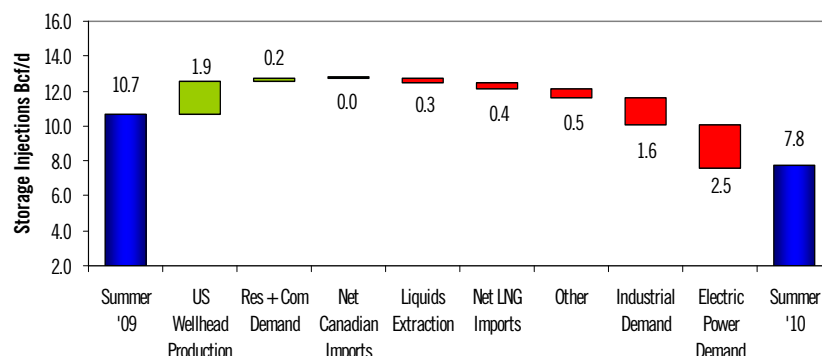
Due to a record hot summer, storage injections were down from last year, creating a 200 Bcf storage deficit at the end of summer...

Storage exited winter this year in line with 2009 end-of-March levels. A mild April brought reduced heating-load demand, but was followed by much warmer-than-average May. Consequently, natural gas storage at the official beginning of the summer season on June 1st stood at a 54 Bcf year-over-year surplus. However, this surplus transformed into a deficit of over 200 Bcf year-over-year by the end of the summer due largely to record high temperatures offsetting a sharp increase in production.

Natural gas supply outstrips natural gas demand during summer months with hotter summers moderating the pace of injections into working underground storage. Based on customer-weighted cooling degree days (CDDs), the official natural gas summer demand season (June 1st - August 31st) ended up ~15% hotter than the 10-year average and 23% warmer than last year. We estimate that this boosted natural gas demand this summer by ~150 Bcf relative to normal temperatures. Consequently, combined with strong IP growth, storage injections were down more than 25% versus last summer. This nearly 3.0 Bcf/d year-over-year drop in storage injections was primarily the result of higher industrial (up 1.6 Bcf/d) and electric generation (up 2.5 Bcf/d) demand more than offsetting a nearly 2.0 Bcf/d increase in domestic production (Figure 2).

...as industrial and electric power demand growth exceeded a sharp uptick in production.

**Figure 2. Summer Year-Over-Year Reconciliation**



Sources: EIA, Citi Investment Research and Analysis

## ...Due in Large Part to the Hottest Summer on Record

2010 was the hottest U.S. summer since at least 1950...

...the next two hottest (2005, 2006) were both followed by warm winters...

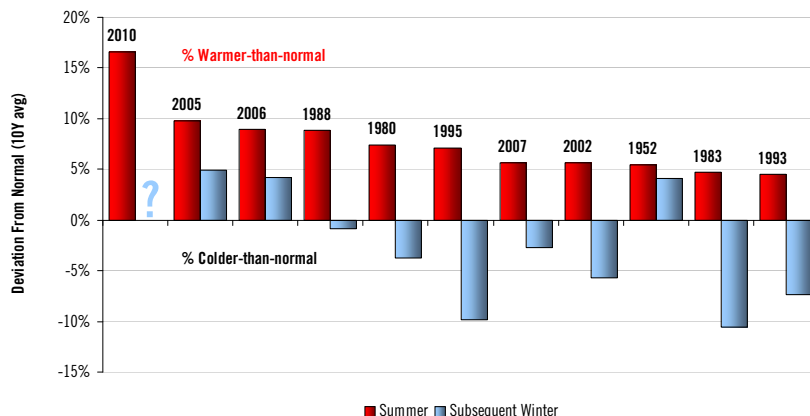
...and a nascent "La Nina" also augurs for mild winter temperatures.

This summer was ~15% warmer than the 10-year average and was the hottest since at least 1950. Since we don't attempt to predict the weather, our models always assume normal weather going forward. Although there is no definitive relationship between warm summers and subsequent winter temperatures, we note that the two hottest summers prior to this year (2005, 2006) were both followed by warmer-than-normal winters. Interestingly, five of the 10 hottest summers since 1950 have all occurred within the last decade.

According to weather forecasters, a "La Nina" episode, which entails at least five consecutive months of lower-than-normal Pacific Ocean temperatures, is forming this year. "La Nina" events tend to coincide with warmer winters but not always. The most recent "La Nina" occurrences include mid-2007 to early-2009, 2000-2001, 1999-2000, late 1995, and 1988-89.

Five of the hottest 10 summers since 1950 have occurred within the last decade

**Figure 3. Winters Following the 10 Hottest U.S. Summers Since 1950**



Sources: MDA, Citi Investment Research And Analysis

## Following a 2.3% Uptick This Year, Supply Is Projected to Increase ~2.1% in 2011

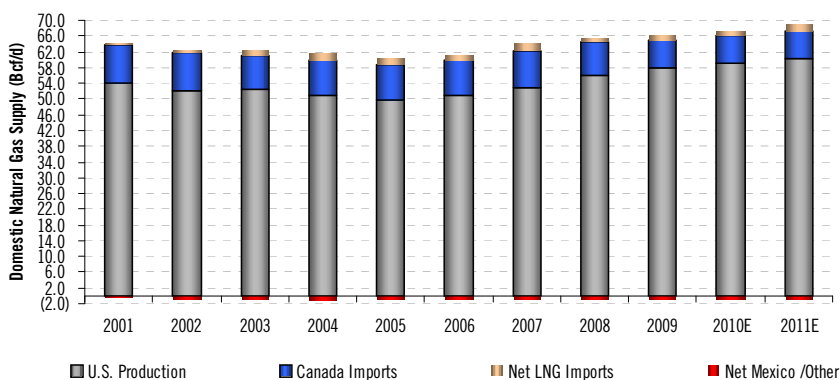
We expect strong total supply growth to continue, with this year's uptick of 2.3% followed by 2.1% increase next year.

Total U.S. natural gas supply should increase 2.3% this year underscored by a 2.1Bcf/d increase in wellhead production. In 2011, we project a further 1.3 Bcf/d increase wellhead output to an all-time high of 66.0 Bcf/d, on average, driven by a ~1.9 Bcf/d rise in domestic onshore production partially offset by a ~0.6 Bcf/d (10%) decline in offshore Gulf of Mexico output, which will then account for just ~9% of total U.S. production – down from nearly 20% in early 2005 (prior to Hurricane Katrina).

Otherwise, after holding nearly steady this year, on average, net imports (Canada and LNG) are forecast to be up ~4, or 0.3 Bcf/d, in 2011. Thus, Canadian and LNG imports should represent ~11% and 2%, respectively, of total U.S. supply next year.

89% of total U.S. supply derives from domestic production.

Figure 4. Total U.S. Natural Gas Supply



Source: EIA, Citi Investment Research and Analysis

## The Emergence of Shale Plays Has Boosted Initial Production Decline Rates...

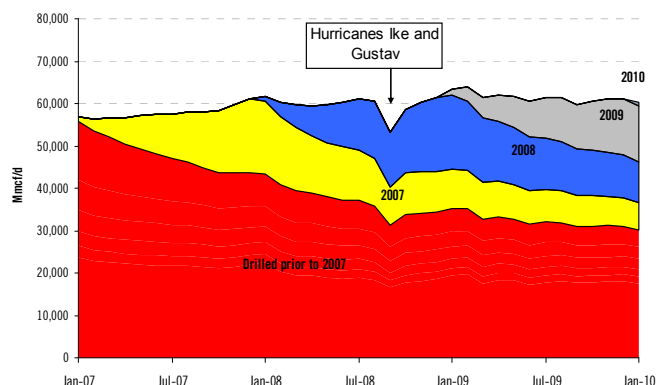
Detailed well production data (HPDI) for 96% of total U.S. natural gas volumes...

Aggregated detailed well production data (HPDI) for 96% of total U.S. natural gas volumes reveals that about one-half of current total U.S. production is from wells drilled in just the past three years (See Figure 5).

Meanwhile, given the increasing contribution from natural gas shale plays, we project an average first-year decline rate for all wells combined (conventional and unconventional) drilled in the past year of 53% (70% for unconventional, 33% for onshore conventional and 45% for the offshore Gulf of Mexico) and for all production from wells drilled before 2010 of 25%. This implies that natural gas output needs to grow by about ~18 Bcf/d annually just to offset natural declines and hold production flat.

...reveals that about one-half of current production is from wells drilled just in the past three years...

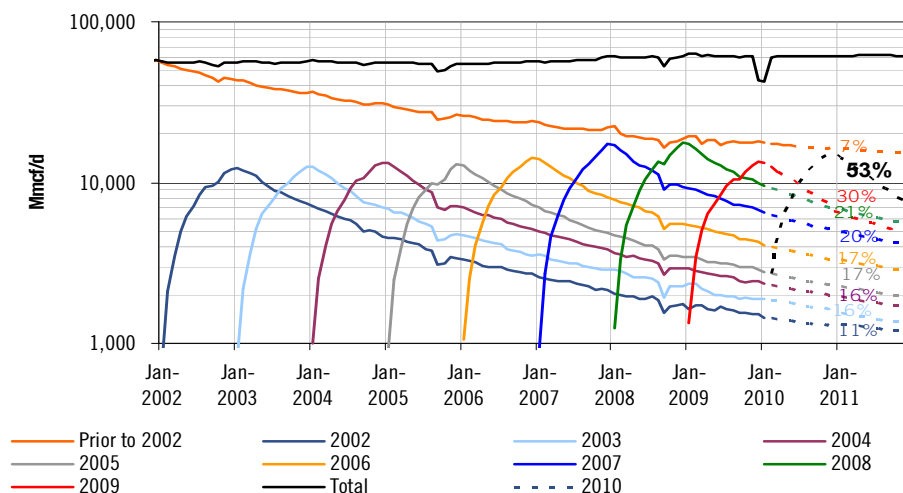
**Figure 5. U.S. Production by Vintage Year**



Source: HPDI, Citi Investment Research and Analysis Estimates

...while total production from wells drilled in 2010 is projected to decline ~53% in 2011.

**Figure 6. Total U.S. Natural Gas Decline**

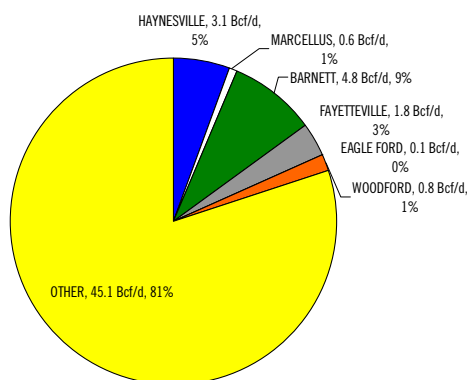


Source: HPDI, Citi Investment Research and Analysis Estimates

## ...While Expanding their Share of Total U.S. Natural Gas Production

Emerging horizontal shale plays now account for nearly 20% of total U.S. production and for nearly 60% of new output from all wells drilled over the past year as shown in Figures 7 and 8, as horizontal rigs have gone from just ~20% of total natural gas rig count in 2007 to 64% currently. Domestic horizontal natural gas drilling is predominantly focused in six shale plays – Haynesville, Marcellus, Barnett, Fayetteville, Eagle Ford and Woodford.

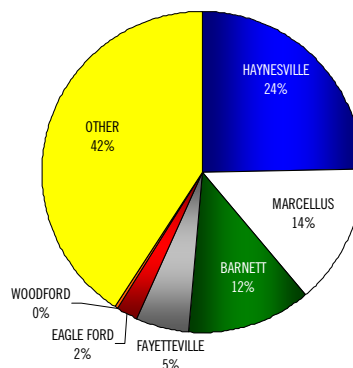
**Figure 7. Total Onshore U.S. Production by Source**



As of January 2010

Source: HPDI, Citi Investment Research and Analysis

**Figure 8. New Onshore U.S. Production by Source**



For Wells Drilled in 2010, As of January 2010

Source: HPDI, Citi Investment Research and Analysis

## These Shale Plays Have Also Sharply Increased Rig Efficiencies

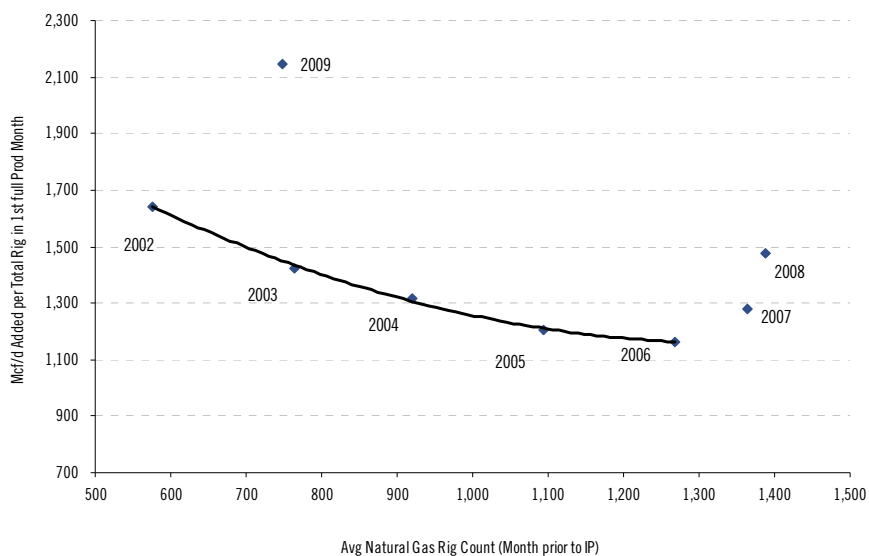
**As producers have continued to reduce spud-to-spud times, drill longer laterals with more frac stages and optimize completion techniques, rig efficiencies have continued to improve.**

**The number of horizontal rigs drilling in emerging shale plays has tripled over the past two years...**

As producers have continued to reduce spud-to-spud times, drill longer laterals with more frac stages and optimize completion techniques, production added per rig, or rig efficiency, has continued to improve. We would note that the flattening of this curve as we have modeled it might still prove conservative given the continued improvements in rig efficiencies this year and noted in most second quarter earnings conference calls.

Our current proprietary rig efficiency curve (Figure 10) reveals a more than 50% increase in overall rig efficiency over the past two years as the number of horizontal rigs drilling in emerging shale plays has tripled. Combined with our production decline curves (Figure 6), we now project that just ~900 total natural gas rigs are required to keep onshore production flat versus 965 onshore rigs currently (as of 9/3/10).

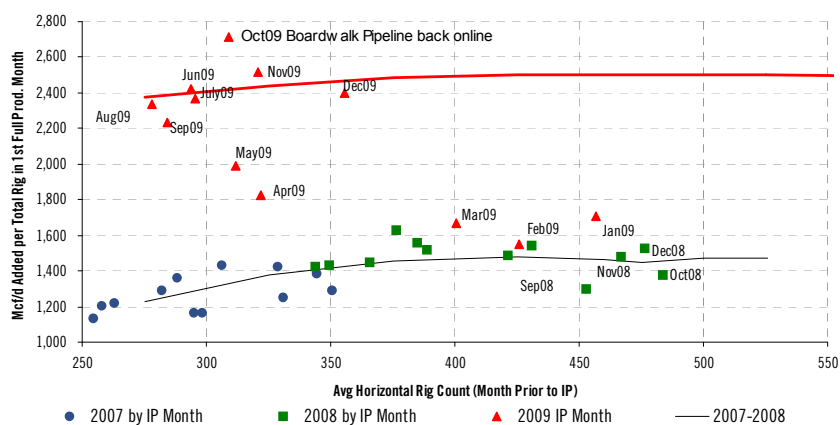
Figure 9. 2002-2009 U.S. Onshore Rig Efficiency



Sources: HPDI, Baker Hughes, Citi Investment Research and Analysis Estimates

...while overall rig efficiencies have improved by more than 50%.

Figure 10. U.S. Onshore Rig Efficiency



Sources: Baker Hughes, HPDI, Citi Investment Research and Analysis Estimates



## The YTD Increase in Horizontal Drilling Has Largely Focused on Liquids-Rich Plays...

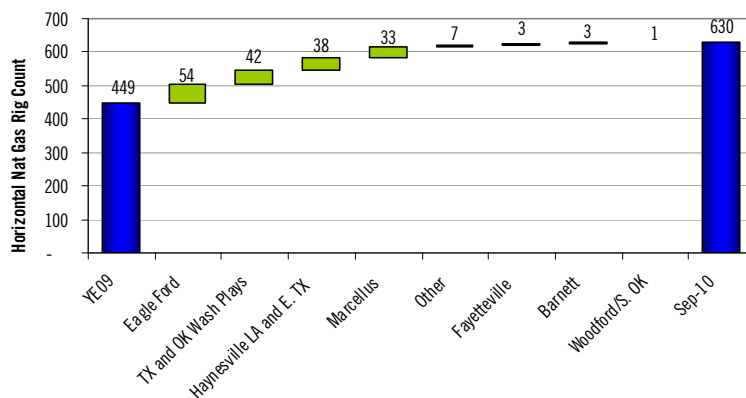
Given the persistent natural gas price discount vs. oil, the increase in drilling YTD has been focused in liquids-rich plays such as the Eagle Ford and the Granite Wash.

The U.S. horizontal natural gas rig count reached an all-time high of 635 in mid-August. Although it has since declined by a handful of rigs in the past couple weeks, it is still up more than 40% since the start of the year.

