

September 16, 2009

**Global Energy and Environment Initiative (GEEI)  
Panel Discussion**

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# Natural Gas – At Your Doorstep

Russell Dyk, Executive Director, Commodities

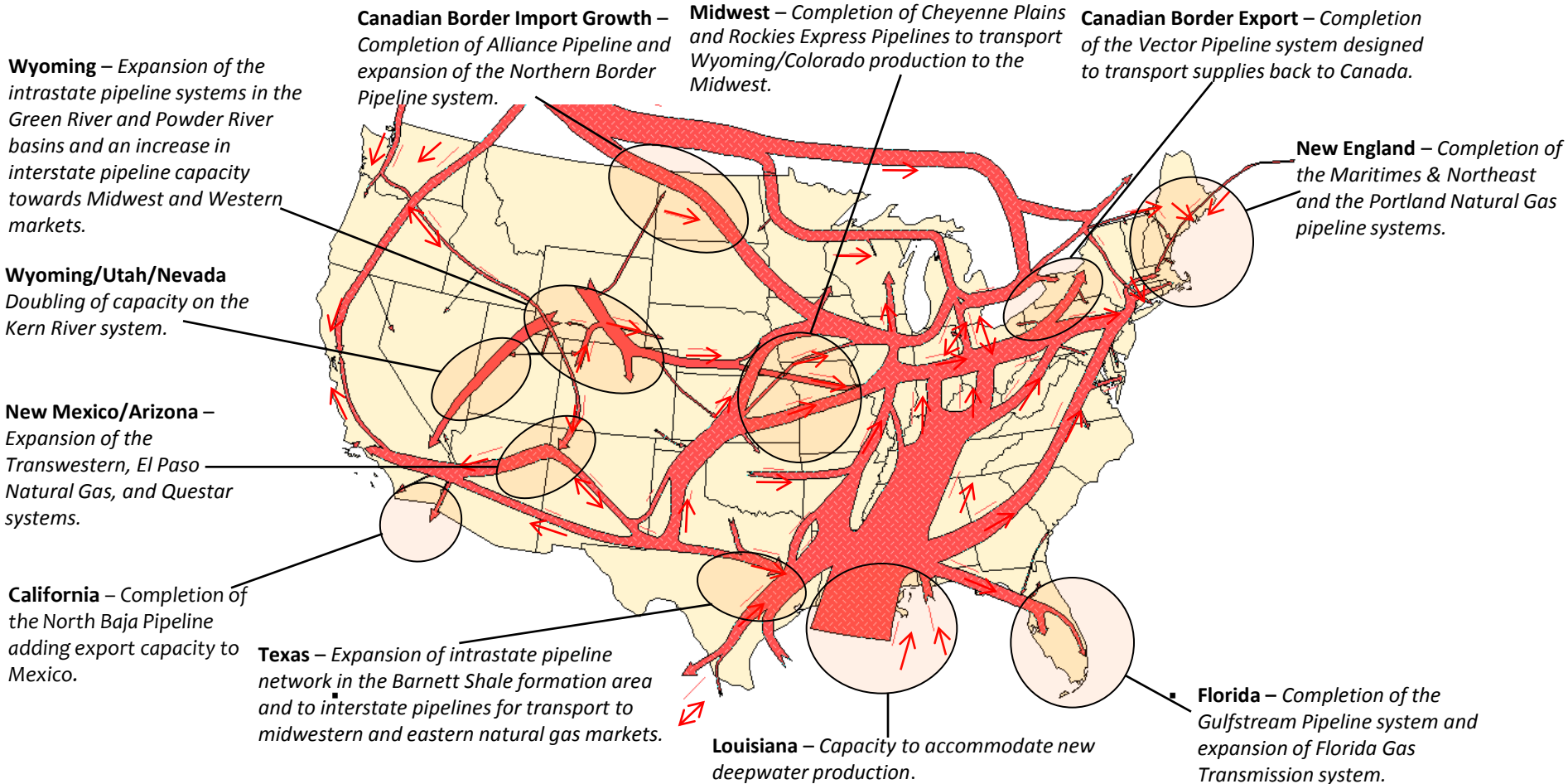
# Introduction

- The Future Looks Bright for Natural Gas Supply
- Funding the Expansion
- A Few (Preventable) Clouds on the Horizon
- It's for Sale; Who Will Buy It?
- Conclusion

