

U.S. Natural Gas Medium-Term Outlook

The Obvious Cure to Low Natural Gas Prices?

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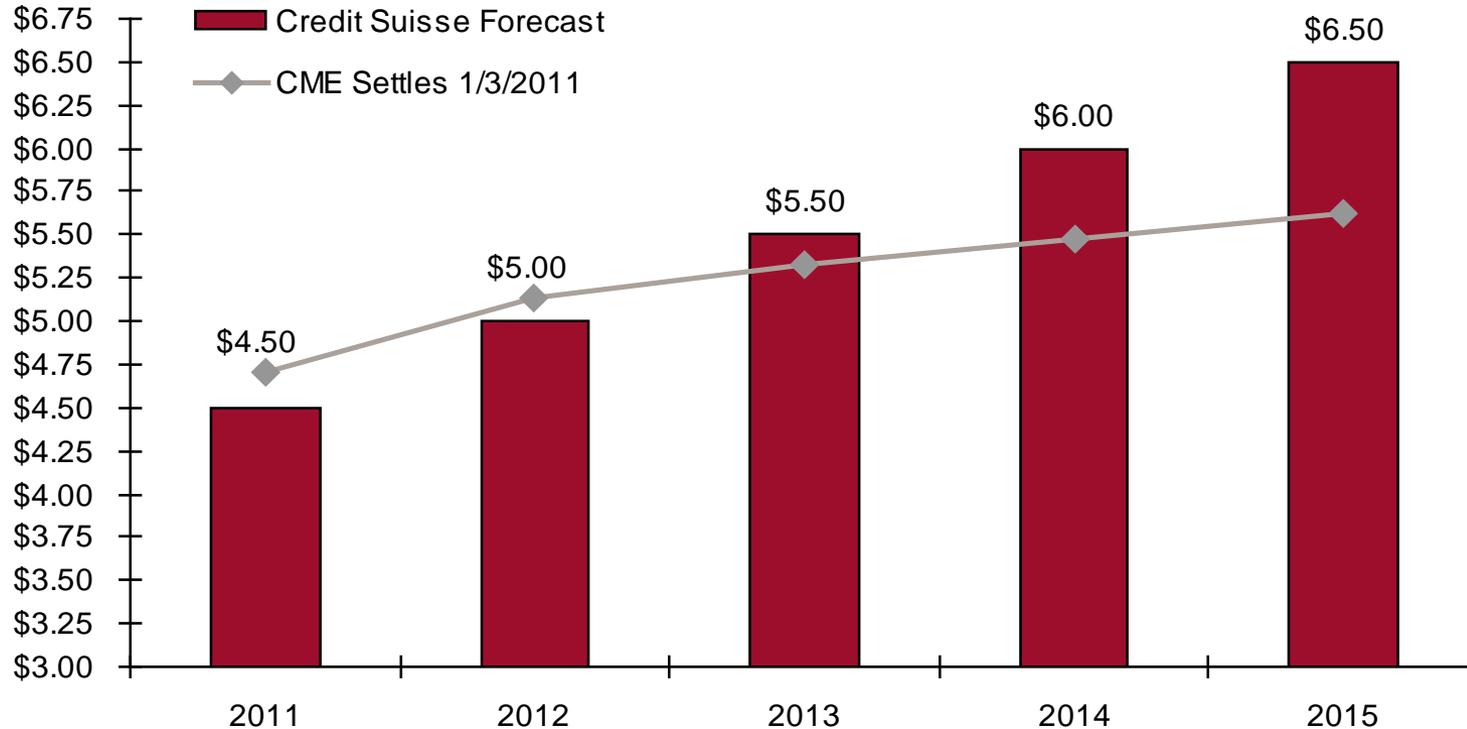
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An Industry Geared Toward Growth...

- **Over the medium term, we assume that the ‘heavy lifting’ (in terms of rebalancing the market) will come from consumers rather than producers.** In fact, the willingness or inability of producers to curtail natural gas production suggests that the current ‘bust-cycle hangover’ will persist until such time that demand growth will tighten the balance sufficiently.
- **Fortunately for producers, the capital investment required for large-scale natural gas demand growth has already been made ...** Although total U.S. consumption has stagnated over the past decade, a singularly important exception occurred in the electric power sector with the unprecedented development of new gas-fired generation.
- **However, supply/demand balances are only expected to tighten gradually over our forecast period.** This dynamic will translate into an extended period of low prices for U.S. natural gas, in our view. In fact, for the initial years of our medium-term forecast period, the fundamental story is simply not compelling for price recovery. Toward the middle of our forecast period, or around 2013, we think that the coincident growth of industrial and electric power demand (with a slight boost from residential demand) will finally begin to tighten the balances enough to allow prices to rise. Finally, by the end of our forecast period, or 2015, we expect that new environmental rules will enable natural gas to begin to make important inroads into further displacing coal as the dominant electric generation fuel.