Our extensive dive into the underlying rig count data shows that the bulk of rigs added year-to-date are in liquids rich plays like the Granite Wash and Eagle Ford shale where high liquids prices enhance economics or in emerging shale plays like the Haynesville or Marcellus where lease terms necessitate drilling. As shown in Figure 11, over one-quarter of the 181 horizontal gas rigs added year-to-date has been in the Eagle Ford shale in South Texas, where the horizontal rig count has nearly tripled to 83 year-to-date. Private operator Lewis Energy Group, EOG, Petrohawk and Pioneer Natural Resources are currently the most active drillers in the Eagle Ford. The second largest uptick has been in the Wash plays of Texas and Oklahoma where the horizontal rig count has more than doubled this year to 75. In the Haynesville shale, where Chesapeake, EnCana, Petrohawk, and EXCO are the most active drillers, the rig count accelerated through the first half of the year and has been more steady of late. The Marcellus shale play, where Chesapeake, Talisman, Range Resources and Atlas Resources are the most active operators, accounts for 33 of the year-to-date horizontal rig adds. The more mature shale plays – Fayetteville, Barnett and Woodford – meanwhile have posted more modest rig adds year-to-date as acreage is largely held-by-production and mostly dry gas. As shown in Figure 12, the Haynesville and Marcellus shale plays now account for nearly one-half of all domestic horizontal natural gas rigs.

YTD horizontal natural rig count additions have been concentrated in either liquids rich plays (Eagle Ford, Wash Plays) or those with high unfulfilled drilling commitments (Haynesville).

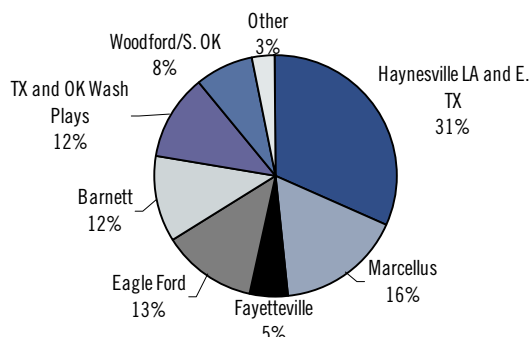
Figure 11. YTD Horizontal Natural Gas Rig Count



Sources: Baker Hughes, Citi Investment Research and Analysis Estimates

The Haynesville and the Marcellus currently account for nearly half of horizontal natural gas drilling.

**Figure 12. U.S. Horizontal Natural Gas Rig Count by Play**



Sources: Baker Hughes, Citi Investment Research and Analysis Estimates

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## ...Although the Need to Hold Acreage and JVs Have Also Been Key Drivers

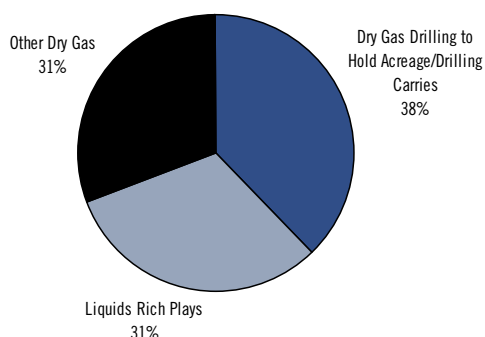
We estimate that 30-40% of total gas rigs currently deployed throughout North America are directed at holding acreage.

Drilling carries are depressing operators' breakeven prices, allowing for development activity to continue even at low gas prices.

We conducted a survey of producers representing nearly one-third of total US natural gas production which indicated that ~38% of total gas rigs are currently directed toward holding acreage or as part of joint venture drilling carries. We estimate that ~90% of these 'acreage-holding' rigs will need to remain active through much of 2011.

Over the past year and a half, operators that missed the original shale land-grab bought into plays via outright purchases and joint ventures. In many cases, the joint venture sellers received an upfront payment and a multi-year drilling carry whereby the purchaser pays a disproportionate share of the drilling costs. We have tallied nearly \$2.5 billion in drilling carries that will come from joint ventures this year and should result in a 17% average uplift to the drilling budgets for those companies originating the joint venture agreements (Figure 14).

Figure 13. Natural Gas Rig Breakout by Objective



Sources: Baker Hughes, Citi Investment Research and Analysis Estimates

Figure 14. Industry Joint Ventures

Seller	Acquirer	Play	Transaction Date	Total Drilling Carry (\$ Millions)	Drilling Carry Remaining (\$ Millions)	2010 Expected Carry (\$ Millions)	Seller's 2010 North American Capex Budget (\$ Millions)	2010 Budget Lift
Chesapeake	PXP	Haynesville & Bossier	Jul-08	\$1,508	\$0	\$0	\$4,550	0%
Chesapeake	BP	Fayetteville	Sep-08	\$800	\$0	\$0	\$4,550	0%
Carrizo Oil and Gas	Avista Capital Partners	Marcellus	Nov-08	\$72	\$0	\$0	\$170	0%
Chesapeake	Statoil	Marcellus	Nov-08	\$2,125	\$1,700	\$600	\$4,550	13%
Quicksilver Resources	Eni	Barnett	May-09	\$0	\$0	\$0	\$540	0%
Rex Energy	Williams	Marcellus	Jun-09	\$33	\$9	\$25	\$131	19%
EXCO Resources	BG Group	Haynesville	Jul-09	\$400	\$314	\$205	\$471	44%
Swift Energy	Petrohawk	Eagle Ford	Nov-09	\$13	\$13	\$13	\$338	4%
Carrizo Oil and Gas	Sumitomo	Barnett	Dec-09	Pay 16.7% for 12.5% WI	NA	\$6	\$170	4%
Chesapeake	Total	Barnett	Jan-10	\$1,450	\$1,200	\$480	\$4,550	11%
PGE (Private)	ExxonMobil	Marcellus	Feb-10	Undisclosed	Undisclosed	Undisclosed	Undisclosed	NA
Anadarko	Mitsui	Marcellus	Feb-10	\$1,400	\$1,400	\$650	\$2,300	28%
EnCana	Kogas	Horn River & Montney	Mar-10	\$565	\$565	\$226	\$4,400	5%
Lewis Energy (Private)	BP	Eagle Ford	Mar-10	Undisclosed	Undisclosed	Undisclosed	Undisclosed	NA
Atlas Energy	Reliance	Marcellus	Apr-10	\$1,360	\$1,360	\$66	\$260	25%
St. Mary Land & Exp.	Undisclosed	Haynesville	May-10	\$87	\$87	\$44	\$725	6%
EXCO Resources	BG Group	Marcellus	May-10	\$150	\$150	\$50	\$471	11%
PetroQuest	NextEra Energy	Woodford	May-10	\$147	\$147	\$25	\$120	21%
Pioneer	Reliance	Eagle Ford	Jun-10	\$879	\$879	\$74	\$895	8%
Trans Energy	Republic Energy Ventures	Marcellus	Jul-10	\$4	\$4	\$2	\$8	25%
Carrizo and Avista	Reliance	Marcellus	Sep-10	\$52	\$52	\$7	\$170	4%
Abraxas Petroleum	Blue Stone Oil & Gas	Eagle Ford	Aug-10	\$19	\$19	Undisclosed	Undisclosed	NA
Penn West	Mitsubishi	Cordova (BC)	Aug-10	\$600	\$600	\$0	\$750	0%
Rex Energy	Sumitomo	Marcellus	Aug-10	\$52	\$52	\$0	\$131	0%
Chesapeake	Pending	Eagle Ford	Pending	Pending	Pending	Pending	\$4,350	NA
Chesapeake	Pending	Niobrara	Pending	Pending	Pending	Pending	\$4,350	NA
EnCana	CNPC	Canadian Shale	Pending	Pending	Pending	Pending	\$4,400	NA
Total/Average*				\$11,715	\$8,550	\$2,472	\$14,933	17%*

\*Average Budget Lift for Sellers with known 2010 Drilling Carries

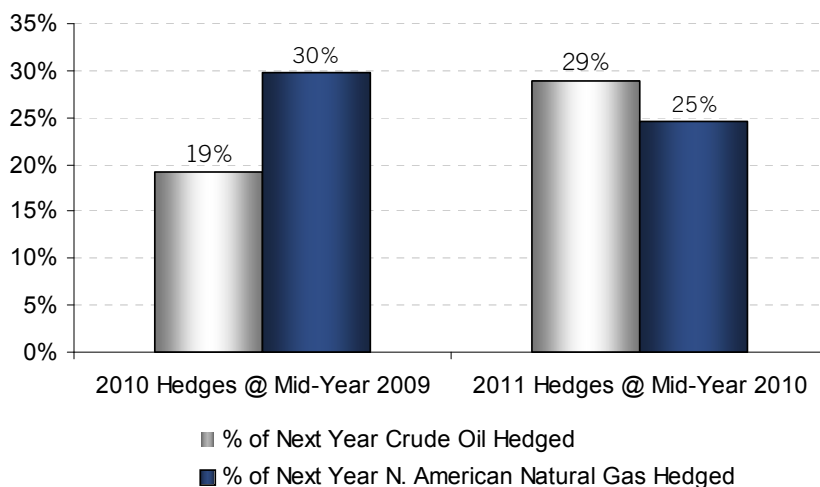
Source: Company Reports, Citi Investment Research and Analysis

This same group of E&P companies has a greater level of its projected ensuing full-year oil production hedged than at this juncture one year ago (Figure 15). Meanwhile, less of the group's projected ensuing full-year North American natural gas production is hedged than at this time last year. However, it also appears that the group has hedged more of its projected natural gas production beyond the ensuing year than historically.

Excluding any future new joint venture agreements, which many companies have stated the intent to enter into over the next year, and with the previously noted lower level of hedging in 2011, we still project a ~13% uptick in cash flow next year, driven by a higher crude oil price projection and continued production growth (Figure 16).

Compared to the same time last year, producers this year have, on average, hedged forward more of their crude oil but less of their natural gas production.

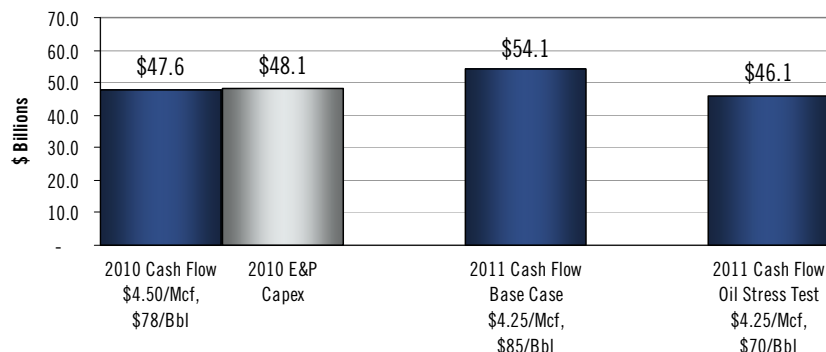
**Figure 15. % of Ensuing Year Production Hedged**



Source: Company Reports, Citi Investment Research and Analysis

Assuming no further JVs and no further hedging, we still project an average 13% cash flow uptick next year for our universe.

**Figure 16. Projected 2010-2011 Cash Flow For E&P Coverage Group**



Sources: Company Reports, Citi Investment Research and Analysis Estimates

## While NGL Prices Have Fallen, the Bottom is Near and Further Deterioration is Unlikely...

We estimate Mont Belvieu ethane prices will need to average at least \$0.46/gal to meet current petrochemical demand, while the average NGL-mix barrel should also maintain at least 52% of the value of crude oil.

Taking into consideration our 2011 natural gas price forecast of \$4.25/Mmbtu, we estimate Mont Belvieu ethane prices will need to average at least \$0.46/gal to meet current petrochemical demand, while the average NGL-mix barrel should also maintain at least 52% of the value of crude oil. Ethane, which accounts for ~42% of an average NGL-mix barrel, has recently experienced a sharp sell-off, hitting lows of \$0.44/gal in July, but rebounded to \$0.50/gal at the end of August as petrochemical plants continued to ramp-up demand following outages.

**We believe ethane will find equilibrium not very far below current pricing, even as the oversupply situation persists.**

**To meet current demand, ethane must trade at a slight premium to natural gas to incentivize processors to strip ethane.**

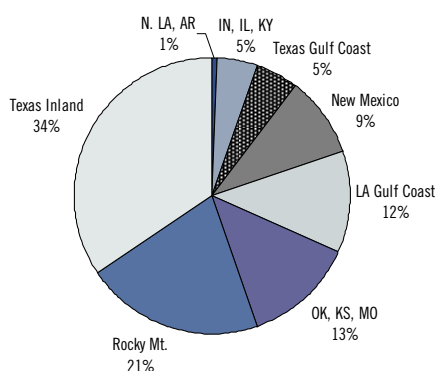
**Factoring in transportation and fractionation costs, a \$4.25/MMbtu Rocky Mountain wellhead ethane price equates to a \$6.29/MMbtu Mont Belvieu price.**

Ethane prices have been the hardest hit in the recent environment of surging NGL supply because the product's application is limited to a petrochemical feedstock and more specifically to ethylene production. Most analysts and forecasters are extremely bearish on 2011 NGL prices and more specifically on ethane prices given the wall of supply that is likely to hit the market as producers have turned their focus toward liquid rich plays. While we would agree that an oversupply is likely, ethane will find an equilibrium that we believe is not very far below current pricing.

The chemical industry consumed ethane at a rate of ~915,000 Bbls/day in August, which is up from ~814,000 Bbls/day last year. To meet this amount of demand ethane MUST trade at a slight premium to natural gas to incentivize processors to strip ethane. Otherwise, most processors have the option to leave ethane in the natural gas stream and sell it as a Btu in the natural gas stream, otherwise known as "ethane rejection."

To substantiate our forecast, consider the following. The Rocky Mountain region supplies ~21% (175,000 Bbls/d) of total daily ethane production (~825,000 Bbls/day). However, processors in this region must get a better price for ethane than they would otherwise receive for natural gas on a per Mmbtu basis. This means that if natural gas is trading at \$4.25/MMbtu, the processor of that gas must receive an ethane price that is in excess of that natural gas price after transportation and fractionation costs. The cost to transport ethane from the Rockies to Mont Belvieu is ~\$0.10/gallon, while fractionation will cost ~\$0.05/gallon. As shown in Figure 18, this converts to a wellhead ethane price in the Rockies that is better than \$0.31/gallon and a Mont Belvieu ethane price that is better than \$0.46/gallon. On a heat equivalent basis this amounts to a wellhead ethane price of \$6.29/MMbtu. However, we point out that Rocky Mountain natural gas basis differentials have historically been quite volatile and could in turn drive ethane price volatility, because the ethane price would fall on any widening in the discount of Rockies natural gas price to composite spot.

**Figure 17. U.S. Ethane Production by Region (825,000 Bbls/d)**



Source: Citi Investment Research and Analysis

**Figure 18. Rocky Mountain Ethane Economics**

	(\$/Mmbtu)	(\$/gal)
Ethane Wellhead Price	<b>\$4.25</b>	\$0.31
Rockies Transport Cost	\$1.36	\$0.10
Fractionation Cost	\$0.68	\$0.05
Ethane Mont Belvieu Price	\$6.29	<b>\$0.46</b>

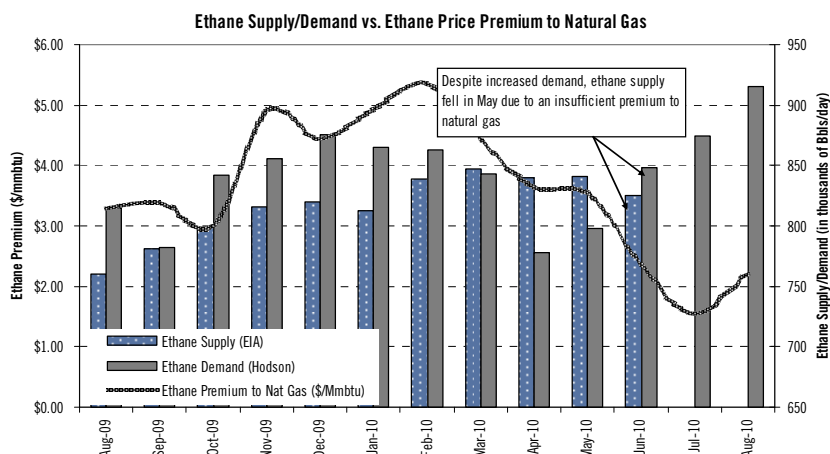
Source: Citi Investment Research and Analysis

Ethane production depends on its wellhead price, and more specifically a wellhead premium to natural gas, rather than on demand, because demand is capped by chemical plant capacity.

Ethane supply fell in May despite increased demand, as the premium to natural gas fell to ~\$2/MMBtu.

The important point to be made is that ethane production depends on its wellhead price, and more specifically a wellhead premium to natural gas, rather than demand. Considering the extraordinarily wide price differential between natural gas and crude oil on a Btu equivalent basis, petrochemical companies are highly incentivized to consume the maximum amount of ethane. If the price for ethane is at a high enough premium to natural gas then processors will strip ethane out of the natural gas stream and sell it into the petrochemical feedstock market. If ethane is not at sufficient premium then processors will likely choose to reject ethane and sell it as natural gas. This can be seen in recent months as ethane supply actually went down in May despite increased demand. The likely reason for this drop in production is due to a lack of premium to the natural gas price that drove some processors to reject ethane. We estimate the required premium to keep ethane production sufficient to meet demand is ~\$2.00/MMBtu, which also ties back to transport and fractionation costs for ethane out of the Rockies. An ethane premium below this threshold does not seem sustainable as Rocky Mountain ethane production makes up for such a large percentage of the market.