# The Future Looks Bright for Supply

## Gas Transportation and Gas Supply Are Bearing Down on Demand

### Gas Transportation

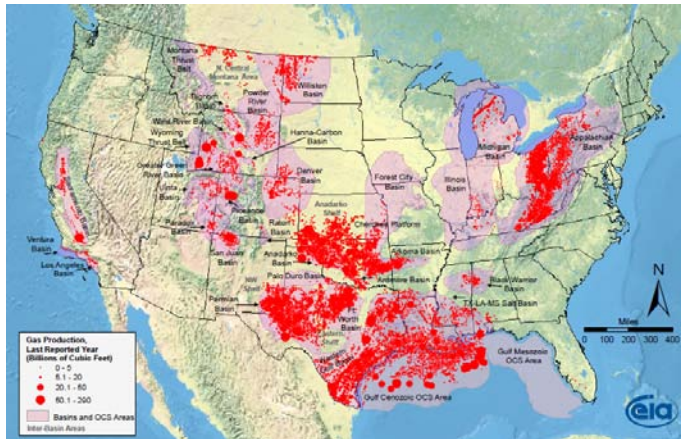


# The Future Looks Bright for Supply

## Technology has both Expanded and Deepened the Geography of Gas Supply

### Conventional Supply Basins

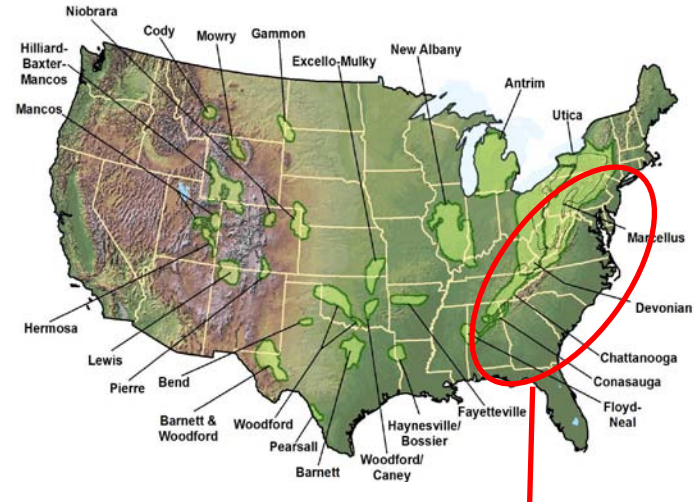
Majority of Current Supply, but Declining



Source: EIA

### Unconventional Supply Basins

Small Percentage of Current Supply, but Future Growth Expected



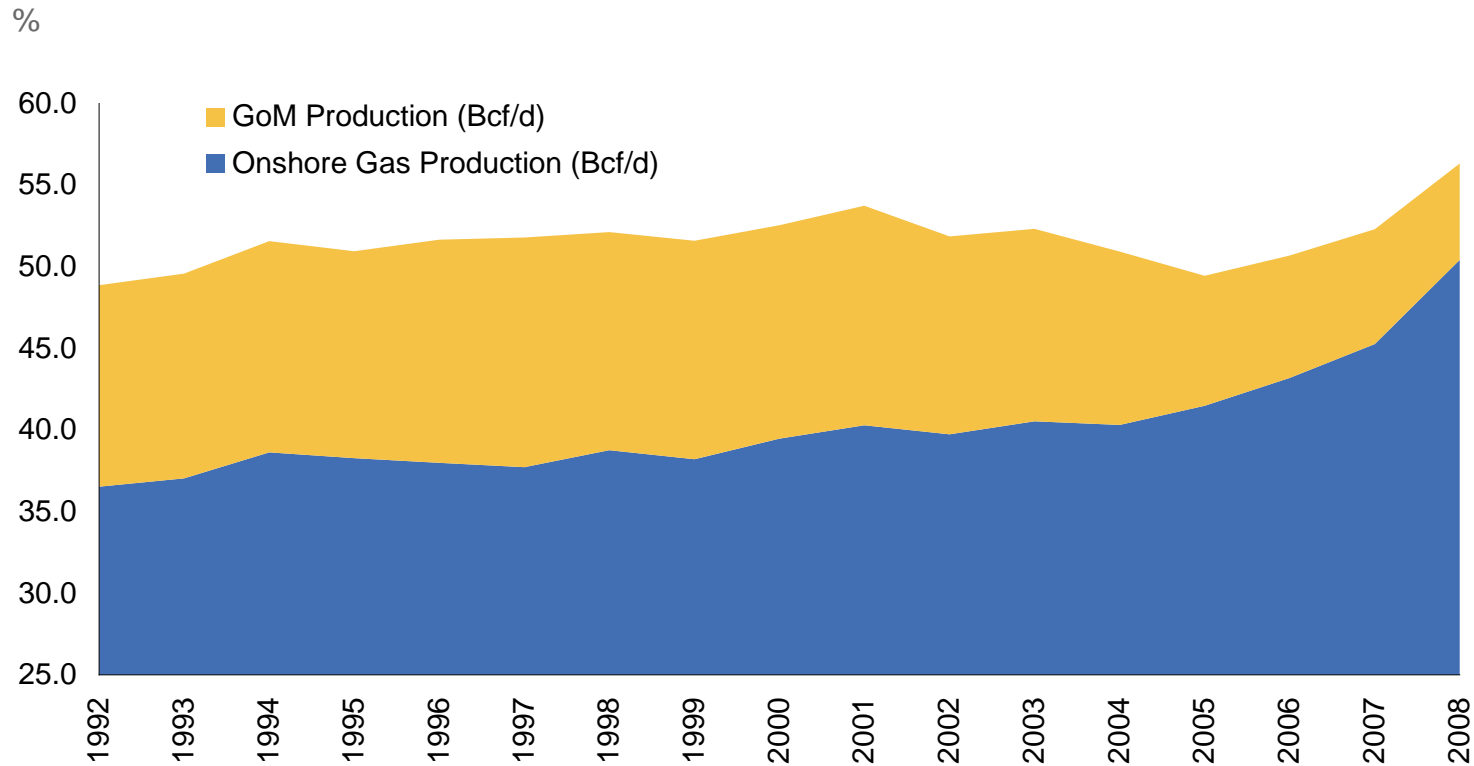
According to the Potential Gas Committee, Atlantic Gas Reserves are 353.5 Tcf, up 285% from their previous report