U.S. Natural Gas Medium-term Forecast

(\$/mmbtu)

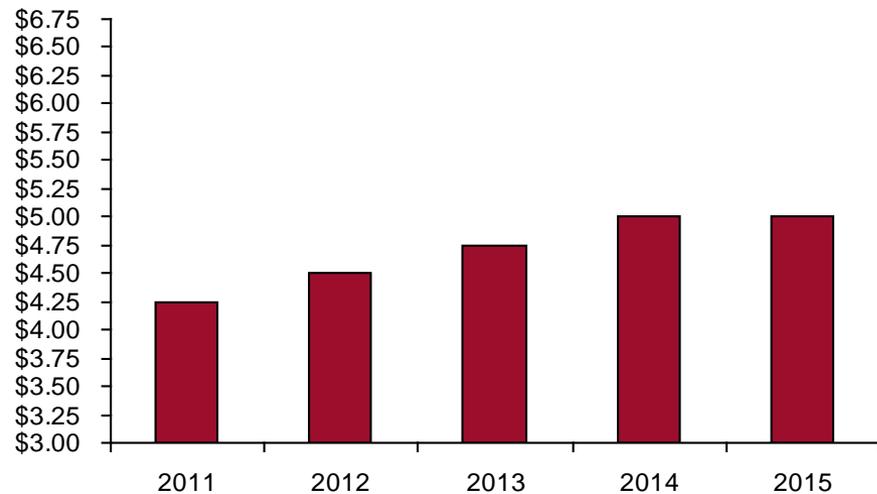


Source: CME, Credit Suisse estimates

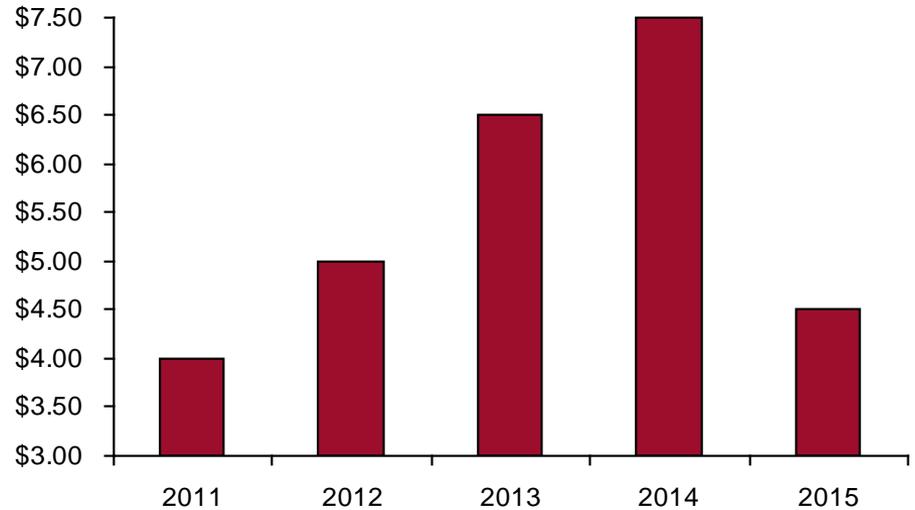
- Based upon our view that substantial low-cost reserves can be called upon quickly to meet growing demand, we expect U.S. natural gas prices to remain largely range-bound, gradually rising from \$4.50 in 2011 to \$6.50 by 2015.

Alternative Price Scenarios?

Consensus View on Natural Gas Prices?



Higher volatility more likely...



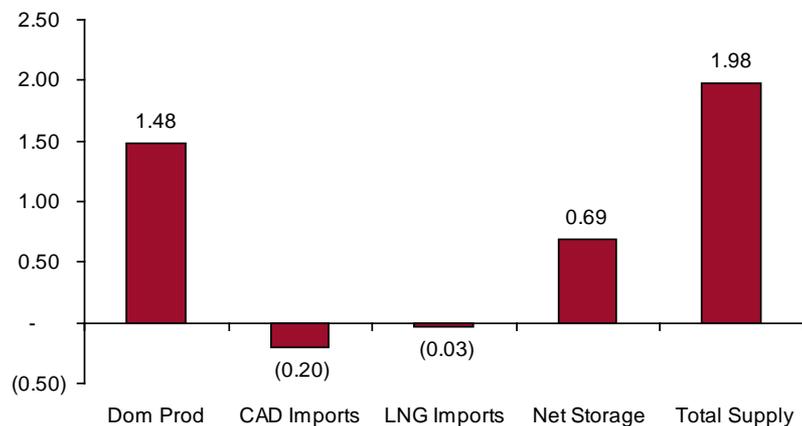
Source: Credit Suisse estimates, \$/mmbtu

- The consensus view is that prices will remain flat at \$5.00 over the medium-term. However, we acknowledge that a more probably scenario suggests slightly more volatility. **A faster-than-anticipated ramp-up in demand suggests a spike in prices around 2013-2014, which would inevitably be met by a rise in low-cost supplies.**