**Figure 19. Ethane Supply/Demand (thousand Bbls/d vs. Ethane Price Premium to Natural Gas (\$/MMBtu)**



Source: EIA, Jacobs Consultancy Inc. Hodson Report & CIRA

Going forward, we expect ethane prices to exhibit wide regional variability, with producers located closest to the Gulf Coast at a significant advantage.

Granite Wash and Rockies producers will likely command a modest premium, while the Marcellus will in the near to medium term remain disadvantaged.

We believe the current wall of NGL supply that is being driven by producers focused on liquids rich natural gas plays will eventually hit bottlenecks. This will 1) limit some volumes actually getting to the market and 2) drive wide regional price differentials for NGLs and in particular ethane that should keep supply and demand in equilibrium. Therefore, producers located close to demand should be the most advantaged. We believe that region to be the Gulf Coast, where most petrochemical plants are located vs. those located further out. In particular, we believe the Eagle Ford producers will be well positioned to command a significant premium for their ethane output.

Going further out, Granite Wash and Rockies producers will likely command a modest premium. The Marcellus will in the near to medium term remain disadvantaged due to its significant distance from end markets and due to the lack of infrastructure. Therefore, producers located in the Marcellus will be forced to reject ethane to the extent allowed by pipeline specs. In the extreme case, ethane may actually become a liability in the Marcellus if producers are

Meanwhile, because the heavier NGL products have a variety of uses, they are expected to exhibit greater price resiliency.

Overall, assuming further weakness in ethane prices and given our 2011 commodity price forecast, we project the average NGL-mix barrel to trade at 52% of WTI crude oil prices through 2011.

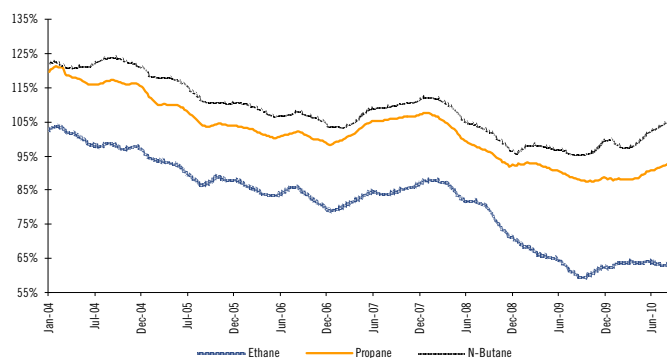
forced to strip some of it out of the gas stream just for purposes of meeting pipeline specs. On a national basis, however, we reiterate that ethane will in our opinion continue to trade at a premium to natural gas.

Because the heavier NGL products (propane, butane, and natural gasoline) have a variety of uses, they have been better able to maintain their historical relationship with oil prices, as seen in Figure 20. While ~47% of propane in the U.S. is used in petrochemical products, ~39% of propane is used as heating and cooking fuel in the form of liquefied petroleum gas (LPG). This secondary application allows the product to retain a higher degree of pricing resiliency in the current market environment, although it also exposes producers to pricing seasonality, with heating demand highest in the winter. To a lesser extent, propane is also used in farming and transportation.

Butane and natural gasoline are used primarily as gasoline blendstocks, making these heavy NGL ends nearly entirely insensitive to natural gas prices and instead dependent on economic and seasonal conditions, such as summer driving season. Since these same factors drive crude oil prices, butanes prices have and can be expected to correlate very closely with crude oil prices.

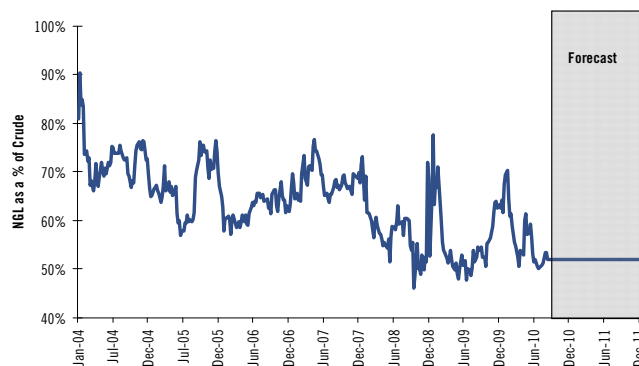
Overall, assuming significant further weakness in ethane prices and given our 2011 commodity price forecast (\$4.25/MMBtu natural gas and \$85/Bbl crude oil), we project the average NGL-mix barrel (42% ethane, 28% propane, 8% n-butane, 9% iso-butane, and 13% natural gasoline) will trade at 52% of WTI crude oil prices through 2011.

**Figure 20. NGLs as a % of Crude 12MMA (\$/Mmbtu)**



Source: Bloomberg & CIRA

**Figure 21. NGL Price as a % of Crude Oil**



Source: Bloomberg & CIRA

## ...And Should Continue to Provide Price Uplift for Liquids-Rich Plays

Under our assumption that ethane continues to trade at a slight premium to natural gas, we expect an average NGL barrel to trade at 52% of WTI crude oil price throughout 2011.

Given our assumption that ethane will on average continue to trade at a slight premium to natural gas rather than trade down to parity, and that we expect the prices of the heavier NGL products to maintain their historical relationship with crude oil prices, we believe that liquids-rich gas will continue to provide price uplift for producers.

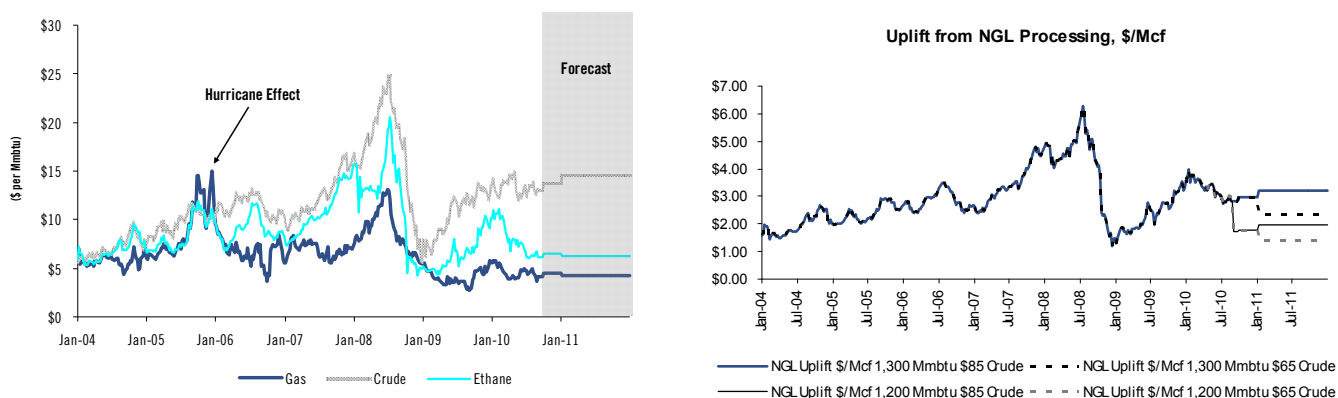
Below, we examine four examples based on the following set of assumptions, all of which can vary widely:

- Case 1: 1,300 Btu gas and \$85/Bbl crude oil
- Case 3: 1,200 Btu gas and \$85/Bbl crude oil
- Case 3: 1,300 Btu gas and \$65/Bbl crude oil
- Case 4: 1,200 Btu gas and \$65/Bbl crude oil
- Standard NGL mix: 42% ethane, 28% propane, 8% n-butane, 9% iso-butane, and 13% natural gasoline
- \$0.18/Mcf transportation and fractionation cost
- 2011 natural gas price of \$4.25/MMbtu, WTI oil price of \$85.00/Bbl (\$75.00/Bbl in the downside case), NGL mix at 52% of WTI crude.

As shown in the chart below, under the assumed set of parameters, NGL processing will provide an uplift of:

- \$3.23/Mcf in Case 1
- \$2.36/Mcf in Case 2
- \$1.96/Mcf in Case 3
- \$1.39/Mcf in Case 4

**Figure 22. Historical and Projected NGL Uplift Per Mcf of Natural Gas**



Sources: Bloomberg, Citi Investment Research and Analysis Estimates

Sources: Bloomberg, Citi Investment Research and Analysis

## Overall, While We Project a Drop in Drilling, Production Should Continue to Rise

**While 965 onshore natural gas rigs are active today, we estimate only 900 are required to hold production flat...**

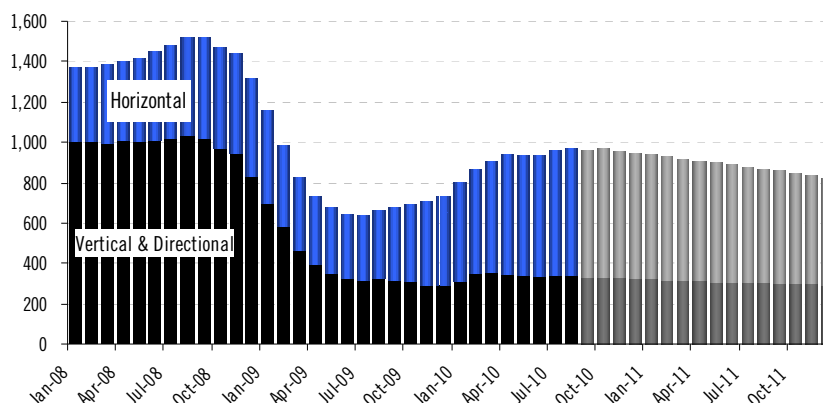
Of the 965 onshore natural gas rigs drilling today, we estimate that nearly 40% are directed at holding acreage and/or benefit from joint venture carries, around one-third target liquids rich plays and one third are discretionary or driven purely by economics. Next year, we believe that the acreage capture



...and, although we project the rig count will fall below 900 in mid-2011...

rigs will hold essentially flat, rigs targeting liquids rich plays will increase ~20% and the remaining rigs will drop ~36% from current levels, assuming normal weather. Thus, we currently forecast at least a 15% drop in the total U.S. natural gas rig count by the end of next year (Figure 23).

**Figure 23. U.S. Natural Gas Onshore Rig Count**

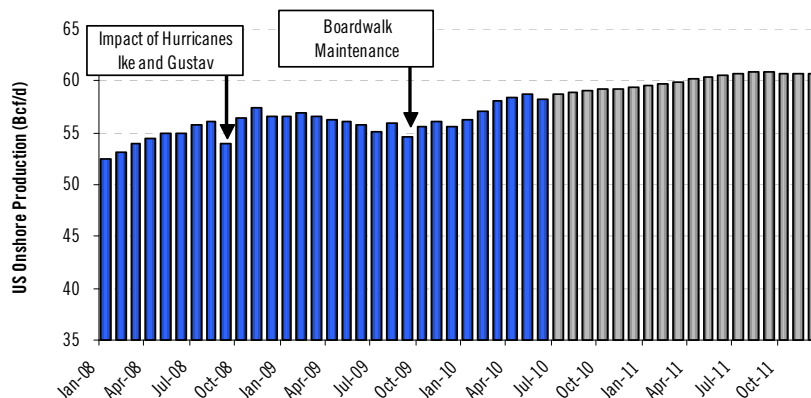


Sources: EIA, Citi Investment Research and Analysis Estimates

We estimate that ~900 onshore natural gas rigs are required to hold production flat. Although we currently forecast the onshore rig count to fall below 900 in mid-2011, our high rig count projections in the first half along with continued rig efficiencies still result in a full year uptick of 3.3% (1.9 Bcf/d) in onshore production, peaking early in the fourth quarter (Figure 24). At the same time, we project offshore Gulf of Mexico production will decline ~0.6 Bcf/d on average year-over-year. Thus, we project that total US natural gas production will be up nearly 1.3 Bcf/d next year on average (1.9 Bcf/d onshore increase less a 0.5 Bcf offshore decrease).

...our rig count assumptions for the first half of the year, along with persistent rig efficiency gains result in 1.9 Bcf/d increase in onshore production next year.

**Figure 24. U.S. Onshore Production (Bcf/d)**



Source: EIA, Citi Investment Research and Analysis

## Meanwhile, We Project that Total Imports Will Increase Around 4% Next Year

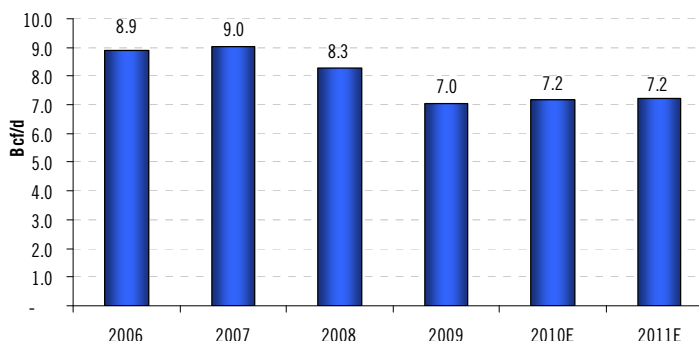
Following a 22% increase in the Canadian natural gas rig count this year...

...we project it will be flat in 2011...

...with net Canadian imports projected to be roughly flat year over year.

In Canada, while conventional activity remains subdued, we do expect a continued pick-up in unconventional drilling, focused primarily on shale plays, with the net effect being just a slight uptick in imports from Canada (Figure 25). We estimate net Canadian natural gas imports will account for about 11% (7.2 Bcf/d) of total U.S. natural gas supply in both 2010 and 2011, though down dramatically from nearly 15% of domestic supply in 2006. Year to date, the Canadian natural gas rig count is up 22%. We project the 2011 rig count will be flat versus 2010 leading to a roughly flat production next year. Growth from the emerging Horn River and Montney shale plays is expected to be more measured relative to U.S. shale plays and to partially offset, but not completely overcome, declines in conventional Canadian production near term. At the same time, we forecast U.S. exports to Canada will continue at the current high level as domestic pipeline capacity and shale plays allow U.S. exports to compete favorably in Eastern Canada with gas transported from Western Canada. Also, Canadian consumption of natural gas is forecast to increase this year and hold level into next year due to demand from oil sands projects as well as coal-to-gas switching in Canada.

**Figure 25. Canadian Imports (Bcf/d)**



Sources: EIA, GLJ Publications, Citi Investment Research and Analysis Estimates

U.S. LNG imports are poised to average ~1.2 Bcf/d in 2010...

After peaking in 2007, LNG imports contracted in 2008 but increased slightly in 2009. The U.S. is the swing consumer with the flexibility to absorb any excess spot gas (or none at all) given its extensive storage and pipeline infrastructure, numerous receiving terminals, and minimal pre-existing purchase contracts. Instead varying levels of U.S. LNG imports act as the “shock absorber” ensuring that global LNG supply and demand (~25 Bcf/d) balance. But this extreme variability results in LNG being perhaps the hardest-to-project component in our U.S. natural gas supply/demand model. This year, imports have averaged 1.3 Bcf/d year to date which equates to ~1.5% of U.S. natural gas supply. However, strong counter-seasonal global LNG demand from the U.K., Latin America, China and India coupled with Qatari supply outages have caused U.S. imports to slide recently to below 1 Bcf/d. Fourth quarter imports should improve slightly, but remain subdued. Thus, we project LNG imports will average 1.2 Bcf/d for the full year.

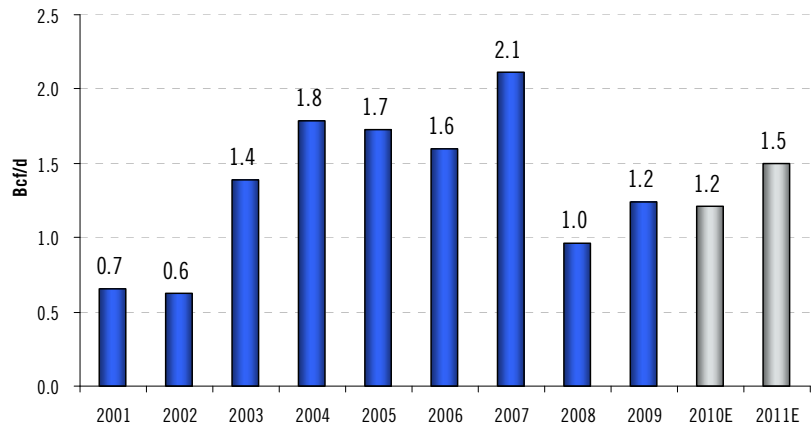
...but we anticipate a modest uptick to  
~1.5 Bcf/d next year...

...after counter-seasonal demand and  
major supply outages kept year-over-year  
LNG imports essentially flat in 2010.

In 2011, we expect less supply disruption and less unusual weather-related demand outside North America that characterized global LNG markets this year, allowing modestly more LNG (1.5 Bcf/d) to arrive at U.S. ports with imports peaking next summer as per typical seasonality.