Source: EIA

# The Future Looks Bright for Supply

## Production “At-risk” is a Diminishing Piece of the Pie

**Offshore Gulf of Mexico Production as a % of Total Production**



Source: EIA

# The Future Looks Bright for Supply

## LNG “Potential” is High

### Current LNG Terminals

mmcf/d

	Current Capacity	Sendout	Utilization (%)	Start Year
Cameron	1,480	-	0.0	2009
<b>Cove Point</b>	1,022	67	6.5	2003 <sup>(1)</sup>
<b>Elba Island</b>	815	402	49.3	2001 <sup>(2)</sup>
<b>Everett</b>	707	452	63.9	1971
Freeport	1,483	23	1.6	2008
Gulf Gateway	494	-	0.0	2005
<b>Lake Charles</b>	1,842	25	1.4	1982
NE Gateway	467	2	0.5	2008
Sabine Pass	2,536	12	0.5	2008
Offshore Marblehead, MA	400			4Q 2009
Sabine Pass Expansion	1,335			3Q 2009
Elba Island Expansion Phase III	1,200			2010
Golden Pass, Sabine Pass, TX	1,935			2010

Under  
Construction

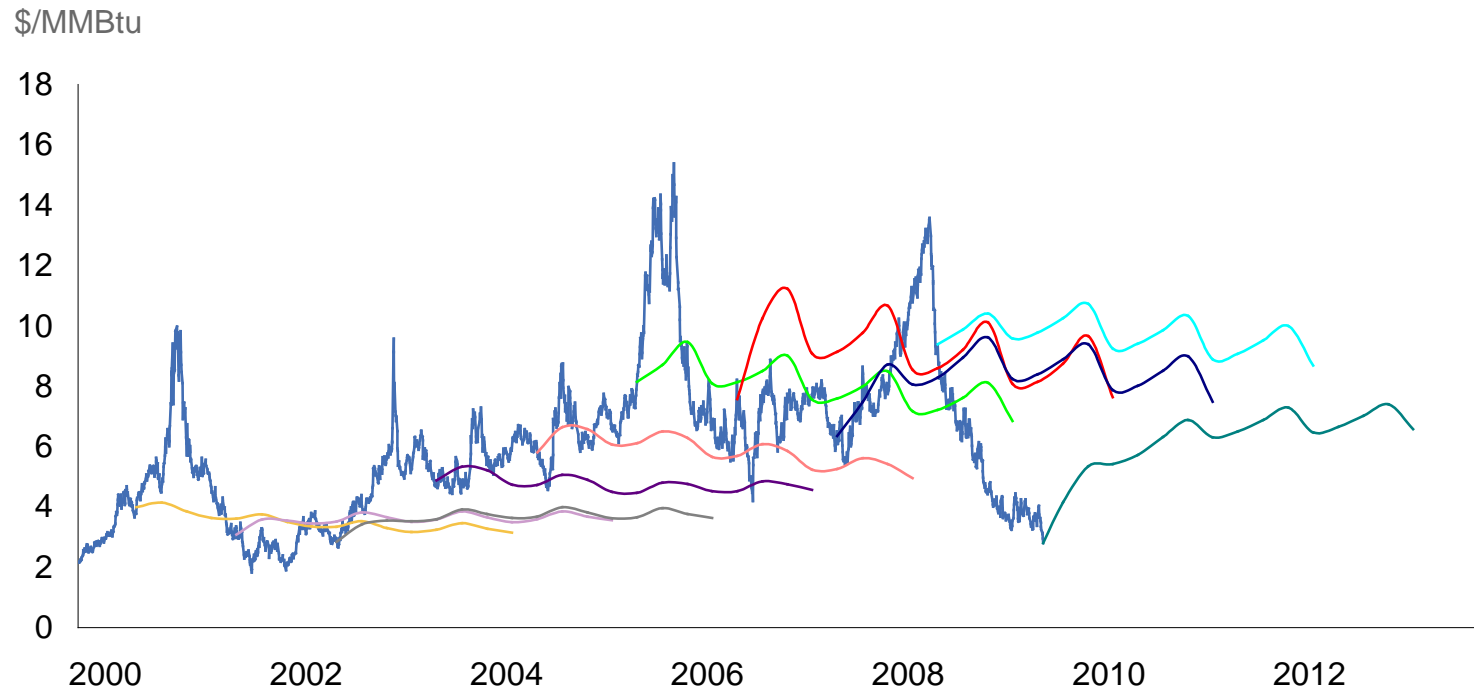
Source: EIA, FERC

- (1) Cove Point Expansion added 801 mmcf/d in 2009  
 (2) Elba Island Expansion Phase II added 367 mmcf/d in 2006