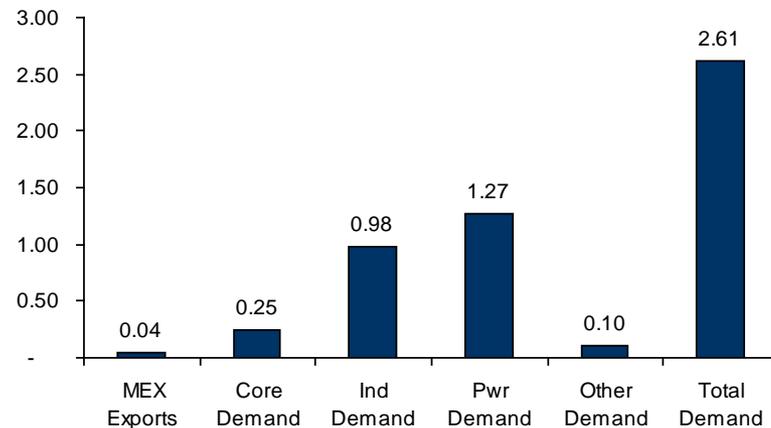
U.S. Supply and Demand Balances

U.S. Supply/Demand Balances, Annual Averages for Key Data, Bcf/d

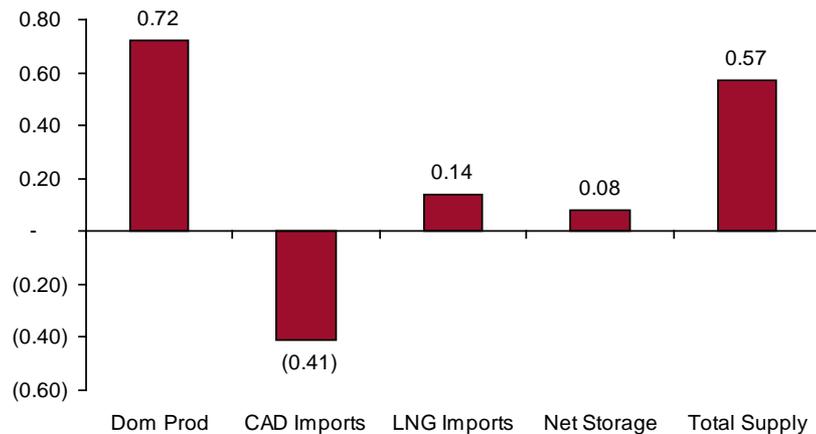
2010 vs. 2009 Supply



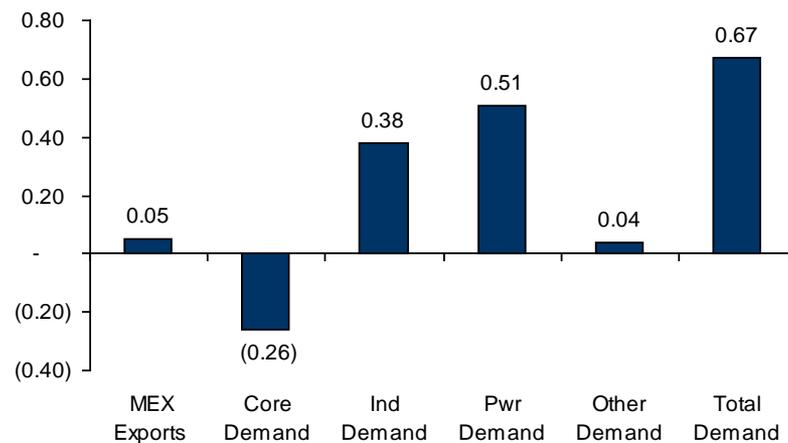
2010 vs. 2009 Demand



2011 vs. 2010 Supply



2011 vs. 2010 Demand



Source: EIA, Credit Suisse estimates

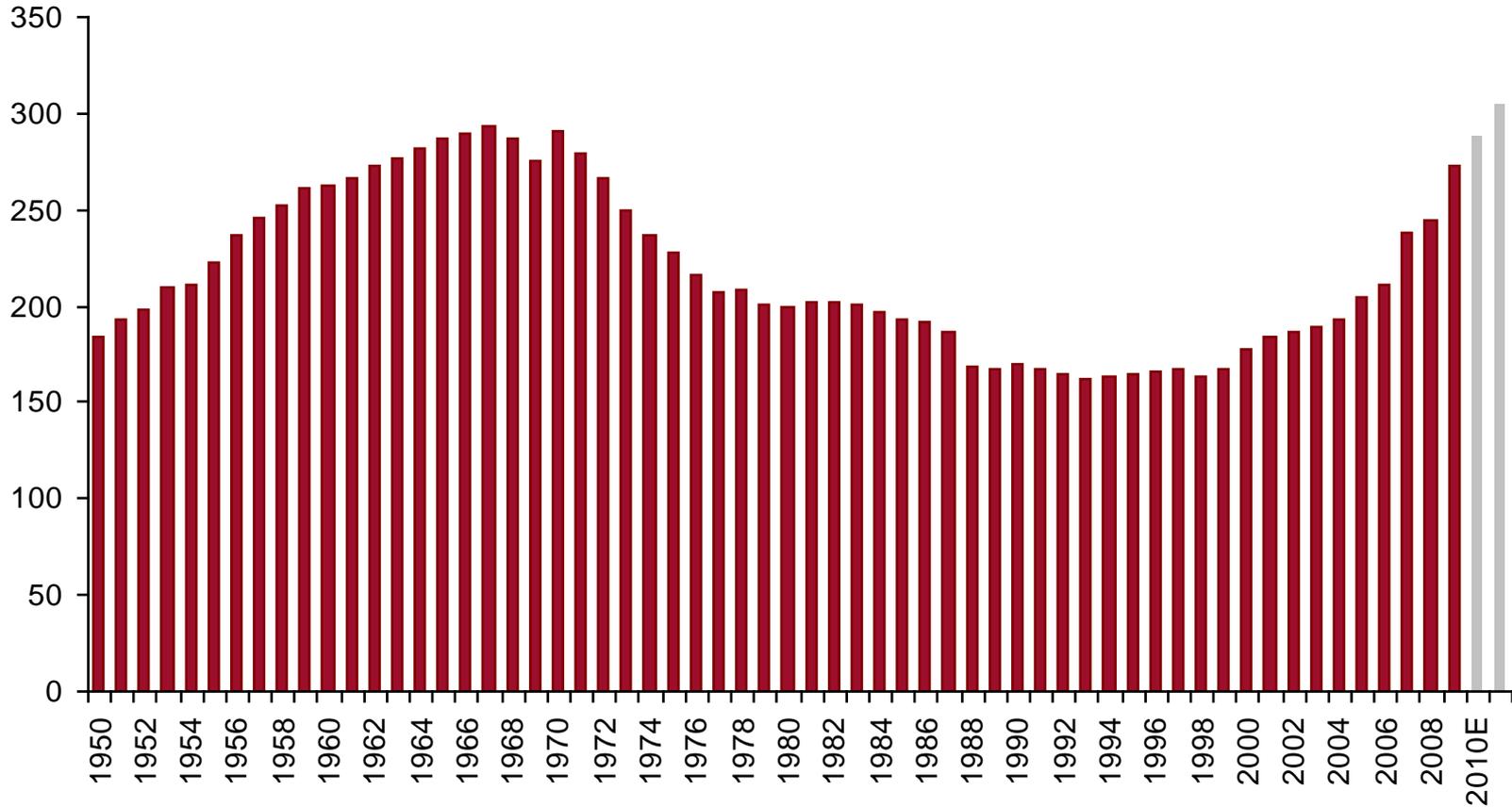
U.S. Supply Outlook

Does the Market Reflect an Orderly Growth in Supply?

- **Over the last decade, U.S. proved reserves of natural gas have grown at the fastest clip in more than a half-century, reversing nearly a three-decade-long trend of declines.** With nearly 245 Tcf of proved reserves and an additional 2,119 Tcf of unproved resources, the U.S. now appears to have the equivalent of 100 years of supply.
- **This sudden reversal from being a resource-poor to a resource-rich nation, however, has come at a cost ...** This was first shouldered by consumers who paid the price for having to call upon higher cost resources as more affordable conventional wells were depleted (which in turn funded the development of shale gas). And now it is being borne by producers whose profitability is squeezed by low prices resulting from the unanticipated growth of shale production during a period of relatively weak demand.