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**Figure 26. LNG Imports (Bcf/d)**



Sources: EIA, Citi Investment Research and Analysis Estimates

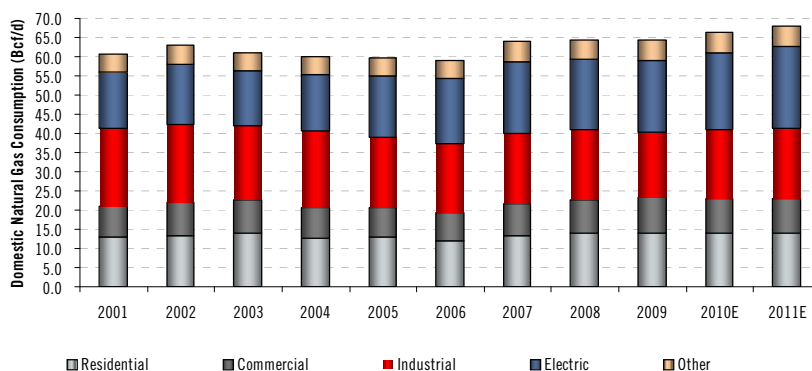
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## **With Tough Yr/Yr Weather Comps, We Project 2011 Demand to Rise Only Modestly**

Overall, we project a 2.2 Bcf/d increase in  
total demand next year, assuming normal  
weather...

With weather and coal-to-gas switching remaining the biggest swing factors, following a 0.2 Bcf/d decrease in total U.S. natural gas consumption last year, we project a roughly 2.0 Bcf/d increase in 2010 and a 2.2 Bcf/d increase in 2011, assuming normal weather going forward (Figure 27).

Figure 27. U.S. Natural Gas Consumption By Sector

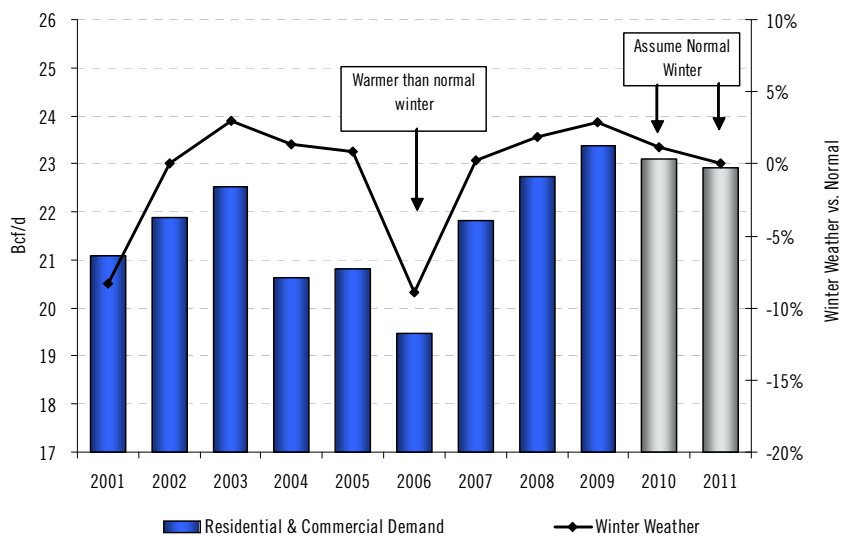


Sources: EIA, Citi Investment Research and Analysis Estimates

Residential plus Commercial consumption is primarily weather-driven, with very little sensitivity to price or even to GDP, and consequently it grew 0.6 Bcf/d (2.9%) last year due to colder winter temperatures. Thus, we project a 0.2 Bcf/d decrease this year and a 0.2 Bcf/d uptick in 2011 based on normal weather from here forward as shown in Figure 28.

...including a 0.2 Bcf drop in Residential and Commercial usage given tough year-over-year weather comps.

Figure 28. Residential and Commercial Usage



Sources: EIA, Citi Investment Research and Analysis Estimates

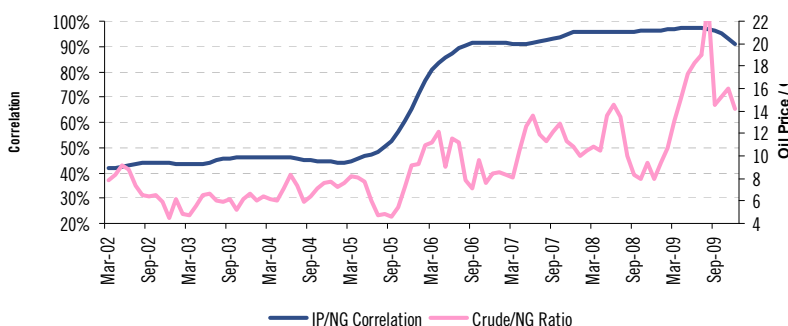
## Based on ~3% IP Growth, We Project Industrial Demand Will Be up 0.6 Bcf/d in 2011...

Industrial natural gas demand has been highly correlated to the US IP index...

Over the past four years, once the crude oil to natural gas price ratio rose consistently above 8.0, changes in industrial demand for natural gas have exhibited a ~90% R-squared correlation to changes in the U.S. industrial production (IP) index. In 2009, industrial usage of natural gas plummeted ~1.3 Bcf/d as IP dropped nearly 10%. This year, CIRA's economists expect IP to continue to expand in the second half of the year, albeit at a slower pace than in the first half, posting a 5.4% year-over-year uptick in 2010. Thus, industrial natural gas demand has since rebounded sharply concurrent with the consumer/industrial inventory rebuild along with an additional assist from Mother Nature, and we expect a nearly 1.2 Bcf/d rise for the full year.

...since the crude oil to natural gas price ratio crossed 8.0, definitively favoring gas usage over fuel oil.

Figure 29. Correlation on IP to Industrial Natural Gas Consumption vs. Oil to Gas Price Ratio



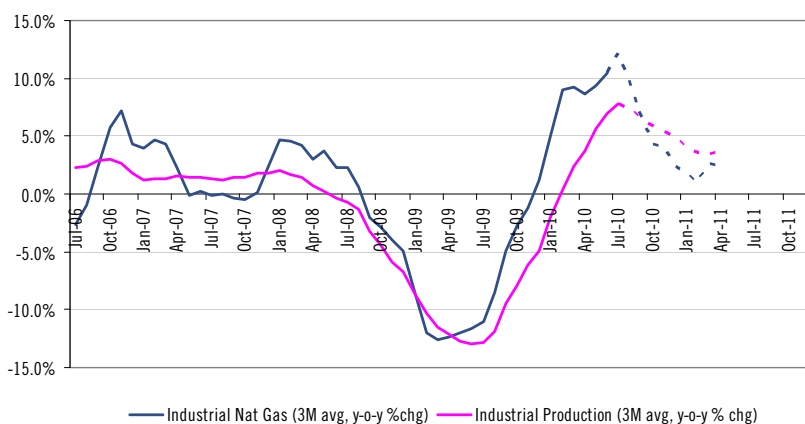
Source: EIA, Federal Reserve, Bloomberg, Citi Investment Research and Analysis

Based on ~3% forecasted IP growth in 2011, we expect a 0.6 Bcf/d uptick in industrial natural gas consumption...

Looking forward to 2011, CIRA's economic team foresees IP growth of 3.2%. Based on this forecast coupled with normal winter conditions cutting demand slightly, we project industrial natural gas demand will be up ~3%, or 0.6 Bcf/d. However, this forecast is highly sensitive to changes in economic activity. If the economy exhibits a "double-dip", much of this incremental demand could be lost, heralding lower gas prices to spur additional coal-to-gas switching.

...even as year-over-year growth slows from the torrid pace during the first half of this year.

**Figure 30. Actual and Forecasted U.S. Industrial Natural Gas Demand/Industrial Production (Y-o-Y)**



Source: EIA, Federal Reserve, Citi Investment Research and Analysis

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## ...While Electricity Demand Should Rise 0.1% on IP Growth Offset by Weather Effects

Natural gas and coal combined account for roughly two-thirds of U.S. electric generation, but natural gas has been steadily gaining share.

Electricity demand next year is projected to increase 0.1%, as 3% projected IP growth is projected to be largely offset by normal summer weather than in 2010.

Natural gas and coal combined account for roughly two-thirds of U.S. electric generation while total generation, apart from seasonality, is most closely correlated to U.S. industrial production (IP). However, natural gas has been gaining market share over the past several years due to incremental capacity being predominantly natural gas powered, but also due to significant coal to gas switching beginning last year due to the relative drop in natural gas prices. As shown in the chart below, natural gas as percentage of total generation rose from 21.4% in 2008 to 23.3% in 2009, when coal-to-gas switching first occurred. Consequently, despite the drop in total generation, natural gas consumption for power generation rose 0.6 Bcf/d (3.8%) in 2009 as lower gas prices led to increased usage as a result of coal-to-gas switching.

In 2010, we expect the natural gas share to increase modestly to ~24% as record summer heat drove up natural gas prices, bringing down coal-to-gas switching. Thus, we project electric utility demand for natural gas to increase 0.8 Bcf/d this year, in large part due to the record hot summer along with 5.4% IP growth. However, looking forward into 2011, and assuming normal weather, coal-to-gas switching levels will again need to rise to absorb even greater excess supply and therefore we forecast the natural gas share of total generation to increase to 25%. Thus, combined with 3.2% IP growth, we expect electric utility demand for natural gas to surge 1.4 Bcf/d in 2011 as increased coal to gas switching will be needed.

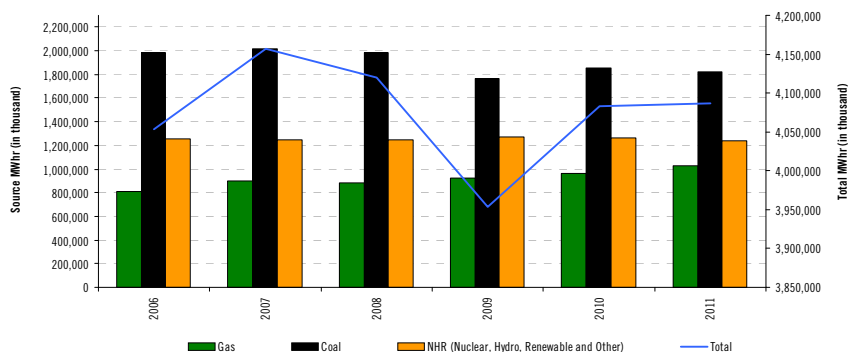
We expect natural gas to regain market share from coal next year as low gas prices are expected to persist.

Natural gas prices have recently shown a high amount of volatility, while coal prices have gradually trended higher, driven by rising costs.

Given the 15% warmer-than-normal summer in 2010, less coal-to-gas switching was needed to absorb the “excess” supply than in 2009...

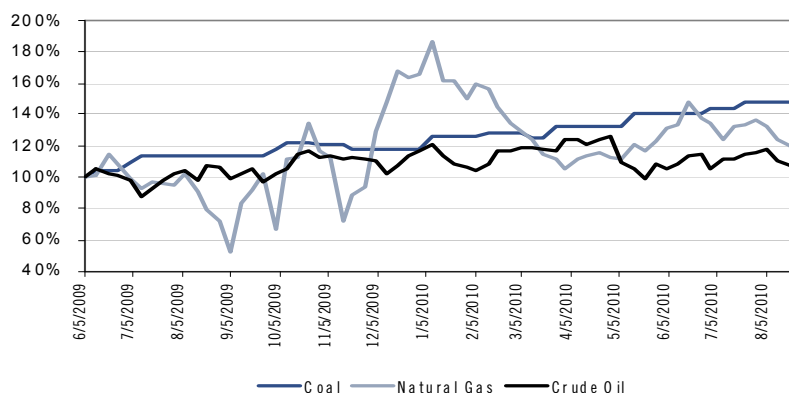
...but assuming a normal summer in 2011, coal-to-gas switching levels should again approach the record levels seen in 2009.

**Figure 31. Total Power Generation By Source**



Sources: EIA, Citi Investment Research and Analysis Estimates

**Figure 32. Relative Price Performance of Coal, Natural Gas and Crude Oil**



Sources: Bloomberg, Platts, Citi Investment Research and Analysis Estimates

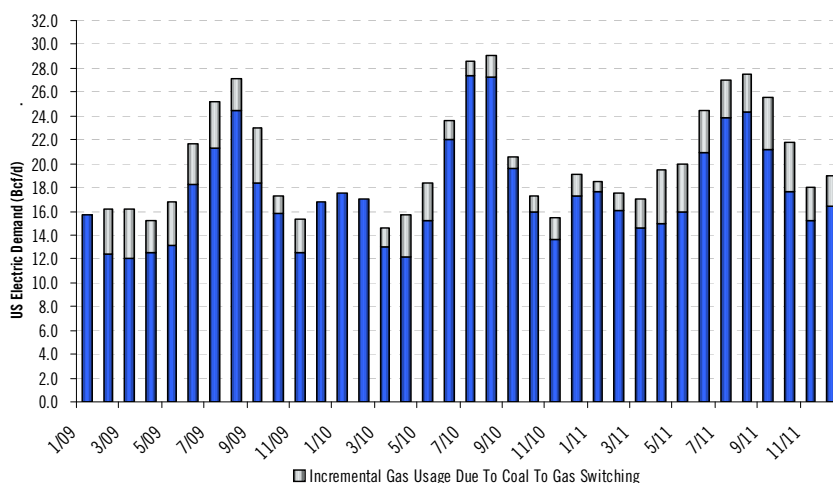
## Coal-To-Gas Switching Is Still the Effective “Clearance Outlet” for Excess Supply...

Although utilities do not provide data on switching, our detailed analysis reveals that coal to gas switching augmented electric generation demand for natural gas by ~19% last year, or ~1.1 Tcf in aggregate. However, given the record hot summer this year, combined with the sharp uptick in industrial production brought about by inventory re-stocking, the resulting lower excess supply should require coal to gas switching to absorb only ~0.6 Tcf this year in order for storage to not exceed “full” heading into the upcoming winter.

Looking ahead to 2011 though, and assuming normal weather, we project the level of coal to gas switching that will be needed in order for storage levels to not exceed 3.86 Tcf heading into the winter of 2011 might again approach 1.0 Tcf. Thus, while coal prices are projected to be higher next year, with the CIRA forecast for Central Appalachian coal at \$65/ton, the natural gas supply/demand balance does not appear any tighter than this year and perhaps closer to where it was in 2009.

We project that electric generation to be up 1.6 Bcf/d year-over-year, including 1.5 Bcf/d more switching than in 2010.

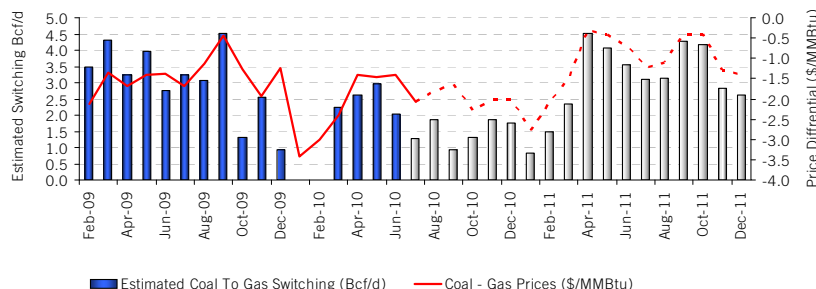
**Figure 33. Total Natural Gas Consumption in Electric Generation**



Sources: EIA, Citi Investment Research and Analysis Estimates

Assuming normal weather going forward, coal-to-gas switching in 2011 is expected to reach levels close to those seen in 2009, and up sharply from 2010.

**Figure 34. Estimated Switching vs. Gas-Coal Price Differential**



Sources: EIA, Citi Investment Research and Analysis Estimates

## In Order for Natural Gas Storage Not to Exceed “Full” Heading into Winter

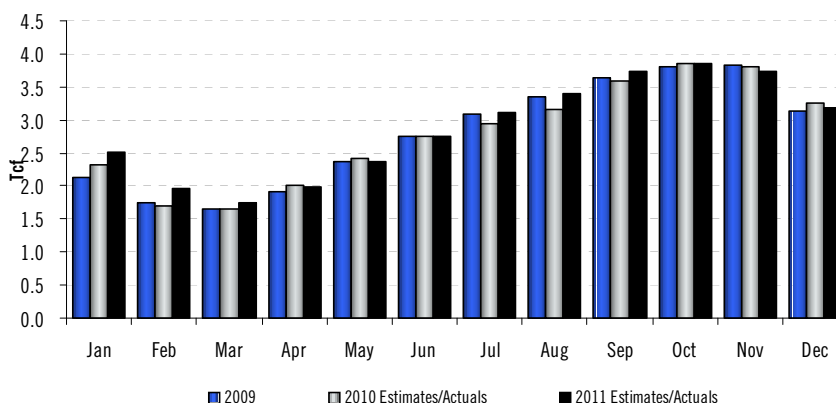
We thus expect coal-to-gas switching to remain the market-clearing mechanism which will keep storage from exceeding the “full” heading into the winter...

U.S. natural gas storage levels stood at nearly 3.8 Tcf at the end of last October but then rose to an all-time high of 3.837 Tcf near the end of November as injections continued through the first three weeks of November due to 14% warmer-than-normal temperatures. Our supply/demand models and level of coal to gas switching are partly driven by assuming that storage will reach but not exceed 3.86 Tcf heading into winter. Consequently, a key variable in our natural gas price forecast is the price level relative to coal that will be required to induce the level of coal to gas switching needed to keep storage from exceeding “full” heading into winter.



...resulting in ~3.85 Tcf in storage at the end of October 2011.