# The Future Looks Bright for Supply

## The Curve Favors Sellers

### Nymex HH Front Month Prices and Historical Forward Curves

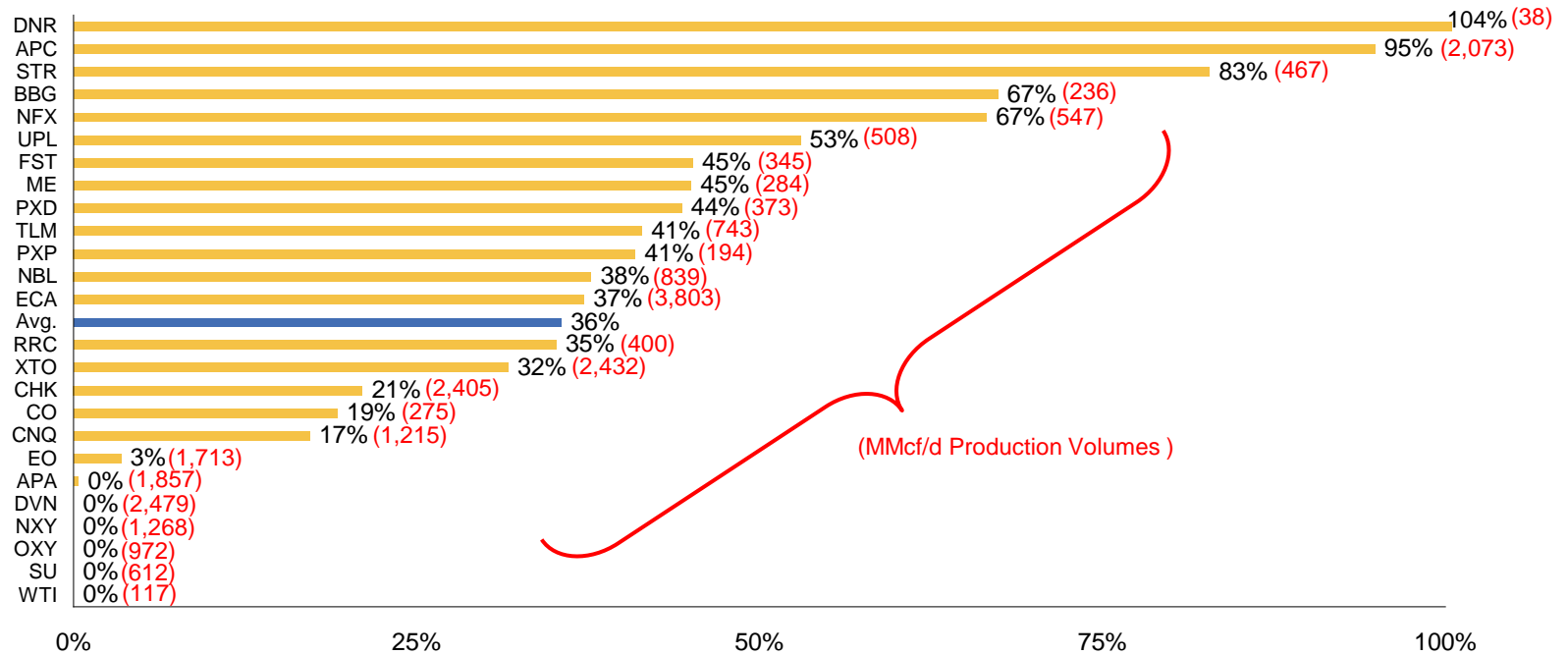


Source: Morgan Stanley Commodities

# The Future Looks Bright for Supply (cont'd)

## The Curve Favors Sellers

**2010 % Estimated Natural Gas Production Hedged**



Source: Company Data, Morgan Stanley Research

# A Few (Preventable) Clouds

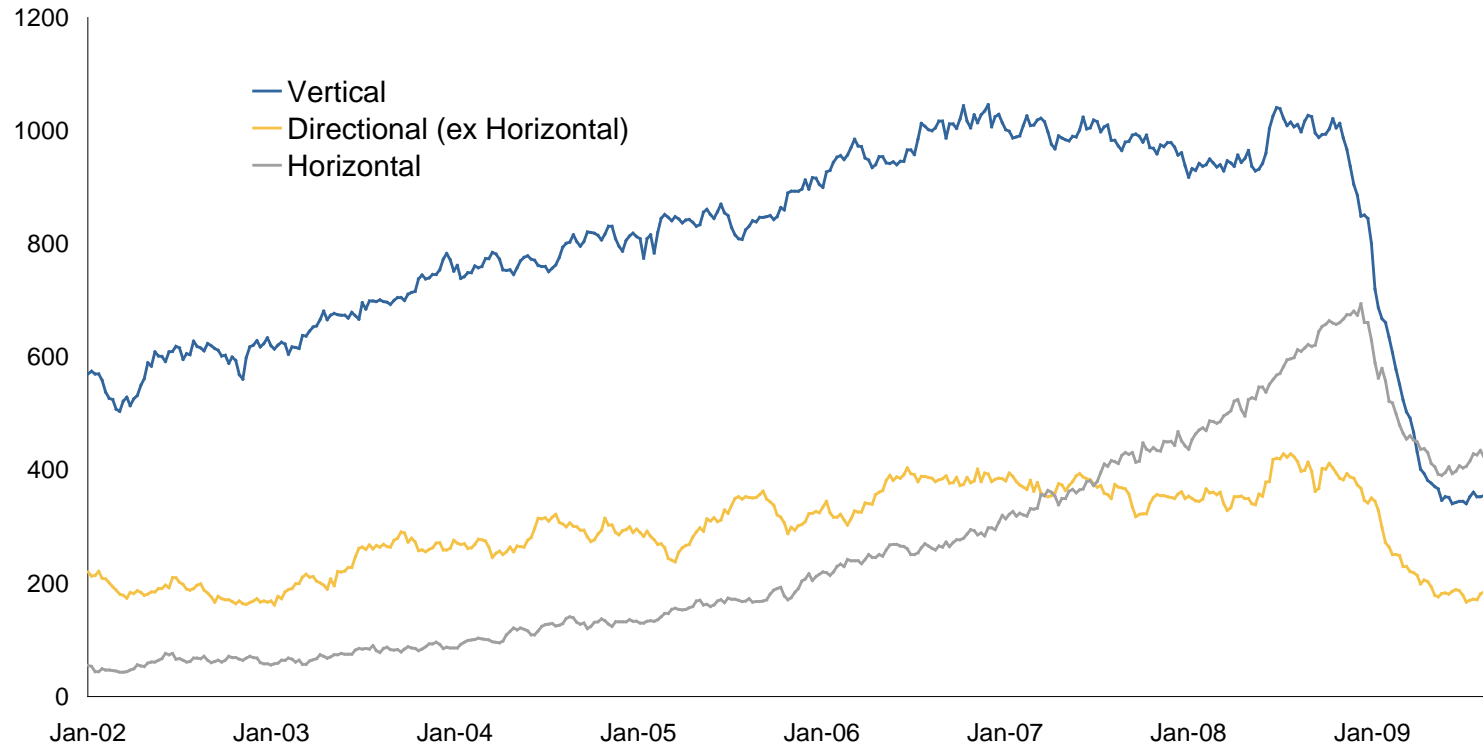
## What Technology Gives, Regulation Can Take Away