- **However, the expansive growth of the U.S. reserve base might rid the industry of these damaging 'boom and bust' cycles, conceivably paving the way to a more orderly market with producers moving closer to a 'just in time model' of supply delivery.** Such a transformation would encourage a less volatile price environment, enabling large-scale demand growth. Indeed, this is exactly the scenario we envision will begin to take hold during our five-year medium-term outlook period.

Reversing the Declining Trend in U.S. Gas Supply?

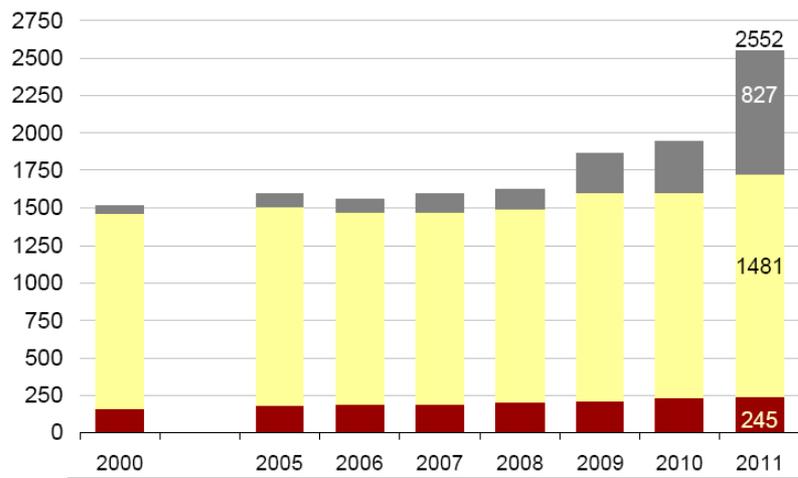
U.S. Proved Reserves of Natural Gas, Tcf



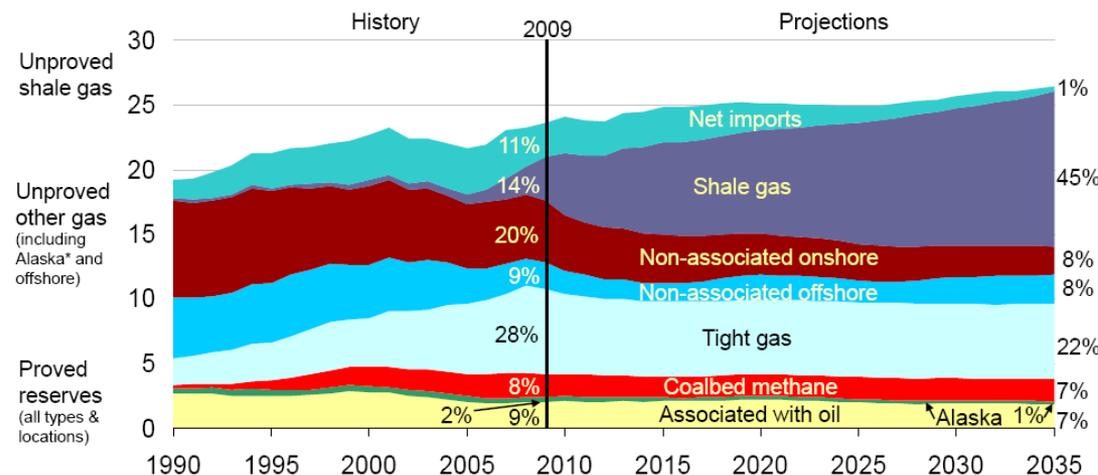
Source: EIA, Credit Suisse estimates

EIA Becomes a “Shale Believer”

U.S. Dry Gas Resources (Tcf)



Source: EIA



Source: EIA

- EIA substantially increased its estimate for technically recoverable unproved shale gas reserves by +480 Tcf to 827 Tcf. The rise in unproved recoverable reserves is explained by increased well productivity in newer shale plays due in part to improvements in drilling technologies and reductions in drilling-related costs. **In EIA’s view, the growth in shale reserves will drastically change the overall makeup in future production and is projected to account for nearly 45% of the overall mix by 2035.**