**Figure 35. Gas Working Underground Storage (Bcf)**

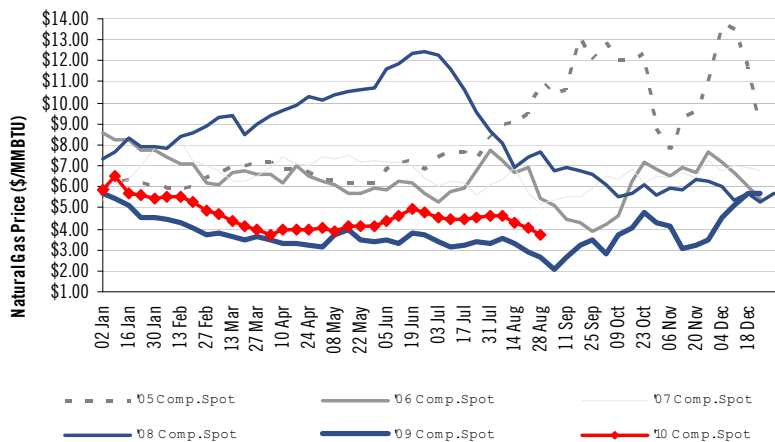


Sources: EIA, Citi Investment Research and Analysis Estimates

## Even Greater Excess Supply Last Year Caused Prices to Plunge toward \$2.00/MMBtu

Due to an extremely hot summer this year, we expect that natural gas prices to plunge to 2009 lows, as less coal-to-gas switching will be needed to balance the market.

**Figure 36. Composite Spot Natural Gas Prices (\$/MMBtu)**



Sources: Natural Gas Week, Citi Investment Research and Analysis Estimates

## Key Variables to Monitor that Yield Greatest Sensitivity in our Projections

- **Natural Gas Rig Count** – If we were to drop the domestic natural gas rig count 25% by year-end 2011 (724) versus our current 15% forecast, then total U.S. natural gas production would drop to 64.6 Bcf/d by year-end 2011 versus our current 66 Bcf/d projection, wherein this could boost our full-year price forecast by \$0.50/MMBtu given 265 Bcf less coal to gas switching.
- **Rig Efficiency** – If rig efficiency increases a further 10% versus our current flat curve going forward, then total U.S. natural gas production would increase to 68.0 Bcf/d by year-end 2011, wherein this could drop our full-year price forecast quite sharply.
- **First Year Decline Rate For Shale Volumes** – If the first year decline rate for all shale production turns out to be 80% as opposed to our current 70% forecast, then total U.S. natural gas production would drop to 65 Bcf/d by year-end 2011, wherein this could boost our full-year price forecast by ~\$0.50/MMBtu.
- **Offshore Gulf of Mexico Volumes** – If an extension of the moratorium or continued significant delays in shallow water permit issuances results in minimal new offshore drilling, and we then decline current offshore production 32%, then total U.S. natural gas production would drop to 64.6 Bcf/d by year-end 2011, wherein this could boost our full-year price forecast by \$0.60/MMBtu.
- **Winter Temperatures** – If this upcoming winter ends up 5% colder than normal (or 6% colder than this past winter), this would result in 250 Bcf of additional consumption which would then reduce the need for coal to gas switching wherein this could boost our full-year price forecast by \$0.50/MMBtu.
- **U.S. Industrial Production** – If U.S. IP ends up being 2% in 2011 as opposed to our current 3% forecast, then our industrial natural gas demand projection would be 0.4 Bcf/d versus 0.6 Bcf/d currently, which would further loosen the supply/demand balance and put further pressure on our full-year price outlook.
- **Coal Fired Power Plant Retirements** – In mid-2011, the EPA will finalize its rulemaking for Maximum Available Control Technology (MACT) and the Clean Air Transport Rule (CATR) standards. The finalization of these rules might lead to coal fired generators beginning to announce retirements of coal plants beginning in mid-to-late 2011 thus creating incremental natural gas demand.

## Estimate and Price Target Adjustments

Based on our revised commodity price outlook, we have adjusted earnings, net asset value and price targets for our coverage group. On average, we have lowered 2010 EPS/CFPS estimates by 11%/4%, for 2011 by 27%/18% and for 2012 by 13%/26%. Proven reserve NAV estimates have dropped, on average, by 10% while price targets, on average, are now 7% lower.

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Given our lower normalized natural gas price projection, the natural gas-leveraged names are most impacted on the above metrics. Also, given the view that natural gas prices will remain low for longer which is also reflected by the long-dated NYMEX futures curves (2018 is the first calendar year in which the NYMEX strip exceeds \$6.00/MMBtu), we believe that the market will continue to mark down the value of stated probable and possible reserves for the gas-leveraged names.

Notably, apart from a four-and-a-half month period in 2009 when investors and many companies still held the view that natural gas prices would rebound sharply within a one year period, the E&P sector has consistently outperformed the S&P 500 index only when consensus estimates for crude oil and natural gas prices are rising (see Figure 40). At this juncture, our oil price forecast for this year is essentially in line with consensus while in 2011 it is modestly above consensus. For both this year and, in particular, for 2011 our natural gas price forecast is below consensus.

Therefore, we continue to have a greater proclivity for the more oil-leveraged names although we believe the group overall will continue to exhibit higher beta performance relative to the broader markets, at least near term. Our Buy rated stocks are APC, APA, CNQ, EOG, NFX, and TLM.

Figure 37. EPS/ CFPS Estimate Revisions

		Target Price			2010 Recurring Diluted EPS			2010 Recurring CFPS			2011 Recurring Diluted EPS			2011 Recurring CFPS			2012 Recurring Diluted EPS			2012 Recurring CFPS		
		Previous	Current	Change	Previous	Current	Change	Previous	Current	Change	Previous	Current	Change	Previous	Current	Change	Previous	Current	Change	Previous	Current	Change
Anadarko Petroleum (APC)	APC	75.00	74.00	-1%	\$ 2.23	\$ 1.95	-13%	\$ 11.27	\$ 10.78	-4%	\$ 2.77	\$ 1.67	-40%	\$ 12.93	\$ 10.83	-16%	\$ 4.79	\$ 4.27	-11%	\$ 16.27	\$ 12.71	-22%
Apache Corporation (APA)	APA	130.00	130.00	0%	10.02	9.34	-7%	20.95	20.11	-4%	12.18	11.05	-9%	24.82	23.43	-6%	13.86	13.26	-4%	27.39	26.65	-3%
Canadian Natural Res. (CNQ)	CNQ	42.50	40.00	-6%	2.26	2.02	-11%	4.86	4.46	-8%	3.61	3.15	-13%	7.22	5.73	-21%	4.40	4.16	-5%	8.26	5.99	-27%
Chesapeake Energy (CHK)	CHK	28.00	26.00	-7%	3.08	3.02	-2%	6.15	6.01	-2%	3.39	2.52	-26%	7.20	5.89	-18%	3.74	3.13	-16%	7.91	5.23	-34%
Devon Energy (DVN)	DVN	78.00	68.00	-13%	6.10	5.82	-5%	10.84	10.40	-4%	7.00	5.23	-25%	12.94	10.40	-20%	9.22	8.22	-11%	16.19	11.90	-27%
EnCana Corp. (ECA)	ECA	30.00	28.00	-7%	1.15	0.99	-14%	6.16	6.11	-1%	2.04	0.66	-68%	7.10	5.96	-16%	2.95	2.12	-28%	8.61	6.58	-24%
EOG Resources (EOG)	EOG	120.00	110.00	-8%	1.65	1.14	-31%	12.85	12.19	-5%	5.10	3.51	-31%	18.83	15.47	-18%	9.19	8.26	-10%	26.45	19.88	-25%
Newfield Exploration (NFX)	NFX	66.00	60.00	-9%	4.53	4.33	-4%	10.79	10.44	-3%	4.39	3.83	-13%	11.24	9.88	-12%	5.67	4.93	-13%	13.67	10.10	-26%
Nexen, Inc. (NXY)	NXY	26.00	25.00	-4%	1.83	1.59	-13%	4.27	3.88	-9%	2.62	2.44	-7%	5.50	4.18	-24%	3.12	3.03	-3%	6.18	4.27	-31%
Noble Energy (NBL)	NBL	74.00	74.00	0%	3.74	3.52	-6%	10.44	10.04	-4%	4.23	3.80	-10%	10.83	9.30	-14%	5.62	5.21	-7%	12.95	10.08	-22%
Range Resources (RRC)	RRC	42.00	40.00	-5%	0.56	0.49	-13%	3.63	3.50	-4%	1.36	0.77	-44%	5.32	4.26	-20%	2.48	1.79	-28%	7.88	5.31	-33%
Southwestern Energy (SWN)	SWN	50.00	40.00	-20%	1.74	1.63	-6%	4.50	4.50	0%	2.39	1.37	-43%	5.96	5.00	-16%	3.37	2.77	-18%	8.06	6.15	-24%
Talisman Energy (TLM)	TLM	21.00	20.00	-5%	0.62	0.52	-17%	3.03	2.92	-4%	1.14	0.94	-18%	4.35	3.53	-19%	1.53	1.39	-9%	4.98	3.68	-26%
Average				-7%			-11%			-4%			-27%			-17%			-13%			-25%

Source: Citi Investment Research and Analysis

Figure 38. Valuations for our Coverage Group Currently Reflect Normalized Prices of \$4.85/MMBtu and \$73/Bbl

Company	Share Price	Citi	Citi Risk	Target Price	ETR	EV/(DACF)	EV/(DACF)	Price/LV	MEV/Mcfe	Reserve/ Prod	Production Growth			% Prod N.American Nat Gas	EBITDA/ Fixed Charges	Net Debt/Cap.		Reserve Replace. Eff. (1)
	9/8/10	Rating	Rating			2010E	2011E				09/10	10/11E	11/12E	2010E	2010E	2009	2010E	2009
Anadarko Petroleum (APC)	52.39	Buy	H	74.00	42%	5.4x	5.2x	65%	2.56	10.4	7.9%	3.4%	8.4%	59%	6.7x	32%	31%	0.6x
Apache Corporation (APA)	91.95	Buy	M	130.00	42%	5.2x	4.2x	67%	2.45	11.1	14.7%	22.4%	4.7%	29%	28.0x	20%	28%	1.0x
Chesapeake Energy (CHK)	21.12	Hold	S	26.00	25%	5.7x	5.9x	63%	2.06	15.7	13.0%	17.7%	6.1%	89%	6.7x	50%	42%	1.1x
Devon Energy (DVN)	63.07	Hold	M	68.00	9%	6.8x	7.4x	84%	2.11	11.0	(4.4%)	0.6%	8.1%	65%	15.9x	30%	6%	1.0x
EOG Resources (EOG)	90.27	Buy	M	110.00	23%	8.4x	6.2x	122%	2.33	13.9	12.7%	18.6%	21.0%	58%	28.0x	18%	32%	2.2x
Newfield Exploration (NFX)	50.65	Buy	M	60.00	18%	5.8x	6.2x	121%	1.79	14.1	12.0%	11.2%	9.8%	70%	9.4x	42%	40%	2.3x
Noble Energy (NBL)	73.19	Hold	M	74.00	2%	7.5x	7.3x	96%	2.88	10.7	2.2%	1.2%	9.9%	31%	14.2x	18%	19%	0.9x
Range Resources	36.23	Hold	H	40.00	11%	11.9x	10.3x	145%	2.42	19.7	13.8%	29.7%	25.1%	81%	5.5x	44%	49%	2.0x
Southwestern Energy (SWN)	33.22	Hold	H	40.00	20%	8.4x	8.8x	170%	3.39	12.2	33.7%	26.6%	23.5%	100%	22.7x	30%	33%	3.4x
U.S. Group Average (Ex Hi-Lo)						6.9x	6.7x	100%	\$2.44	12.7	9.7%	12.4%	10.4%	65%	14.8x	31%	32%	1.6x
Price US\$																		
Canadian Natural Res. (CNQ)	33.12	Buy	H	40.00	23%	6.8x	5.8x	109%	2.18	17.0	12.7%	6.7%	5.1%	32%	17.5x	36%	30%	6.6
EnCana Corp. (ECA)	28.65	Hold	M	28.00	1%	5.5x	6.4x	130%	2.31	7.7	(17.5%)	11.7%	10.6%	96%	9.2x	23%	26%	1.7
Nexen, Inc. (NXY)	19.28	Hold	H	25.00	31%	5.7x	4.5x	61%	3.81	7.1	3.3%	0.1%	(3.9%)	15%	11.6x	38%	30%	0.5
Talisman Energy (TLM)	16.52	Buy	H	20.00	22%	6.0x	4.6x	108%	2.64	7.8	(4.4%)	7.9%	5.7%	29%	25.3x	18%	20%	0.9
Canadian E&P Average						6.0x	5.3x	102%	\$2.73	9.9	(3.0%)	7.6%	5.8%	43%	15.9x	29%	27%	2.4x
US & Canadian Average (Ex Hi-Lo)					20%	6.5x	6.2x	101%	\$2.48	12.2	5.1%	10.8%	9.1%	58%	15.2x	30%	30%	1.9x

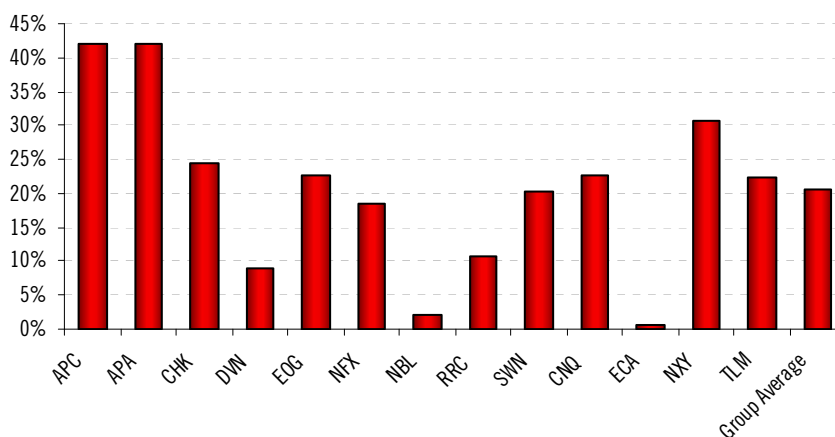
\* Based on WTI spot crude oil and composite spot natural gas prices of \$78.20/Bbl and \$4.50/MMBtu in 2010, \$85.00/Bbl and \$4.25/MMBtu in 2011 and \$90.00/Bbl and \$5.50/MMBtu in 2012.

(1) Reserve Replacement Efficiency = (2009 Cash Flow per BOE produced)/(3-yr average Finding & Development cost per BOE).

Source: Bloomberg, Citi Investment Research and Analysis Estimates

The ~20% upside potential, on average, to our price targets is based on “normalized” prices of \$80.00/Bbl and \$5.50/MMBtu

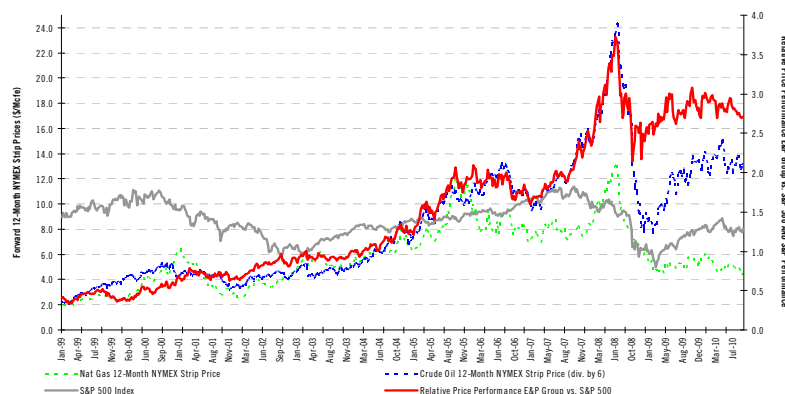
**Figure 39. Potential Upside to our Price Targets**



Source: Citi Investment Research and Analysis

The relative performance of the E&P sector has been most consistently reflected by the direction in the consensus for oil and natural gas prices.

**Figure 40. Historical Ensuing Year Consensus Oil & Gas Prices, S&P 500 Index and Relative E&P Composite Stock Price Performance**



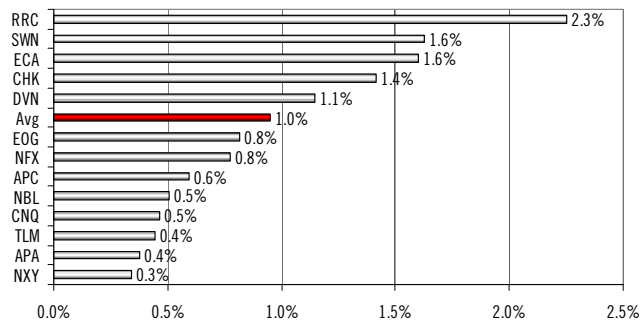
Sources: Bloomberg, Citi Investment Research and Analysis

## Natural Gas Price Summer Wrap-Up

### and Outlook

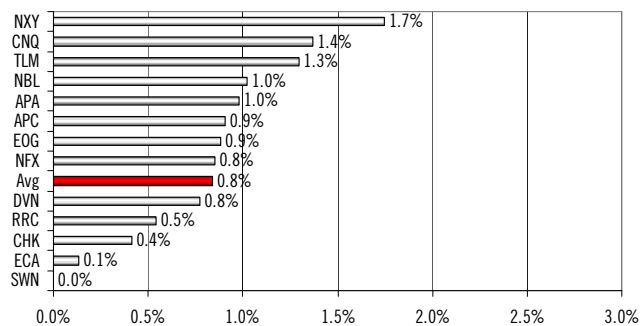
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**Figure 41. 2011 CF Sensitivity per \$0.10/MMBtu Change in Natural Gas Price Forecast**



Sources: Company Reports, Citi Investment Research and Analysis Estimates

**Figure 42. 2011 CF Sensitivity per \$1.00/Bbl Change in Oil Price Forecast**



Sources: Company Reports, Citi Investment Research and Analysis Estimates

## Anadarko Petroleum Corp

### Company description

Anadarko Petroleum Corporation explores for, develops and produces natural gas, crude oil and natural gas liquids with about 2.3 billion barrels of oil equivalent (BOE) of proved reserves. It also produces hard minerals from land grant holdings, and owns and operates midstream assets to gather, treat and process natural gas. The company has about 60% of its reserves and production as natural gas, and 40% as crude oil. Anadarko was founded in 1959 with headquarters in The Woodlands, Texas.