- Part of what makes unconventional gas “unconventional” is that new techniques are necessary to exploit it.
- Frac-ing is necessary in shales and tight sands to induce permeability (i.e. the ability of gas and liquids to flow through the rock).
- Some opposition is understandable because a) new technologies can bring unexpected problems and b) some unconventional production is much closer to our “backyards.”
- Regulation should aim to minimize adverse impacts of exploitation, rather than prevent it altogether.
- Nimby-ism might give way to Iimby-ism (i.e. “It’s in my backyard!!!”). In other words, individuals and states can benefit from the greater resource potential

# A Few (Preventable) Clouds

## Conventional Is Still Cool

### Rig Counts

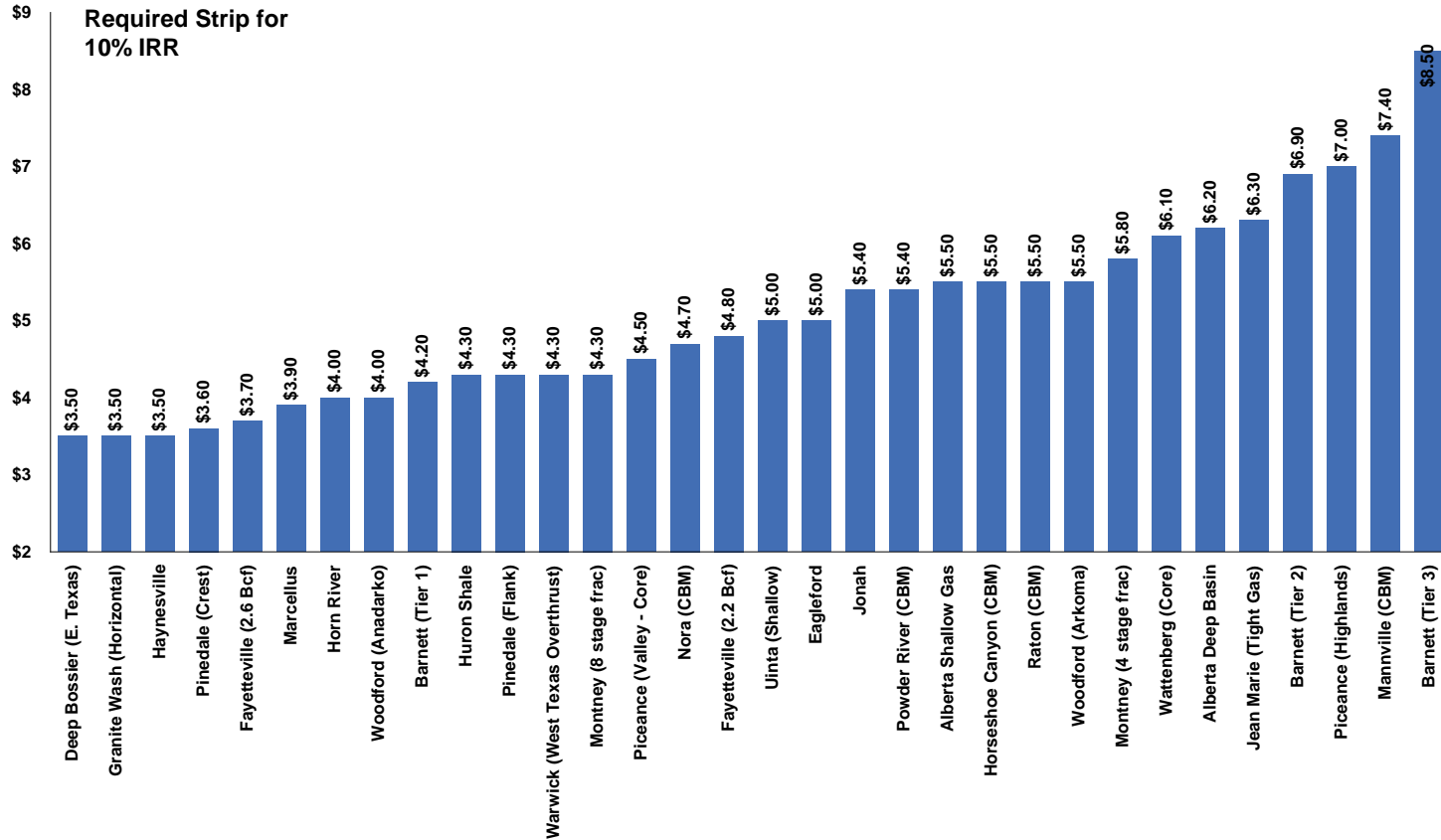


Source: Smith International, Haver, Morgan Stanley Research

# A Few (Preventable) Clouds (cont'd)

## Conventional Is Still Cool

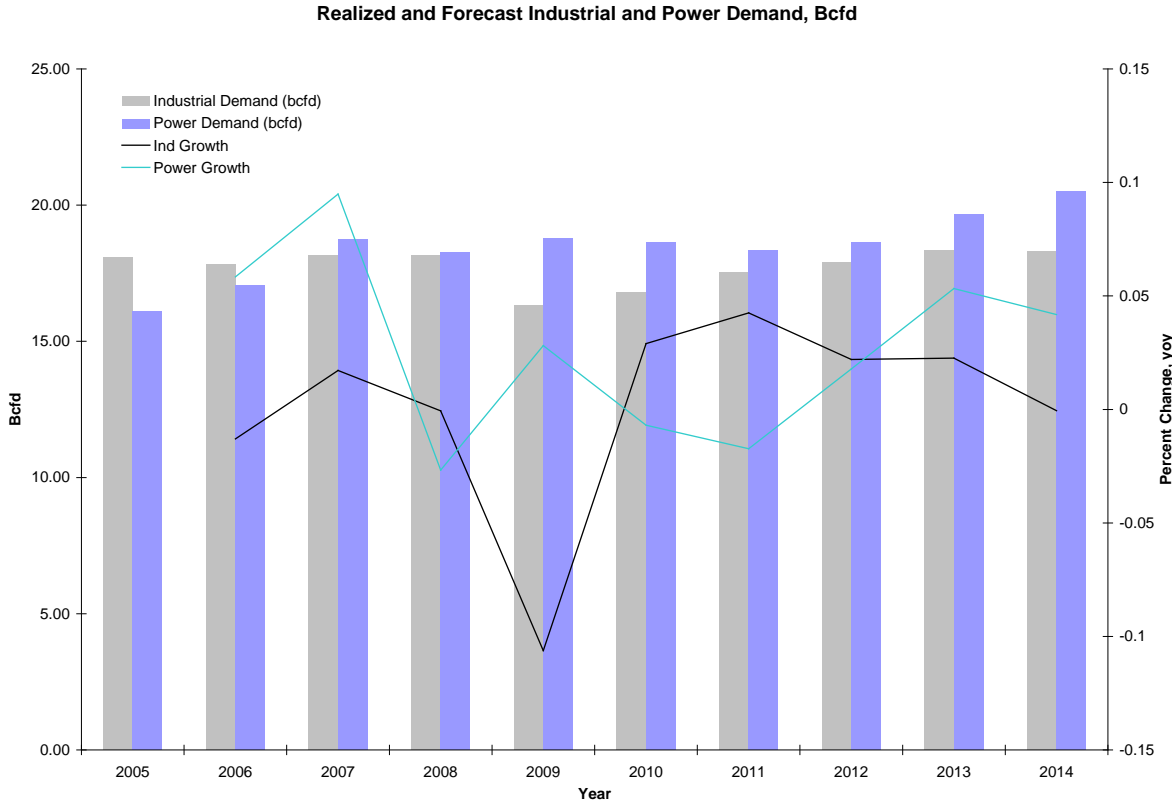
### Basin Economics



Source: Company Data, Morgan Stanley Research

# Who Will Buy It?

## Natural Gas Demand Is Under Threat



Source: EIA, Morgan Stanley Estimates

# Who Will Buy It?

## Some Policy Choices

1. Incentivize industrial demand (and perhaps the weaker dollar will do that, so we will in fact export gas thru fertilizers or chemicals)