A Wicked Hangover...Delayed Reaction Extends Bust Cycle

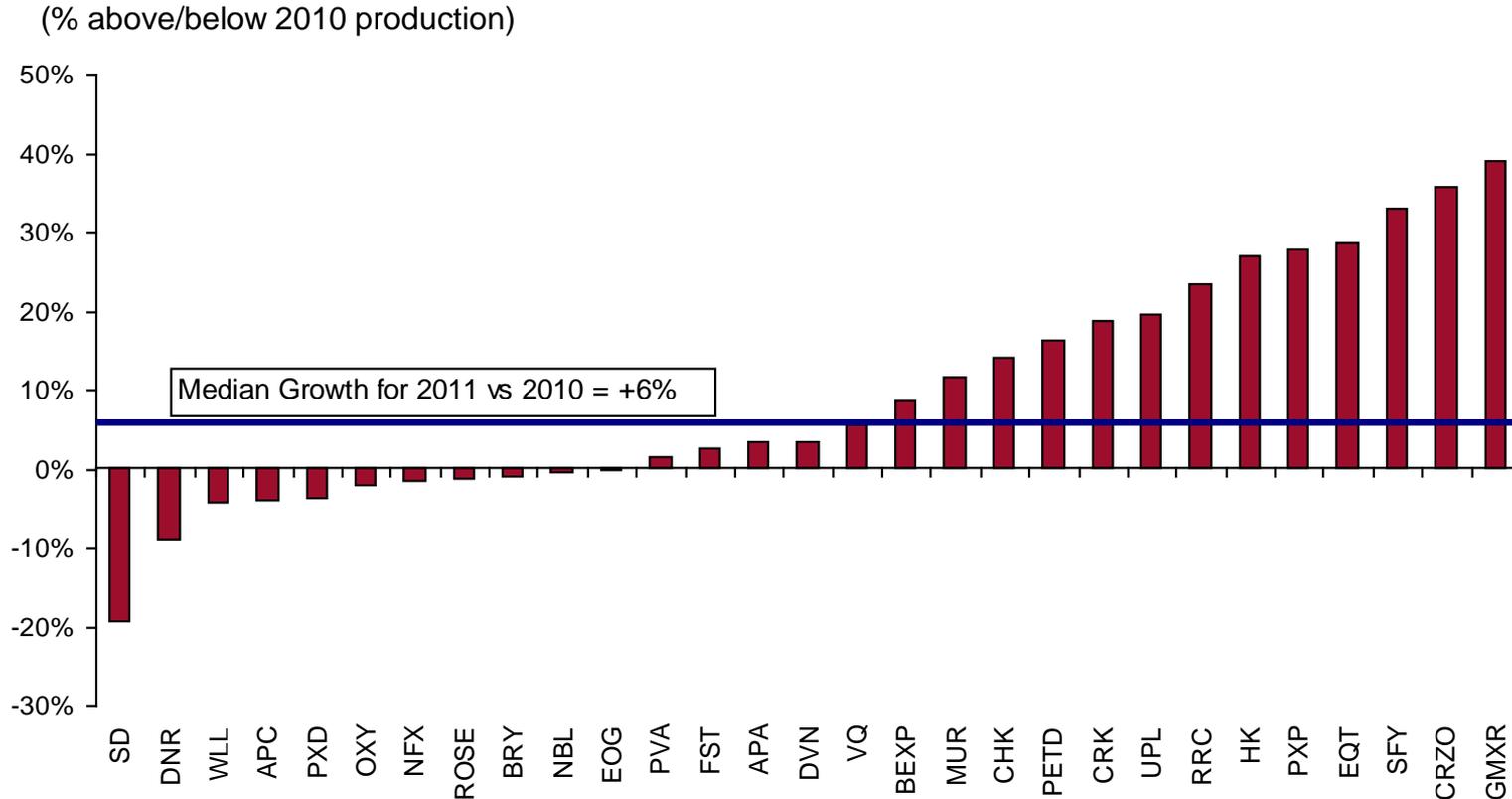
U.S. Natural Gas Rigs

State	Quarterly Averages												
	Current 12/31/10	W-o-W	Q4 TD	Q3	Q2	Q1	Q4 09'	Q4vQ3 Δ	Q4vQ3 % Δ	Q4v1H10 Δ	Q4v1H10 % Δ	YoY Δ	YoY% Δ
TX	344	(5)	354	382	373	350	270	(29)	-7%	(8)	-2%	84	31%
LA	149	2	153	161	172	163	141	(8)	-5%	(14)	-8%	11	8%
PA	116	(3)	127	107	98	92	82	20	19%	32	33%	44	54%
OK	116	1	118	116	116	102	74	2	2%	9	8%	43	58%
CO	60	1	60	56	49	42	38	5	8%	15	34%	22	57%
AR	34	1	36	37	43	41	36	(0)	-1%	(5)	-13%	0	1%
WY	31	(1)	33	34	31	32	37	(1)	-3%	1	2%	(4)	-11%
WV	27	0	24	24	29	28	26	(1)	-2%	(5)	-18%	(2)	-9%
OH	13	0	12	11	10	9	11	2	16%	3	29%	1	12%
UT	11	0	9	11	11	10	5	(2)	-18%	(1)	-11%	4	74%
NM	7	(1)	10	9	8	5	11	1	13%	3	42%	(1)	-9%
Others	21	(2)	26	29	27	28	27	(2)	-9%	(2)	-6%	(1)	-3%
Total US	929	(7)	961	985	970	902	759	(24)	-2%	25	3%	202	27%

Source: Smith International, Credit Suisse estimates

- **Certainly it is not much of an exaggeration to classify the current pricing environment as a 'bust cycle' for producers.** Without the significant inducement of pre-existing hedges, producers would be forced to trim operations.
- **So why do producers continue to drill?** Notwithstanding hedges that were executed in a more favorable price environment, there are three other factors that have encouraged drilling this year, including lease retention agreements (especially in the Haynesville Shale), joint venture arrangements (that require and fund a specified level of drilling), and the continued willingness of Wall Street to provide capital based on a production growth story.