In the U.S., Anadarko operates both onshore including the Rockies and Southern region (which includes the Marcellus, Haynesville and Eagleford shale areas), as well as offshore in the deepwater Gulf of Mexico. Internationally, Anadarko has an extensive operation in Algeria including the in-development El Merk project, as well as production at Bohai Bay in China. In Ghana, Anadarko (along with its partners) is developing the Jubilee project. Anadarko is a prolific deepwater explorer hold exploration acreage and conducting extensive exploration in the deepwater Gulf, Brazil, Ghana, Mozambique, China, Indonesia as well as other countries.

### Investment strategy

We rate Anadarko Buy/High Risk (1H) based on the upside to our current price target in the context of the risk rating. Anadarko is unique among its peers in maintaining a high-risk but high-potential exploration program around the globe and has posted exceptional success over the past year. Consequently, the company has significant potential in both discoveries already notched and prospects, many of which have been enhanced by its recent successes, yet to be drilled. At the same time, like many of its peers, the company also possesses meaningful upside potential in North American shale plays. And even though Anadarko is expected to generate more moderate production growth near-term, its inventory of mega projects essentially assures strong growth longer term. Finally, Anadarko has well above average sensitivity to changes in crude oil prices and below average sensitivity to changes to natural gas prices, which we are much more cautious on near term. Therefore, as we look forward to continued success with the exploration drill bit we assign Anadarko a Buy rating.

### Valuation

Our \$74 price target is based on APC's stock achieving an EV multiple of 6.3x our 2011 debt-adjusted cash flow estimates based on 'normalized' WTI spot oil and composite spot gas prices of \$80.00/Bbl and \$5.50/MMBtu, respectively, and ~91% of NAV.

### Risks

We rate Anadarko High Risk.

Our risk rating on APC is High based on a combination of quantitative and qualitative risk assessments compared to other stocks covered by Citi Investment Research.

**Maconda Liability** - Anadarko holds a 25% non-operated interest in the BP-operated Macondo prospect that leaked oil into the Gulf of Mexico. It is potentially liable for a pro-rata share of the costs and damages associated with Macondo.

**Volatile Commodity Prices** – Anadarko is sensitive to changes in the prices of crude oil, and natural gas. Their exposure is substantially reduced due to extensive hedging of expected natural gas and crude oil production in 2010, but a portion of their production is unhedged.

**Political Risks** – Anadarko operates or explores in developing countries such as Algeria, Ghana, Sierra Leone, Liberia, Cote d'Ivoire, Mozambique and thus is subject to political risks including changes in operating terms, taxes, or expropriation.

**Expensive Long-Term Projects** – Anadarko pursues long-term projects which require large capital outlays and several years of development before any cash flows are realized. These projects are subject to substantial uncertainties in terms of projects costs, as well as the timing and amount of eventual returns.

**Exploration Risk** - Anadarko is conducting or is planning to conduct exploration in several under-explored areas within Mozambique, Sierra Leone, Liberia, Indonesia and elsewhere, and such exploration projects have a high probability of failure.

## Apache Corp

### Company description

Apache Corporation explores for, develops and produces natural gas, crude oil and natural gas liquids with about 2.4 billion barrels of oil equivalent (BOE) of proved reserves at year-end 2009. The company is evenly balanced with about 50% of its reserves and production as natural gas, and 50% as crude oil. Apache was founded in 1954 with headquarters in Houston, Texas.

In the U.S., Apache operates on the Gulf Coast, as well as the Permian and Anadarko basins, and East Texas. In Canada, Apache operates in British Columbia (including the Horn River area), Alberta and Saskatchewan. Internationally, Apache has extensive operations in Egypt and the U.K. North Sea, and smaller operations in Argentina and Australia. Apache also holds exploration interests in Chile.

In the last few years, Apache has focused on being capital disciplined, spending within cash flow to maintain a strong balance sheet, expanding North American onshore shale production, pursuing development and exploration opportunities internationally, as well as recently taking a 16.25% stake in Chevron's Wheatstone LNG project.

### Investment strategy

We rate Apache Buy/Medium Risk (1M) based on the upside to our current price target in the context of the risk rating. We expect Apache will continue to exhibit solid financial discipline while posting high organic production growth. Apache also has above-average sensitivity to changes in oil prices and well below average sensitivity to changes in natural gas prices. Therefore, we are confident in Apache's ability to continue to create shareholder value and at this juncture, assign a Buy rating.

## Valuation

Our \$74 price target is based on CHK's stock achieving an EV multiple of 6.3x our 2011 debt-adjusted cash flow estimates based on 'normalized' WTI spot oil and composite spot gas prices of \$80.00/Bbl and \$5.50/MMBtu, respectively, and ~91% of NAV.

## Risks

We rate Apache Medium Risk

Our risk rating on APA is Medium based on a combination of quantitative and qualitative risk assessments compared to other stocks covered by Citi Investment Research.

**Volatile Commodity Prices** – Apache is sensitive to changes in the prices of crude oil, and natural gas. Their exposure to natural gas is reduced through a combination of hedges and long-term fixed-price contracts, but most of their crude production is unhedged and subject to market price volatility.

**Political Risks** – Apache operates in developing countries such as Argentina, Chile and Egypt and thus is subject to political risks including changes in operating terms, taxes, or expropriation.

**Expensive Long-Term Projects** – Apache pursues long-term projects which require large capital outlays and several years of development before any cash flows are realized. These projects are subject to substantial uncertainties in terms of projects costs, as well as the timing and amount of eventual returns.

If the impact on the company from any of these factors proves to be less than we anticipate, the stock could materially outperform our target. Conversely, if the impact on the company from any of these factors proves to be greater than we anticipate, the stock could underperform our target price.

## Canadian Natural Resources Ltd

### Company description

Canadian National Resources Limited (CNRL) explores for, develops and produces natural gas, crude oil and natural gas liquids with about 2.2 billion barrels of oil equivalent (BOE) of proved reserves. The company has about two-thirds of its production and reserves as crude oil, and one-third as natural gas. CNRL was founded in 1973 with headquarters in Calgary, Canada.

Canada accounts for most of CNRL's production and reserves with the company holding over 18 million acres in British Columbia, Alberta, and Saskatchewan, and is the second-largest Canadian producer of natural gas. It holds extensive conventional gas assets as well as a sizeable in the emerging Montney shale area. To produce crude oil, CNRL owns and operates their flagship Horizon Oil Sands Projects in Alberta, the Primrose thermal project, as well as heavy crude production at Pelican Lake and elsewhere in Western Canada. Internationally, CNRL owns and operates assets in the UK North Sea. It also operates in offshore Africa – Cote d'Ivoire and Gabon, with exploration planned in offshore South Africa.



In the last few years, CNRL has focused on successfully starting up the Horizon project, and utilizing free cash flow to pay down debt to improve balance sheet metrics. The company has long-term potential to expand Horizon as well as expand and develop thermal assets at Primrose, Kirby and five other potential locations.

### Investment strategy

We rate Canadian National Resources Buy/High Risk (1H) based on the upside to our current price target in the context of the risk rating. CNQ has built a very attractive highly oil-oriented, long reserve life portfolio with significant expansion potential. We believe that the firm provides an excellent vehicle for investors to position themselves for secularly higher oil prices and structurally limited supply. With 95% of its production coming from either Canada or the U.K., the company has broad upside potential without any of the political risk inherent in many other oil companies that operate in unstable countries.

### Valuation

Our \$40 price target is based on CNQ's stock achieving an EV multiple of 6.8x our 2011 debt-adjusted cash flow estimates based on 'normalized' WTI spot oil and composite spot gas prices of \$80.00/Bbl and \$5.50/MMBtu, respectively, and ~132% of NAV.

### Risks

We rate Canadian Natural Resources High Risk. Our risk rating on CNQ is High based on a combination of quantitative and qualitative risk assessments compared to other stocks covered by Citi Investment Research.

**Volatile Commodity Prices** – CNQ is sensitive to changes in the prices of crude oil, and natural gas. They have some commodity hedges in place, but the majority of their natural gas and crude oil production is unhedged and subject to market price volatility.

**Expensive Long-Term Projects** – CNQ pursues long-term oil projects which require large capital outlays and several years of development before any cash flows are realized. These projects are subject to substantial uncertainties in terms of projects costs, as well as the timing and amount of eventual returns.

**Environmental Risks** – CNQ's existing and proposed oil sand and thermal oil assets in Canada could be subject to both increased scrutiny as well as new rules to mitigate environmental impact. These changes could substantially increase costs, decrease viability, or block certain projects.

**Political Risks** – A small portion of CNRL's production and reserves comes from developing countries – Cote d'Ivoire and Gabon, and thus is subject to political risks including changes in operating terms, taxes, or expropriation.

If the impact on the company from any of these factors proves to be less than we anticipate, the stock could materially outperform our target. Conversely, if the impact on the company from any of these factors proves to be greater than we anticipate, the stock could underperform our target price.

## Chesapeake Energy Corp

### Company description

Chesapeake Energy Corporation (CHK) is one of the largest independent producers of natural gas in the United States, with natural gas output over 2.4 Billion cubic feet per day, or >3% of total US natural gas production. The company has 14.3 Tcf of proved reserves as of year-end 2009, ~94% of which are natural gas. It is either the largest or second largest leased acreage holder in the Barnett, Fayetteville, Haynesville and Marcellus shale along with the Granite Wash plays, which combined account for roughly 60% of the company's total production.

### Investment strategy

We rate Chesapeake Energy Corporation Hold/ Speculative (2S) based on limited upside to our current price target in the context of the risk rating. We recognize that Chesapeake possesses significant upside potential to its proven reserve base but given its premium valuation and well above average operating and enterprise value risk associated with weaker natural gas prices, in addition to the our view that Street estimates for 2010 production growth need to be ratcheted down, we are comfortable with a Hold rating on the stock at this juncture.

### Valuation

Our \$26 price target is based on CHK's stock achieving an EV multiple of 5.7x our 2011 debt-adjusted cash flow estimates based on 'normalized' WTI spot oil and composite spot gas prices of \$80.00/Bbl and \$5.25/MMBtu, respectively, and ~78% of NAV.

### Risks

Our risk rating on CHK is Speculative based on a combination of quantitative and qualitative risk assessments compared to other stocks covered by Citi Investment Research.

Balance Sheet Risk -The overriding constraint on CHK's output is its debt-laden balance sheet. CHK is currently one of the most financially levered large-cap E&P companies, though it is taking steps to reduce financial leverage.

Deal Execution Risk - As part of its stated operating strategy, Chesapeake acquires leasehold positions in natural gas plays and markets these positions to other industry players at prices above its cost basis. Chesapeake may amass a larger position than it can prudently sell or develop.

Drilling and Operational Risk - With future production growth pinned on natural gas shale plays, disappointing drilling results could impact Chesapeake's share price. However, if results exceed our estimates, this would constitute an upside risk to our target price.

If the impact on the company from any of these factors proves to be greater/less than we anticipate, the stock could materially underperform/outperform our target price.

## Devon Energy Corp

### Company description

Oklahoma City-based Devon Energy is one of the largest producing independent North American E&P companies with current output of near 4 Bcfe/d. The company is in the process of re-focusing to solely operate onshore North America, planning to exit the offshore Gulf of Mexico and International regions during 2010. Both before and after the planned divestitures, Devon's production mix will approximate two-thirds natural gas and one-third oil. Devon's near-term production growth is derived from six main assets - the Barnett, Haynesville, Cana-Woodford, Arkoma-Woodford and Horn River natural gas shale plays and the Jackfish Canadian oil sands project.

### Investment strategy

Overall, we believe that Devon's strategic repositioning in 2010 will bode well for its operations and growth longer term even though it is yet one more company presently more dependent on domestic natural gas drilling to grow production in a currently oversupplied natural gas market. In addition, the transformation makes the company a bit more "gassier." Also, on a pro forma basis, the company will sharply outspend cash flow in 2010 (supplemented by asset sales proceeds) to just keep production flat on a year-over-year basis although this "kick start" should result in a 10% CAGR thereafter through at least 2014. Therefore, we have a Hold/ Medium Risk rating on the stock.

### Valuation

Our \$68 price target is based on CHK's stock achieving an EV multiple of 6.9x our 2011 debt-adjusted cash flow estimates based on 'normalized' WTI spot oil and composite spot gas prices of \$80.00/Bbl and \$5.50/MMBtu, respectively, and ~91% of NAV.

### Risks

We rate Devon Energy Medium Risk

Our risk rating on Devon is Medium based on a combination of quantitative and qualitative risk assessments compared to other stocks covered by Citigroup Investment Research.

**Drilling Results** - With future production growth pinned on US shale plays, disappointing drilling results, particularly in the Haynesville, Horn River and Cana-Woodford shale plays could impact Devon's share performance.

**Volatile Commodity Prices** - Hydrocarbon prices have shown increasing volatility in recent years, as well as cash flow and earnings. This volatility tends to significantly impact sector stock performance. Devon has mitigated some commodity price risk by assuming historically high levels of hedging into 2010.

If the impact on the company from any of these factors proves to be less than we anticipate, the stock could materially outperform our target. Conversely, if the impact on the company from any of these factors proves to be greater than we anticipate, the stock could underperform our target price.

## EnCana Corp

### Company description

EnCana Corporation has recently re-positioned itself as a "pure-play" North American natural gas producer, by spinning off their crude oil production, and refinery assets in a new company Cenovus. The "new" EnCana holds about 12 Tcf of proved natural gas reserves, controls about 15 million net acres in North America, with about 99% of production from natural gas or natural gas liquids. EnCana was formed in 2002 with the merger of PanCanadian Energy and Alberta Energy Company, with headquarters in Calgary, Canada.

In Canada, EnCana will remain the largest producer of natural gas with extensive land holdings in British Columbia and Alberta, encompassing both conventional assets as well as sizeable positions in the Horn River and Montney shale plays. EnCana also owns and will operate the in-development Deep Panuke project in offshore Nova Scotia. In the U.S., EnCana holds natural gas positions in Colorado, Wyoming, Louisiana, and Texas including the Haynesville and Barnett shale.

### Investment strategy

We rate EnCana Hold/Medium Risk (2M) based on the upside to our current price target in the context of the risk rating. The "new" EnCana is the most natural gas levered large-cap company in our coverage group. In light of our natural gas price forecast for 2010 (below EnCana's planning range), we expect the company to spend all of its expected discretionary cash flow or more to fulfill its capital plan. The production curtailments during 2009 and negative price related revisions indicate that a substantial portion of its production is uneconomic at sub-\$4/MMBtu price levels, leaving it exposed if natural gas prices "double-dip" during the upcoming shoulder period. Nevertheless based on "shut-in" restoration and shale play growth especially Haynesville, we expect 2010 production to rise about 10%.

### Valuation

Our \$28 price target is based on ECA's stock achieving an EV multiple of 5.2x our 2011 debt-adjusted cash flow estimates based on 'normalized' WTI spot oil and composite spot gas prices of \$80.00/Bbl and \$5.25/MMBtu, respectively, and ~127% of NAV.

### Risks

We rate EnCana Medium Risk

Our risk rating on ECA is Medium based on a combination of quantitative and qualitative risk assessments compared to other stocks covered by Citi Investment Research.

**Volatile Commodity Prices** - EnCana is sensitive to changes in the price of natural gas. A portion of their exposure is hedged, however some of their expected natural gas production is unhedged and subject to market price volatility.

**Lack Of Diversification** - All of the EnCana assets are now related to natural gas production in North America, and so they lack commodity or geographic diversification and will be adversely affected if natural gas prices are low.

If the impact on the company from any of these factors proves to be less than we anticipate, the stock could materially outperform our target. Conversely, if the impact on the company from any of these factors proves to be greater than we anticipate, the stock could underperform our target price.

## EOG Resources Inc

### Company description

EOG Resources is a leading independent exploration & production company that explores for, develops and produces natural gas, crude oil and natural gas liquids. The company's key operating regions are the Barnett oil and gas plays, the Bakken, East Texas, Appalachia, the Mid-Continent, Canada, Trinidad, and the U.K. North Sea.