2. Incentivize natural gas power demand (cap & trade can do this, although RPS means that renewables will occupy a large share of new generation)
3. Incentivize transportation demand, either thru NGV or electric vehicles – that is, create a “new” source of demand

# Conclusion

- The past decade has seen gas market supply bear down on demand - the system is maturing
- Technology accelerates this trend further, with shale now literally in our backyard. That also brings development issues which need to be intelligently resolved
- We not only have a large domestic resource – the Potential Gas Committee just assessed the resource base at the highest level in the committee's 44-year history - but also a large measure of redundancy (i.e. LNG terminal capacity; demand switchability in gas-fired power)
- The curve incentivizes supply, but what will incentivize demand in a shrinking industrial sector and with RPS "crowding out" gas? Transport is an elegant solution

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# Natural Gas – View From The Capital Markets

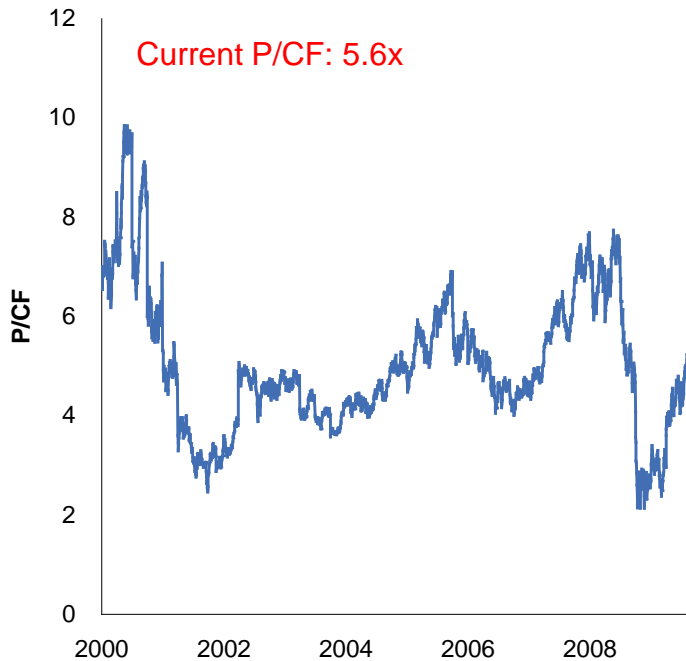
Stephen Richardson, Vice President, Equity Research

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# Capital Markets Have Embraced Unconventional