U.S. Producers Are Committed to Production Growth in 2011...

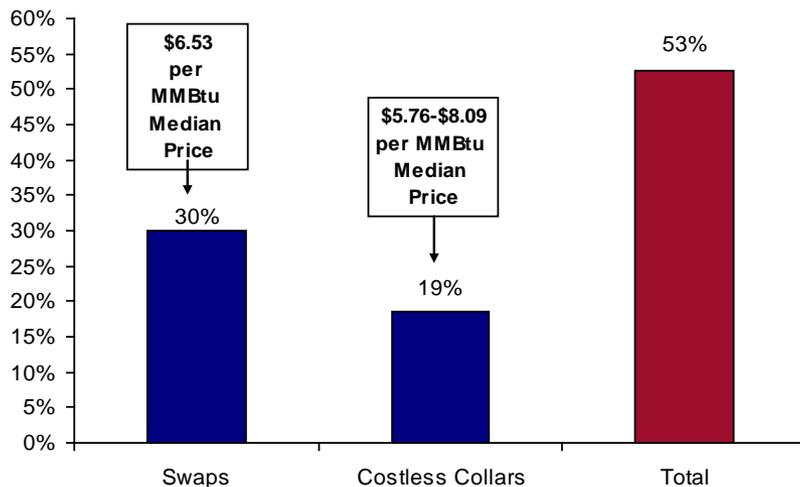


Source: Credit Suisse Equity Model, Credit Suisse Equity Research, Jonathon Wolff, Anish Patel, Christopher Hoffman, and David Lee

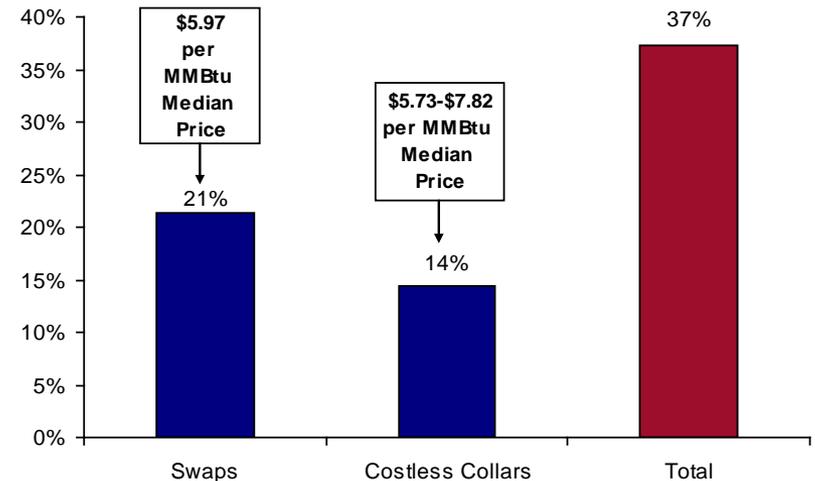
- Credit Suisse Equity Research projects a 6% median growth rate for U.S. natural gas producers within their coverage universe.