### Investment strategy

We rate EOG Resources Buy/Medium Risk (1M) based on the upside to our current price target in the context of the risk rating. Overall, EOG should post among the strongest growth profiles in our coverage group next year while continuing to achieve top-tier economic returns with one of the most conservative balance sheets. We also expect the company to lead the industry in identifying and securing horizontal and vertical shale and tight sand oil play opportunities. And even though EOG is largely unhedged in 2010 with still significant leverage to natural gas prices in what we expect will be a weak natural gas price environment near term, the company's growth should be driven by liquids growth, and we are not attributing any premium relative to the group average in our price target MEV/DACF multiple.

### Valuation

Our \$110 price target is based on the company achieving a enterprise value to discretionary cash flow (EV/DACF) multiple of and 6.9x our 2011 estimates based on "normalized" WTI spot crude oil and composite spot natural gas prices of \$80.00/Bbl and \$6.25/MMBtu, respectively, and ~149% of proven NAV.

### Risks

We rate EOG Resources Medium Risk.

Our risk rating on EOG is Medium based on a combination of quantitative and qualitative risk assessments compared to other stocks covered by Citi Investment Research.

**Drilling Results** - Disappointing drilling results, particularly in EOG's key operating areas in the Eagle Ford, Barnett Combo play, the Bakken, the Haynesville shale, the Marcellus shale and the Horn River Basin, could impact EOG's share performance.

**Volatile Commodity Prices** - Hydrocarbon prices have shown increasing volatility in recent years, as well as cash flow and earnings. This volatility tends to significantly impact sector stock performance.

If the impact on the company from any of these factors proves to be less than we anticipate, the stock could materially outperform our target. Conversely, if the impact on the company from any of these factors proves to be greater than we anticipate, the stock could underperform our target price.

## Newfield Exploration Co.

### Company description

Newfield Exploration is a Houston-based Exploration and Production company with key operations in the Woodford shale, the Monument Butte oil field, the liquids-rich Granite Wash, the Bakken oil shale, offshore Gulf of Mexico and Malaysia. The company also is a recent entrant in the Eagle Ford shale, Alberta Basin, and Marcellus shale plays.

### Investment strategy

We rate Newfield Resources with a Buy/ Medium Risk rating and with a 12-month price target of \$60.00 per share. Newfield is well positioned to post 10%-plus production growth over at least the next three years (we are modeling an overall 12% uptick in 2010) largely driven by domestic crude oil volumes, which should be up 20-25% per annum. Even though its current output is ~70% natural gas, nearly 15% growth this year is predominantly price protected with hedges (~85% at minimum \$6.50/MMBtu) with high-single digit growth in 2011/2012 also partly protected with hedges but also largely liquids-rich gas apart from project start-ups in the deepwater Gulf of Mexico. Thus, Newfield fits within our preference for the more oil-leveraged names with above-average growth and economic returns, while we remain quite sanguine on the near-term outlook for natural gas prices.

### Valuation

Over the past five years, the E&P group has traded at an average of 6.1x forward 12-months' cash flow after pro forma adjustments for acquisitions. Using "normalized" 2010 WTI spot crude oil and composite spot natural gas prices of \$80.00/Bbl and \$6.25/MMBtu, respectively, the average target multiple for our E&P universe is 6.9x. Newfield is 70% levered to natural gas, although heavily hedged, and typically trades at a slight discount to the group based on its DACF multiple, though a premium based on its Price/Liquidation value. Our \$60 price target is based on the company achieving a multiple of 6.8x our 2011 DACF based on "normalized" 2011 WTI spot crude oil and composite spot natural gas prices of \$80.00/Bbl and \$5.50/MMBtu, respectively, and ~144% of proven NAV .

### Risks

We rate Newfield Resources Medium Risk.

Our risk rating on NFX is Medium based on a combination of quantitative and qualitative risk assessments compared to other stocks covered by Citi Investment Research.

Drilling Results - Disappointing drilling results, particularly in NFX's key operating areas in the Woodford shale, Monument Butte, the Granite Wash, the Bakken, offshore Gulf of Mexico, the Eagle Ford shale, the Alberta Basin or the Marcellus shale could impact NFX's share performance.

Gulf of Mexico uncertainties - Increased regulation, higher costs and possible delays in the Gulf of Mexico could impact NFX's GOM operations.

Volatile Commodity Prices - Hydrocarbon prices have shown increasing volatility in recent years, as well as cash flow and earnings. This volatility tends to significantly impact sector stock performance.

If the impact on the company from any of these factors proves to be less than we anticipate, the stock could materially outperform our target. Conversely, if the impact on the company from any of these factors proves to be greater than we anticipate, the stock could underperform our target price.

## **Nexen Inc**

### **Company description**

Nexen Inc. explores for, develops and produces natural gas, crude oil and natural gas liquids with about 1 billion barrels of oil equivalent (BOE) of proved reserves at year-end 2009. Nexen is heavily-oriented towards crude oil with about 90% of its reserves and 85% of production as liquids, while the remaining as natural gas. Nexen was originally founded at Canadian Occidental Petroleum Limited (CanOxy) in 1971, majority owned by Occidental Petroleum of California, but the name was changed to Nexen in 2001 after Occidental fully divested its ownership. Headquarters are in Calgary, Canada.

In Alberta, Canada, Nexen owns 65% of, and operates the Long Lake Steam-Assisted Gravity Drainage (SAGD) crude oil project. Additionally, the company holds a 7.23% non-operating interest in the Syncrude Oil Sands Project. In British Columbia, Canada, Nexen holds an 88,000 acre position and is producing natural gas at the Horn River shale play. In the offshore U.S., Nexen has both operated and non-operated interests in various Shelf and Deepwater Gulf of Mexico wells.

Internationally, Nexen has substantial assets in the North Sea area and continues to produce, develop and explore additional resources there. Nexen also has a major presence in Yemen, although their current contract expires at the end of 2011. Other smaller operations are in Columbia and Nigeria.

### **Investment strategy**

We rate Nexen Hold/High Risk (2H) based on the upside to our current price target in the context of the risk rating. Although production should increase this year, Nexen faces the overhang of Yemen output declining and likely going away beyond 2011. In addition, uncertainty remains around its Long Lake facility. Therefore, we are maintaining coverage of NXY with a Hold rating at this juncture.

### **Valuation**

Our \$25 price target is based on NXY's stock achieving an EV multiple of 5.9x our 2011 debt-adjusted cash flow estimates based on 'normalized' WTI spot oil and composite spot gas prices of \$80.00/Bbl and \$5.50/MMBtu, respectively, and ~79% of NAV.

### **Risks**

We rate Nexen High Risk.

Our risk rating on NXY is High based on a combination of quantitative and qualitative risk assessments compared to other stocks covered by Citi Investment Research and Analysis.

**Volatile Commodity Prices** – Nexen is highly sensitive to changes in the prices of crude oil, and natural gas. Only a small portion of their expected production is hedged, with most production subject to market price volatility.

**Political Risks** – Nexen operates in developing countries including Yemen, Columbia and Nigeria and thus is subject to political risks including changes in operating terms, taxes, or expropriation. About 15% of current production is from Yemen, a country with considerable political instability, and where their current contract that expires at the end of 2011 may not be extended.

**Technical Risks** – Nexen is utilizing a new technology, OrCrude, licensed from their partner OPTI Canada Inc. at their Long Lake project. This technology is yet to be fully proven, as even through production has begun at Long Lake, output remains well below capacity and has encountered numerous delays and technical issues.

If the impact on the company from any of these factors proves to be less than we anticipate, the stock could materially outperform our target. Conversely, if the impact on the company from any of these factors proves to be greater than we anticipate, the stock could underperform our target price.

## Noble Energy Inc

### Company description

Noble Energy is a Houston-based independent energy company engaged in oil and gas exploration and production. Operations are located in the U.S. Rockies, Mid-Continent, and onshore and offshore Gulf of Mexico, while international operations are focused offshore West Africa, Israel, the North Sea, China and Ecuador.

### Investment strategy

We rate Noble Energy Hold/Medium Risk (2M) based on the upside to our current price target in the context of the risk rating. Overall, while Noble has a host of deepwater Gulf of Mexico and international development projects that should significantly boost production longer-term, the development of these projects is diverting cash flow from activities that might otherwise grow production near term. In fact, we project that the company's total organic production will be essentially flat through 2012 until these development projects begin to come on stream. In addition, based on our commodity price projections, Noble will sharply outspend operating cash flow over the next three years. In the mean time, it is allocating nearly one-quarter of capital outlays to high-impact exploration endeavors but any success will only add to the longer-term project pipeline and would likely add further strains on the balance sheet in the mean time. Therefore, while we acknowledge Noble's success with the drill bit and upside exploration exposure, we believe this, combined with the lack of near-to-medium-term growth, is nearly fully reflected in its stock price at this juncture.



## **Valuation**

Our \$74 price target is based on Noble's stock achieving a multiple of 7.5x our 2011 debt-adjusted cash flow estimates based on "normalized" 2011 WTI spot crude oil and composite spot natural gas prices of \$80.00/Bbl and \$5.50/MMBtu, respectively and ~94% of proven NAV.

## **Risks**

Our risk rating on Noble is Medium based on a combination of quantitative and qualitative risk assessments compared to other stocks covered by Citigroup Investment Research and Analysis.

Offshore Gulf of Mexico Exposure - Future political and economic ramifications of the turmoil in the deepwater Gulf of Mexico crisis are uncertain.

Exploration Results - Noble allocates ~20% of its capital budget to its exploration program. Exploration results, particularly in the deepwater Gulf of Mexico, offshore West Africa and offshore Israel, may impact on NBL's share price.

Volatile Commodity Prices - Hydrocarbon prices have shown increasing volatility in recent years, as well as cash flow and earnings. This volatility tends to significantly impact sector stock performance. NBL has mitigated some commodity price risk by assuming high levels of hedging into 2010.

If the impact on the company from any of these factors proves to be less than we anticipate, the stock could materially outperform our target. Conversely, if the impact on the company from any of these factors proves to be greater than we anticipate, the stock could underperform our target price.

## **Range Resources Corp**

### **Company description**

Range Resources is a Fort Worth, Texas-based independent Exploration and Production company. The company' has three key operations: the Marcellus shale in Pennsylvania, the Barnett shale in Texas, and the Nora field in Virginia in addition to traditional oil and gas properties in the Mid-Continent, Appalachia and the Southwestern US. Range's production mix is ~81% natural gas and ~19% crude oil or natural gas liquids.

### **Investment strategy**

Overall, we believe that Range Resources has established an enviable position in one of the key future, if not among the highest resource potential, shale plays in North America. The company's Marcellus shale position should allow it to continue to post industry leading returns and production growth for several years into the future. However, Range's production is predominantly natural gas for which we believe the outlook will remain quite dismal near term. The company also continues to sharply outspend cash flow which is likely to ultimately lead to further equity issuance in order to sustain the rapid development of the Marcellus shale. The stock continues to trade at a significant premium to its E&P peer group. Given our continued concerns regarding the near-term outlook for natural gas prices plus Range's financial leverage, we believe that its current valuation premium is appropriate and therefore rate the stock a Hold/High Risk with a 12-month price target of \$40 per share.

## Valuation

Our \$40 price target is based on RRC's stock achieving an EV multiple of 10.4x our 2011 and 8.6x our 2012 debt-adjusted cash flow estimate based on 'normalized' WTI spot oil and composite spot gas prices of \$80.00/Bbl and \$5.25/MMBtu, respectively and ~160% proven of NAV.

## Risks

We rate Range Resources High Risk.

Our risk rating on RRC is High based on a combination of quantitative and qualitative risk assessments compared to other stocks covered by Citigroup Investment Research.

**Regulatory Risk** - With future growth pinned largely on the Marcellus, Range is significantly exposed to the developing natural gas regulatory environment in Pennsylvania.

**Funding Risk** - Range relies on asset sales, debt or equity issuance to fund continued production growth. Failure to secure these funds could put future growth at risk.

**Drilling Results** - Disappointing drilling results, particularly in the Marcellus could impact RRC's share performance.

**Volatile Commodity Prices** - Hydrocarbon prices have shown increasing volatility in recent years, as well as cash flow and earnings. This volatility tends to significantly impact sector stock performance. RRC has partially mitigated commodity price risk with high levels of hedging over the next year.

If the impact on the company from any of these factors proves to be less than we anticipate, the stock could materially outperform our target. Conversely, if the impact on the company from any of these factors proves to be greater than we anticipate, the stock could underperform our target price.

## Southwestern Energy Co

### Company description

Southwestern Energy is a domestic onshore natural gas-leveraged E&P company primarily focused in the Arkoma Basin (Arkansas and Oklahoma), East Texas, and Appalachia. The company is also focused on creating and capturing additional value at and beyond the wellhead through established natural gas distribution, marketing and transportation businesses and expanding gathering activities.

### Investment strategy

We rate Southwestern Energy Hold/High Risk (2H) based on the upside to our current price target in the context of the risk rating. Overall, while Southwestern has sharply underperformed the E&P sector this year despite its leading production growth and economic return matrices, we believe the stock is still somewhat fully valued particularly given our outlook for natural gas prices near term. And the company is still among the most sensitive in our coverage group to changes in natural gas prices near term. Thus, while we believe that Southwestern will continue to post top-tier production growth and economic returns, we are maintaining our Hold/ High Risk rating at this juncture

## Valuation

Our \$40 price target is based on Southwestern's stock achieving a multiple of 8.1x our 2011 debt-adjusted cash flow estimates based on "normalized" WTI spot crude oil and composite spot natural gas prices of \$80.00/Bbl and \$5.25/MMBtu, respectively and ~205% of proven NAV.

## Risks

We rate Southwestern Energy High Risk

Our risk rating on SWN is High based on a combination of quantitative and qualitative risk assessments compared to other stocks covered by Citi Investment Research.

**Drilling Results** - Disappointing drilling results, particularly in the Fayetteville, Haynesville, and Marcellus shale plays could negatively impact SWN's share performance.

**Repeatability** - SWN has achieved high organic growth and low F&D costs through the exploitation of its Fayetteville shale position. Once the Fayetteville play matures, SWN is at risk of not securing as compelling opportunities.

**Infrastructure Build Out** - The overarching bottleneck in developing the Fayetteville play has traditionally been overall takeaway capacity from third party operators. Delays in future expansions of takeaway capacity could delay SWN's production growth.

**Volatile Commodity Prices** - With 100% natural gas production and minimal hedges in place, SWN is the most natural gas levered name in our universe.

The impact on the company from any of these factors proves to be less than we anticipate, the stock could materially outperform our target. Conversely, if the impact on the company from any of these factors proves to be greater than we anticipate, the stock could underperform our target price.

## Talisman Energy Inc

### Company description

Talisman Energy Inc. explores for, develops and produces natural gas, crude oil and natural gas liquids with about 1.4 billion barrels of oil equivalent (BOE) of proved reserves at year-end 2009. The company is roughly evenly balanced with about 50% of its production as natural gas, and 50% as crude oil. Talisman was originally part of British Petroleum but became an independent company in 1992 and is headquartered in Calgary, Canada.

Within North America, Talisman holds both conventional and unconventional natural gas assets with a land position exceeding 2 million acres including the Marcellus Shale (Pennsylvania/New York), the Montney Shale (British Columbia), the Utica Shale (Quebec) and recently the Eagle Ford Shale (TX). Internationally, in the North Sea, Talisman owns producing assets on both the U.K. and Norwegian sides, and pursues both development and exploration projects. Talisman has substantial operations in South East Asia including Indonesia, Malaysia and Vietnam and is conducting extensive exploration throughout S.E. Asia as well as in Australia and Papua New Guinea. Talisman also operates in Algeria, and explores in Kurdistan (Northern Iraq). Columbia and Peru.

Within the last two years, Talisman has divested assets including operations in Netherlands, Trinidad, Tunisia and non-core North American conventional. Talisman is now focused on growth from North American unconventional gas, generating cash flow from mature North Sea assets, and is pursuing large international development and exploration targets.

### Investment strategy

We rate Talisman Buy/High Risk (1H) based on the upside to our current price target in the context of the risk rating. Talisman has markedly improved the quality of its portfolio both in North America as well as globally and is now well-positioned to grow production organically with improved economic returns. The company has also completed nearly all of its planned asset sales, resulting in a more consistent strategy focused on growth with solid footholds in several emerging North America shale plays and upside exposure through the exploration drill bit internationally. Talisman is also still one of the more oil leveraged names in our coverage group. And while production growth should begin to improve and while we expect attractive finding and development costs to be reported for 2009, the stock continues to trade at a substantial discount to its peer group.

### Valuation

Our \$20 price target is based on TLM's stock achieving an EV multiple of 5.6x our 2011 debt-adjusted cash flow estimates based on 'normalized' WTI spot oil and composite spot gas prices of \$80.00/Bbl and \$5.50/MMBtu, respectively, and ~131% of NAV.

### Risks

We rate Talisman High Risk

Our risk rating on Talisman is High based on a combination of quantitative and qualitative risk assessments compared to other stocks covered by Citi Investment Research.

**Volatile Commodity Prices** – Talisman is sensitive to changes in the prices of crude oil, and natural gas. Only some of their expected natural gas and crude oil exposure is hedged, with the majority unhedged and subject to market price volatility.

**Political Risks** – Talisman operates in developing countries including Indonesia, Vietnam, Kurdistan, Columbia and Papua New Guinea and thus is subject to political risks including changes in operating terms, taxes, or expropriation.