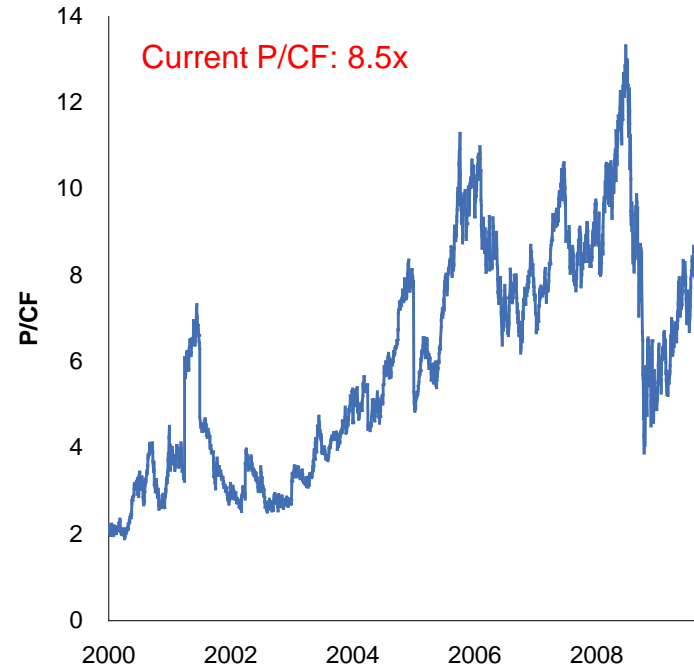
The market has rewarded 'resource players' due to improved repeatability and visibility in re-investment opportunities.

## Diversified Players<sup>(1)</sup>



Source: FactSet, Morgan Stanley Research

## Resource Players<sup>(2)</sup>

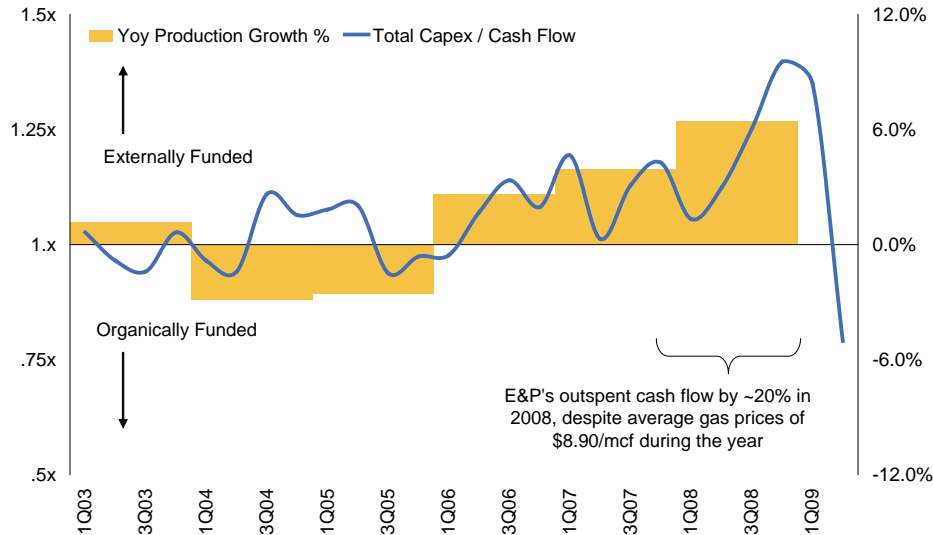


Source: FactSet, Morgan Stanley Research

# How Will Companies Fund?

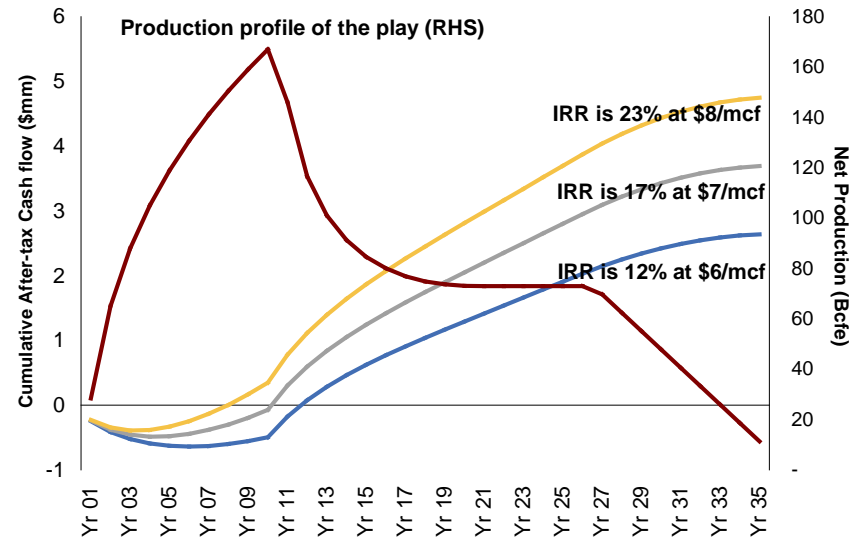
Exploiting unconventional resource, has required significant external funding.