Natural Gas E&P's Average Hedge Positions

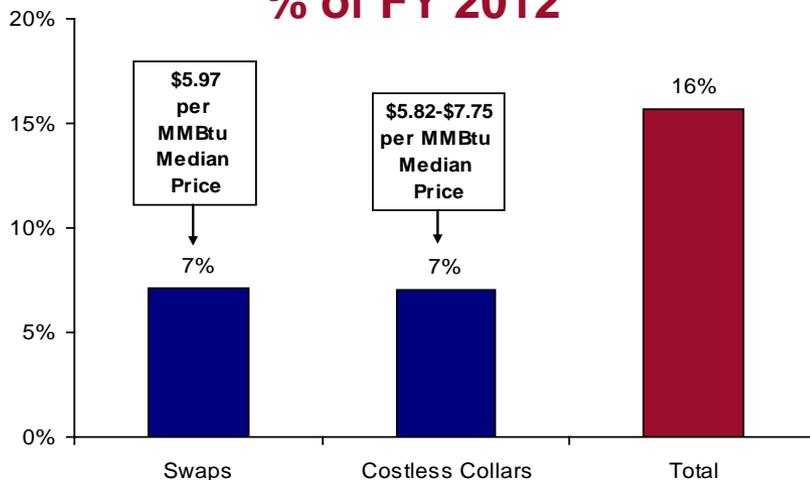
% of FY 2010



% of FY 2011



% of FY 2012



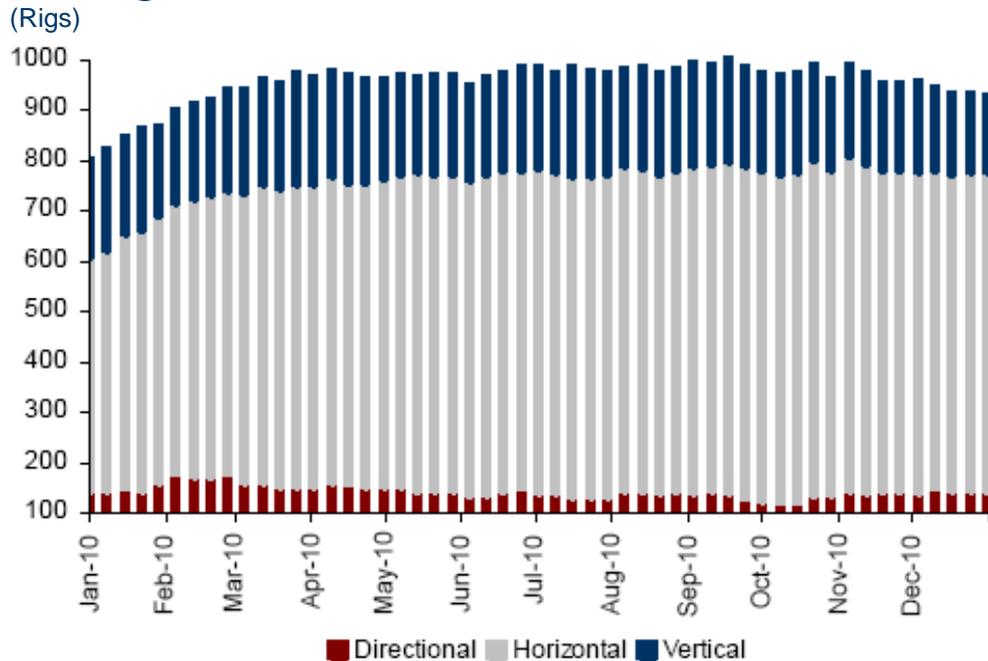
➤ 2011 hedge positions growing, but still below 2010 levels.

➤ Only 37% of producers currently hedged at an average price of \$5.97/Mmbtu.

➤ With less than 40% of production hedged in 2011, producers are much more exposed to price fluctuations.

Source: Credit Suisse Equity Research "EIA Reports 3 Bcf Fill" on November 18, 2010

U.S. Rig Count Poised for a Correction?

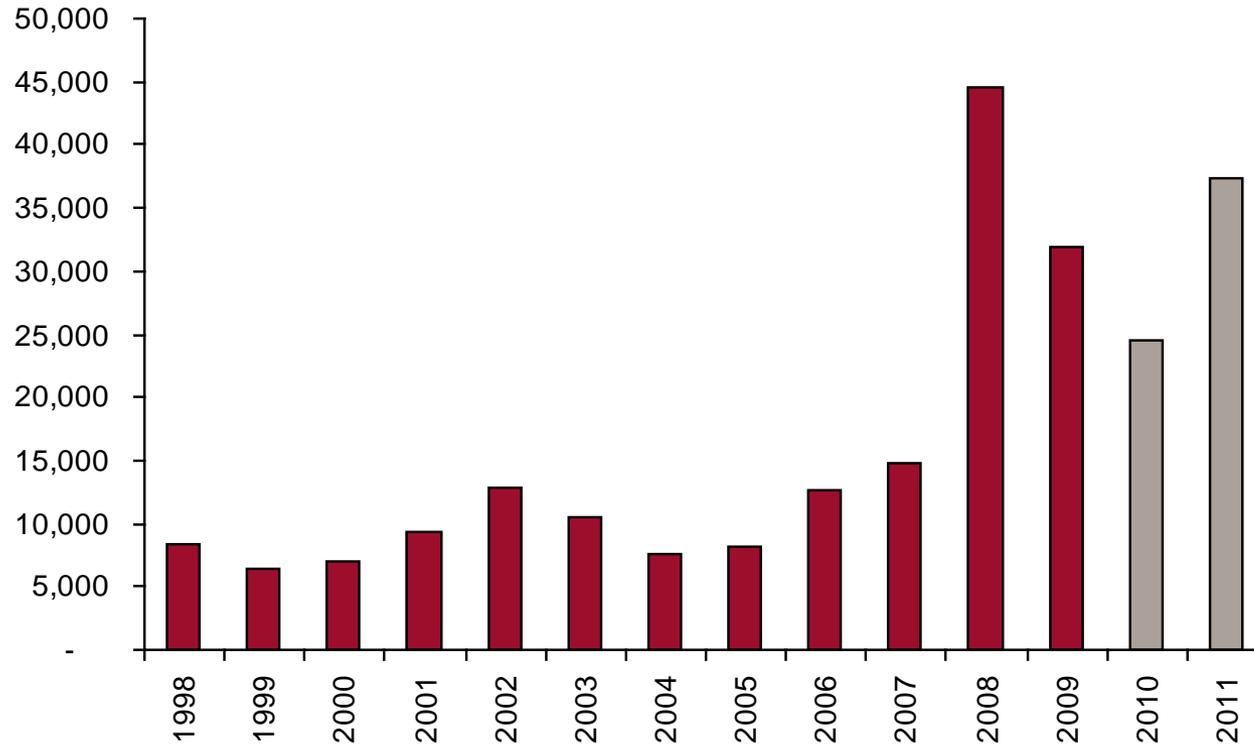


Source: Smith International, Credit Suisse estimates

- Horizontal rigs have been added at a relatively steady pace while vertical and directional rigs have lagged. **In fact, the act of swapping out mostly vertical or directional rigs in favor of horizontal rigs seems to suggest more of an efficiency play by producers rather than a slowdown in drilling.**
- **Further complicating the problem of timing the downturn in domestic production is the possibility that service bottlenecks have led to a sizeable backlog of wells not yet tied into the system.** We think that the number of uncompleted wells has risen materially, which in turn has prompted more than a few announcements of forced production deferrals.

Problem of Stranded Supplies Largely Eliminated...