**Exploration Risk** – Talisman is conducting exploration in several under-explored areas within Indonesia, Kurdistan, Peru, and Papua New Guinea, and these exploration projects have a high-probability of failure.

**LNG Project Risk** – Talisman is likely to start or join a LNG project to monetize their Papua New Guinea gas discoveries. LNG projects require large capital outlays and several years of development before any cash flows are realized. They are subject to substantial uncertainties in terms of projects costs, as well as the timing and amount of eventual returns.

If the impact on the company from any of these factors proves to be less than we anticipate, the stock could materially outperform our target. Conversely, if the impact on the company from any of these factors proves to be greater than we anticipate, the stock could underperform our target price.

## Appendix A-1

### Analyst Certification

The research analyst(s) primarily responsible for the preparation and content of all or any identified portion of this research report hereby certifies that, with respect to each issuer or security or any identified portion of the report with respect to an issuer or security that the research analyst covers in this research report, all of the views expressed in this research report accurately reflect their personal views about those issuer(s) or securities. The research analyst(s) also certify that no part of their compensation was, is, or will be, directly or indirectly, related to the specific recommendation(s) or view(s) expressed by that research analyst in this research report.

### IMPORTANT DISCLOSURES

#### Apache Corp (APA)

##### Ratings and Target Price History

##### Fundamental Research

Analyst: Robert S Morris

Covered since December 7 2009



	Date	Rating	Target Price	Closing Price
1	7-Feb-08	2H	*105.00	97.77
2	11-Apr-08	2H	*144.00	131.93
3	11-Jun-08	2H	*161.00	140.00

	Date	Rating	Target Price	Closing Price
4	15-Aug-08	2H	*116.00	106.74
5	28-Jan-09	2H	*85.00	78.62
6	2-Apr-09	2H	*75.00	67.92

	Date	Rating	Target Price	Closing Price
7	7-May-09	2H	*86.00	81.46
8	17-Jul-09	Coverage suspended		
9	7-Dec-09	*1M	*130.00	93.34

\* Indicates change

Rating/target price changes above reflect Eastern Standard Time

#### Anadarko Petroleum Corp (APC)

##### Ratings and Target Price History

##### Fundamental Research

Analyst: Robert S Morris

Covered since December 7 2009



	Date	Rating	Target Price	Closing Price
1	7-Nov-07	1H	*72.00	59.10
2	11-Apr-08	1H	*80.00	63.80
3	11-Jun-08	1H	*106.00	77.69
4	15-Aug-08	1H	*76.00	57.61

	Date	Rating	Target Price	Closing Price
5	2-Apr-09	1H	*49.00	42.05
6	7-May-09	1H	*60.00	48.72
7	17-Jul-09	Coverage suspended		
8	7-Dec-09	1H	*80.00	58.27

	Date	Rating	Target Price	Closing Price
9	21-Apr-10	1H	*100.00	72.58
10	2-Jun-10	1H	*75.00	44.36

\* Indicates change

Rating/target price changes above reflect Eastern Standard Time

## Chesapeake Energy Corp (CHK)

### Ratings and Target Price History Fundamental Research

Analyst: Robert S Morris

Covered since December 7 2009



	Date	Rating	Target Price	Closing Price
1	27-Feb-08	*2H	*48.00	45.35
2	11-Apr-08	2H	*52.00	47.60
3	11-Jun-08	2H	*70.00	59.67
4	15-Aug-08	2H	*54.00	45.53

\* Indicates change

	Date	Rating	Target Price	Closing Price
5	17-Dec-08	*2S	*20.00	16.09
6	7-May-09	2S	*25.00	21.92
7	17-Jul-09	Coverage suspended		
8	7-Dec-09	2S	*28.00	22.80

	Date	Rating	Target Price	Closing Price
9	4-Jan-10	2S	*32.00	28.09
10	18-Feb-10	2S	*36.00	27.46
11	21-Apr-10	2S	*30.00	23.68
12	13-May-10	2S	*28.00	23.29

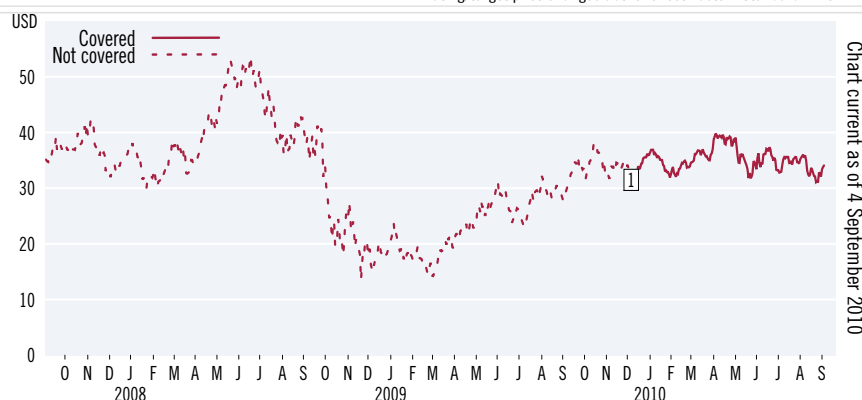
Rating/target price changes above reflect Eastern Standard Time

## Canadian Natural Resources Ltd (CNQ)

### Ratings and Target Price History Fundamental Research

Analyst: Robert S Morris

Covered since December 7 2009



	Date	Rating	Target Price	Closing Price
1	7-Dec-09	*1H	*42.50	32.68

\* Indicates change

Rating/target price changes above reflect Eastern Standard Time

## Devon Energy Corp (DVN)

### Ratings and Target Price History Fundamental Research

Analyst: Robert S Morris

Covered since December 7 2009



	Date	Rating	Target Price	Closing Price
1	11-Apr-08	2H	*121.00	109.26
2	11-Jun-08	2H	*135.00	116.61
3	15-Aug-08	2H	*110.00	93.95
4	3-Nov-08	2H	*85.00	77.89

\* Indicates change

	Date	Rating	Target Price	Closing Price
5	3-Feb-09	2H	*70.00	61.91
6	2-Apr-09	2H	*55.00	48.40
7	7-May-09	2H	*70.00	60.34
8	17-Jul-09	Coverage suspended		

	Date	Rating	Target Price	Closing Price
9	7-Dec-09	*2M	*75.00	65.79
10	11-Mar-10	2M	*78.00	72.04

Rating/target price changes above reflect Eastern Standard Time

## EnCana Corp (ECA)

### Ratings and Target Price History

### Fundamental Research

Analyst: Robert S Morris  
Covered since December 7 2009



	Date	Rating	Target Price	Closing Price
1	11-Apr-08	2H	*44.95	41.88
2	12-May-08	2H	*50.84	49.09
3	11-Jun-08	2H	*51.91	48.88

\* Indicates change

	Date	Rating	Target Price	Closing Price
4	15-Aug-08	2H	*40.14	35.45
5	2-Feb-09	2H	*25.15	23.55
6	17-Jul-09	Coverage suspended		

	Date	Rating	Target Price	Closing Price
7	7-Dec-09	*2M	*16.05	27.83
8	11-Dec-09	2M	*30.00	28.26

Rating/target price changes above reflect Eastern Standard Time

## EOG Resources Inc (EOG)

### Ratings and Target Price History

### Fundamental Research

Analyst: Robert S Morris  
Covered since December 7 2009



	Date	Rating	Target Price	Closing Price
1	13-Nov-07	*2H	*90.00	85.66
2	23-Jan-08	*1H	*100.00	82.47
3	27-Feb-08	*2H	*112.00	105.68
4	11-Apr-08	2H	*138.00	126.32
5	11-Jun-08	2H	*139.00	128.39

\* Indicates change

	Date	Rating	Target Price	Closing Price
6	15-Aug-08	2H	*106.00	95.60
7	6-Nov-08	*1H	*95.00	77.17
8	4-Feb-09	1H	*88.00	68.58
9	2-Apr-09	1H	*70.00	60.33
10	7-May-09	*2H	*82.00	73.52

	Date	Rating	Target Price	Closing Price
11	17-Jul-09	Coverage suspended		
12	7-Dec-09	*1M	*110.00	87.27
13	10-Feb-10	1M	*102.00	88.24
14	8-Apr-10	1M	*120.00	106.96

Rating/target price changes above reflect Eastern Standard Time

## Noble Energy Inc (NBL)

### Ratings and Target Price History

### Fundamental Research

Analyst: Robert S Morris  
Covered since December 7 2009



	Date	Rating	Target Price	Closing Price
1	11-Apr-08	2H	*88.00	82.75
2	11-Jun-08	2H	*115.00	100.72
3	15-Aug-08	2H	*74.00	67.06

\* Indicates change

	Date	Rating	Target Price	Closing Price
4	28-Jan-09	2H	*55.00	51.82
5	2-Apr-09	2H	*62.00	58.39
6	17-Jul-09	Coverage suspended		

	Date	Rating	Target Price	Closing Price
7	7-Dec-09	*2M	*68.00	65.68
8	27-Jan-10	2M	*74.00	75.00

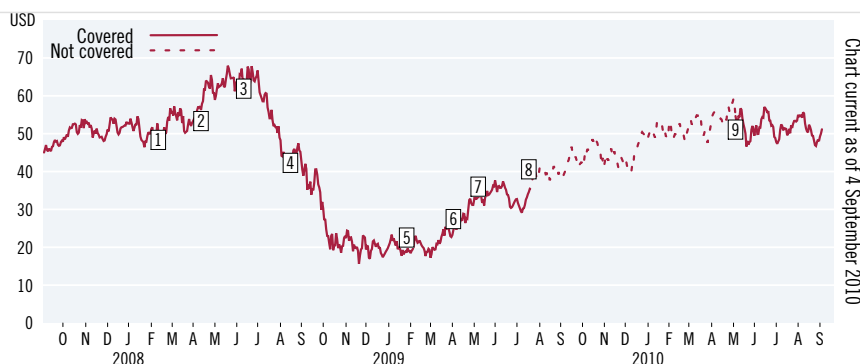
Rating/target price changes above reflect Eastern Standard Time



## Newfield Exploration Co. (NFX)

### Ratings and Target Price History Fundamental Research

Analyst: Robert S Morris  
Covered since May 6 2010



	Date	Rating	Target Price	Closing Price
1	12-Feb-08	2H	*57.00	50.72
2	11-Apr-08	2H	*66.00	56.25
3	11-Jun-08	2H	*74.00	64.52

\* Indicates change

	Date	Rating	Target Price	Closing Price
4	15-Aug-08	2H	*49.00	44.12
5	27-Jan-09	2H	*21.00	18.60
6	2-Apr-09	2H	*26.00	24.50

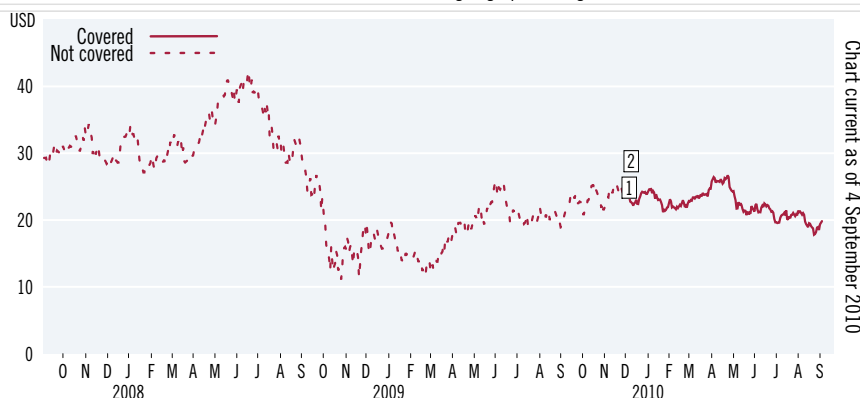
	Date	Rating	Target Price	Closing Price
7	7-May-09	*1H	*42.00	32.96
8	17-Jul-09	Coverage suspended		
9	5-May-10	*1M	*66.00	54.66

Rating/target price changes above reflect Eastern Standard Time

## Nexen Inc (NXY)

### Ratings and Target Price History Fundamental Research

Analyst: Robert S Morris  
Covered since December 7 2009



	Date	Rating	Target Price	Closing Price
1	7-Dec-09	*2H	*27.00	23.48

\* Indicates change

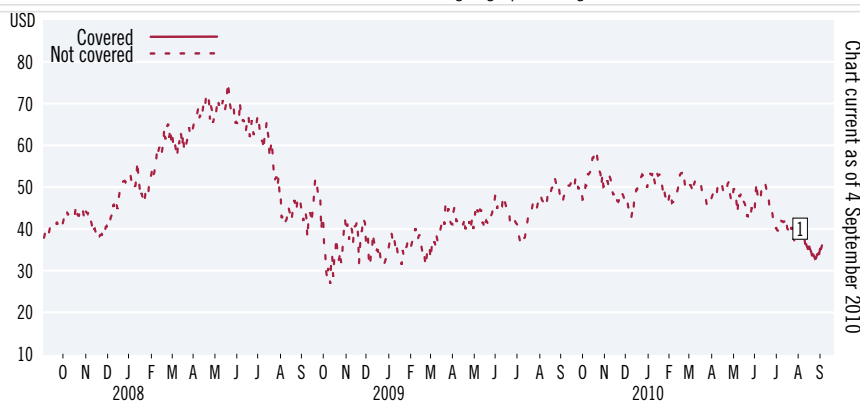
	Date	Rating	Target Price	Closing Price
2	9-Dec-09	2H	*26.00	22.66

Rating/target price changes above reflect Eastern Standard Time

## Range Resources Corp (RRC)

### Ratings and Target Price History Fundamental Research

Analyst: Robert S Morris  
Covered since August 5 2010



	Date	Rating	Target Price	Closing Price
1	4-Aug-10	*2H	*42.00	39.46

\* Indicates change

Rating/target price changes above reflect Eastern Standard Time

## Southwestern Energy Co (SWN)

### Ratings and Target Price History Fundamental Research

Analyst: Robert S Morris  
Covered since December 7 2009

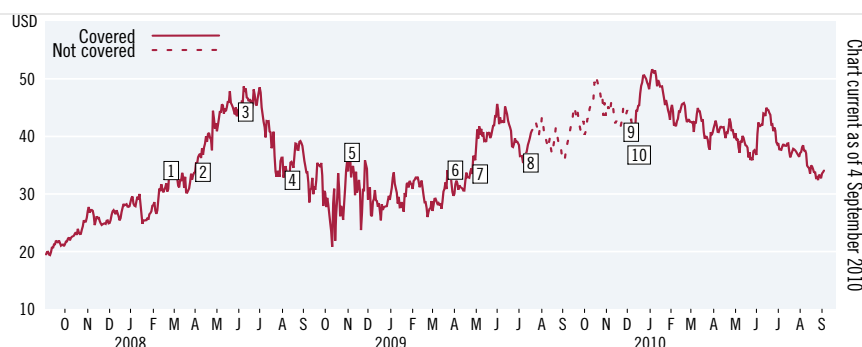


Chart current as of 4 September 2010

	Date	Rating	Target Price	Closing Price
1	27-Feb-08	*2H	*\$35.00	32.81
2	11-Apr-08	2H	*\$41.00	36.80
3	11-Jun-08	2H	*\$52.00	48.33
4	15-Aug-08	2H	*\$41.00	35.18

\* Indicates change

	Date	Rating	Target Price	Closing Price
5	7-Nov-08	*1H	41.00	34.42
6	2-Apr-09	1H	*\$38.00	31.69
7	7-May-09	1H	*\$50.00	40.26
8	17-Jul-09	Coverage suspended		

	Date	Rating	Target Price	Closing Price
9	7-Dec-09	*2H	*\$52.00	42.93
10	17-Dec-09	2H	*\$50.00	45.40

Rating/target price changes above reflect Eastern Standard Time

## Talisman Energy Inc (TLM)

### Ratings and Target Price History Fundamental Research

Analyst: Robert S Morris  
Covered since December 7 2009

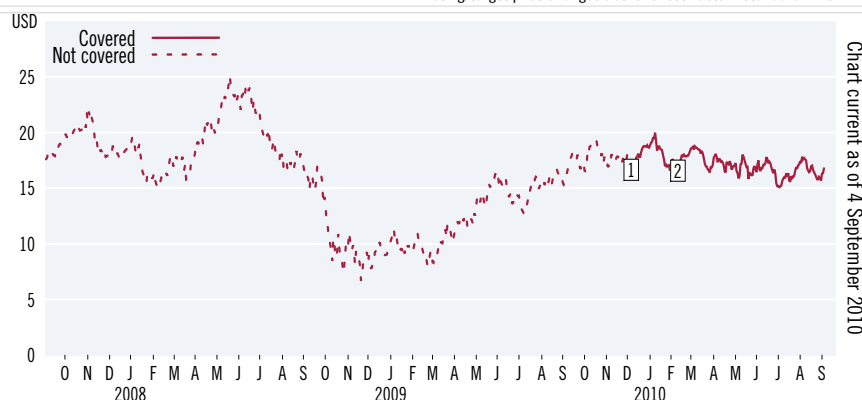


Chart current as of 4 September 2010

	Date	Rating	Target Price	Closing Price
1	7-Dec-09	*1H	*\$23.00	17.21

\* Indicates change

	Date	Rating	Target Price	Closing Price
2	10-Feb-10	1H	*\$21.00	16.74

Rating/target price changes above reflect Eastern Standard Time

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