**Total Capex/Cash Flow<sup>(1)</sup>**



Source: Company Data, Morgan Stanley Research

**Generic Unconventional Gas Economics:  
Returns Highly Dependent on Price<sup>(2)</sup>**



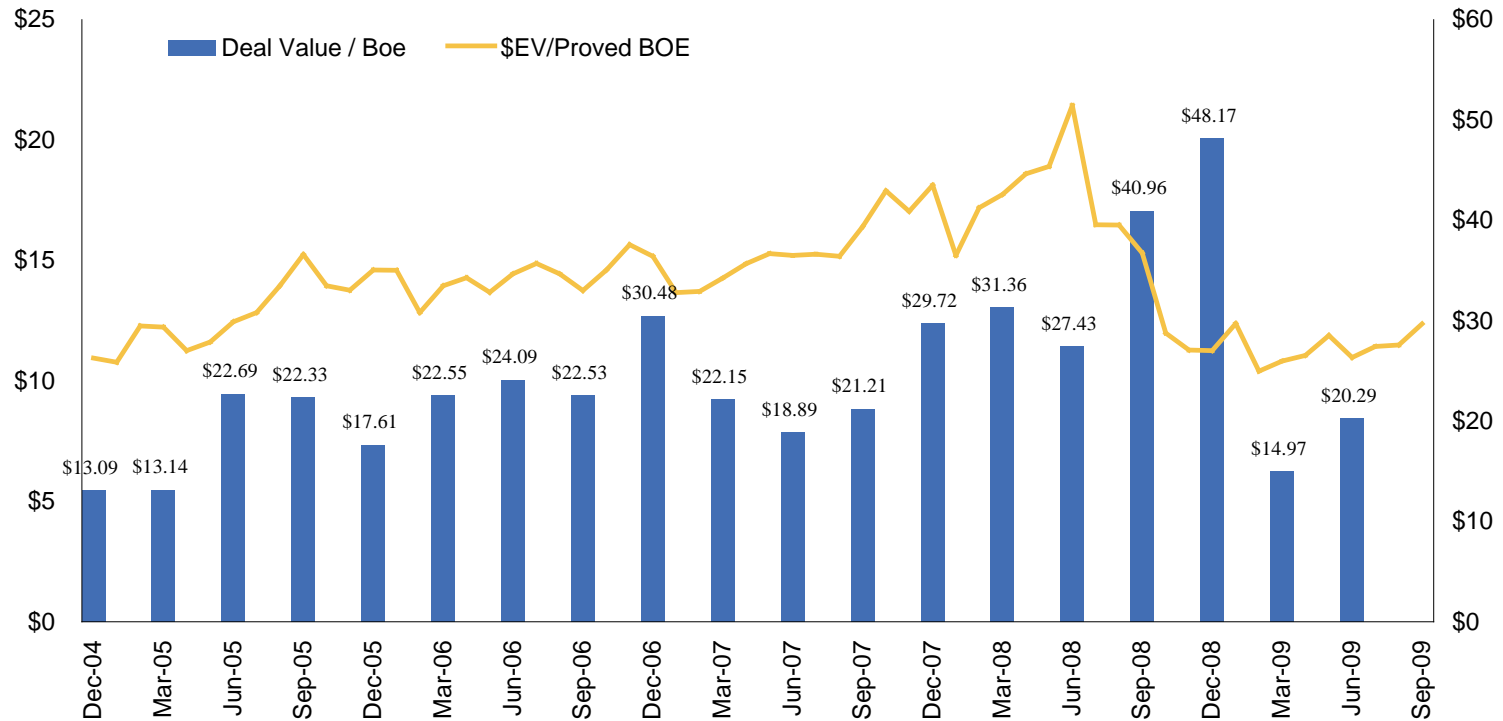
Source: Company Data, Morgan Stanley Research

- (1) Includes DVN, EOG, APA, APC, CHK, & XTO
- (2) Assumes 100k acre program, 40-acre spacing, 50% acreage risk, 10-yr drilling program, Barnett Type curve, 2.3 Bcf EUR, \$2.8m D&C cost, no acreage or midstream cost assumption

# How Will Companies Fund?

## If Public Markets Don't Get It, Private Markets Will

**Public vs. Private Market Valuations**



Source: Company Data, IHS Herold, Morgan Stanley Research

# How Will Companies Fund? (cont'd)

There are alternatives to public market funding of resource development

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## Recent Transactions

Buyer	Seller	Date	Transaction Value (\$MM)	Asset
BG Group	EXCO	2Q 2009	1,304	Haynesville (50.0%)
ENI	Quicksilver	2Q 2009	280	Barnett (27.5%)
StatoilHydro	Chesapeake	4Q 2008	3,375	Marcellus (32.5%)
BP	Chesapeake	3Q 2008	1,900	Fayetteville (25.0%)
BP	Chesapeake	3Q 2008	1,750	Arkoma (100.0%)
PXP	Chesapeake	3Q 2008	3,300	Haynesville (20.0%)

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Source: Company Data, Morgan Stanley Research

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	Count	% of Total	Count	% of Total IBC	% of Rating Category
<b>Overweight/Buy</b>	<b>783</b>	<b>34%</b>	<b>238</b>	<b>37%</b>	<b>30%</b>
<b>Equal-weight/Hold</b>	<b>1062</b>	<b>46%</b>	<b>316</b>	<b>49%</b>	<b>30%</b>
<b>Not-Rated/Hold</b>	<b>26</b>	<b>1%</b>	<b>3</b>	<b>0%</b>	<b>12%</b>
<b>Underweight/Sell</b>	<b>434</b>	<b>19%</b>	<b>88</b>	<b>14%</b>	<b>20%</b>
<b>Total</b>	<b>2,305</b>		<b>645</b>		

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Benchmarks for each region are as follows: North America - S&P 500; Latin America - relevant MSCI country index or MSCI Latin America Index; Europe - MSCI Europe; Japan - TOPIX; Asia - relevant MSCI country index.

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