Natural Gas Pipeline Capacity Additions (Mmcf/d)

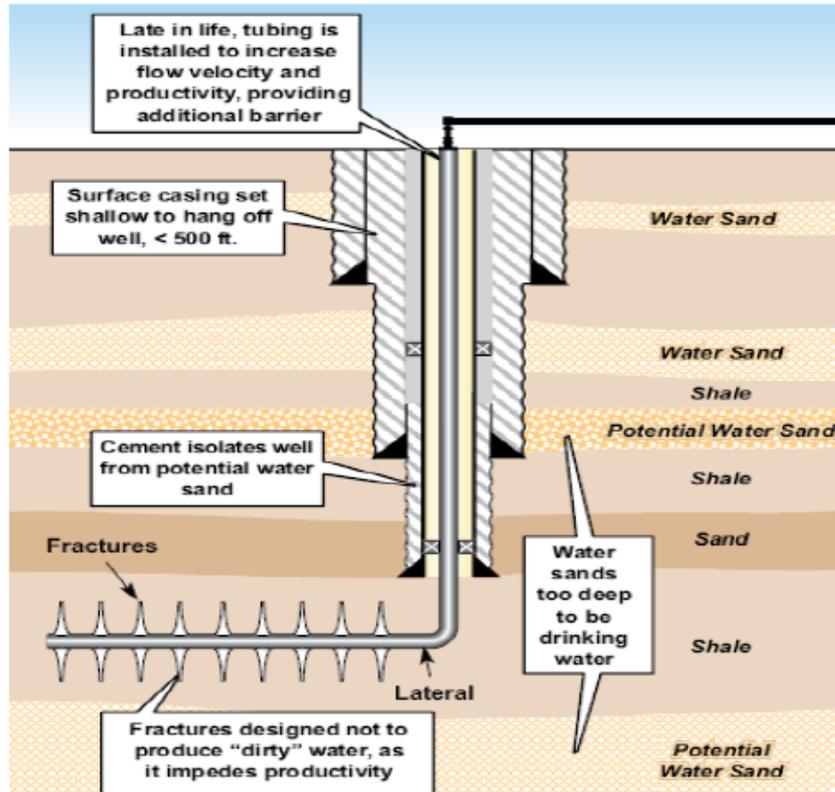


Source: EIA

- We note that, since 2008, the industry has added more than 100 Bcf/d of new pipeline capacity, representing the greatest amount of construction activity in more than two decades. The push for access to new supply sources has led to rapid infrastructure growth in relatively undeveloped production regions. **This “de-bottlenecking” of the pipeline grid is yet another factor that should help eliminate the chronic boom-to-bust cycles in the industry.**

Shale Drilling Moratorium – Specter of Future Drilling?

Fracturing of a Shale Well

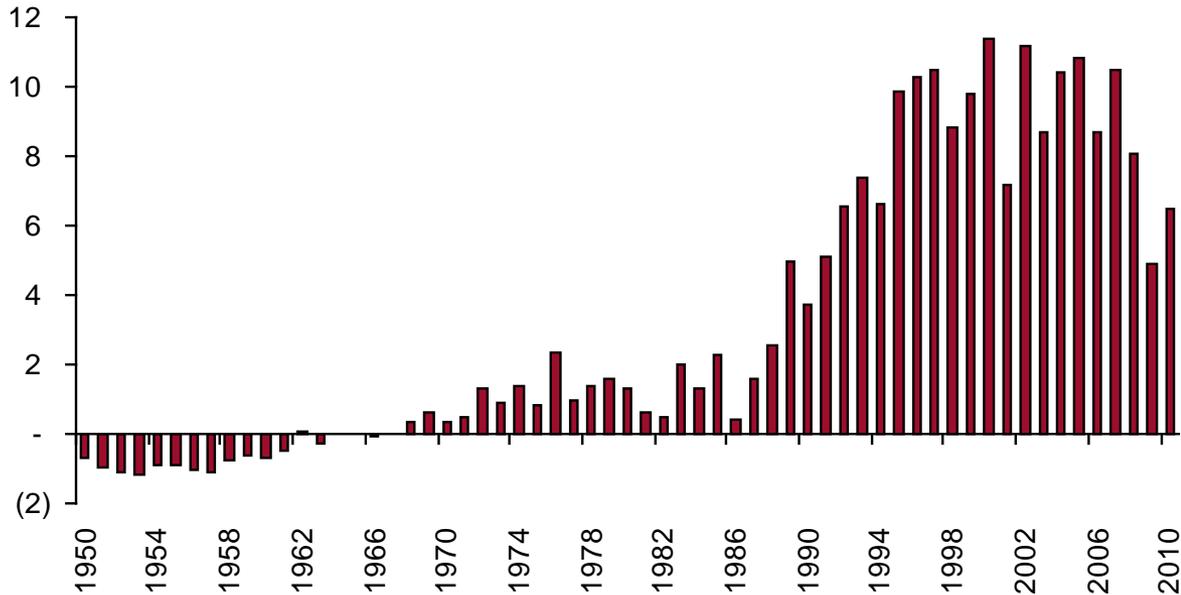


Source: IHS, CERA

- While new “fracking” regulations pose a risk to our domestic production projections, our most aggressive scenario assumes an additional layer of drilling costs with very little impact on overall production volumes. **In our view, the state/local revenues associated with oil and gas activities and the recent election of new governors with pro-gas leanings will likely deter a heavy-handed stance on the regulation of hydraulic fracturing.**

Growing Production Base Reduces U.S. Import Reliance...

= U.S. Total Consumption – U.S. Dry Gas Production (Bcf/d)

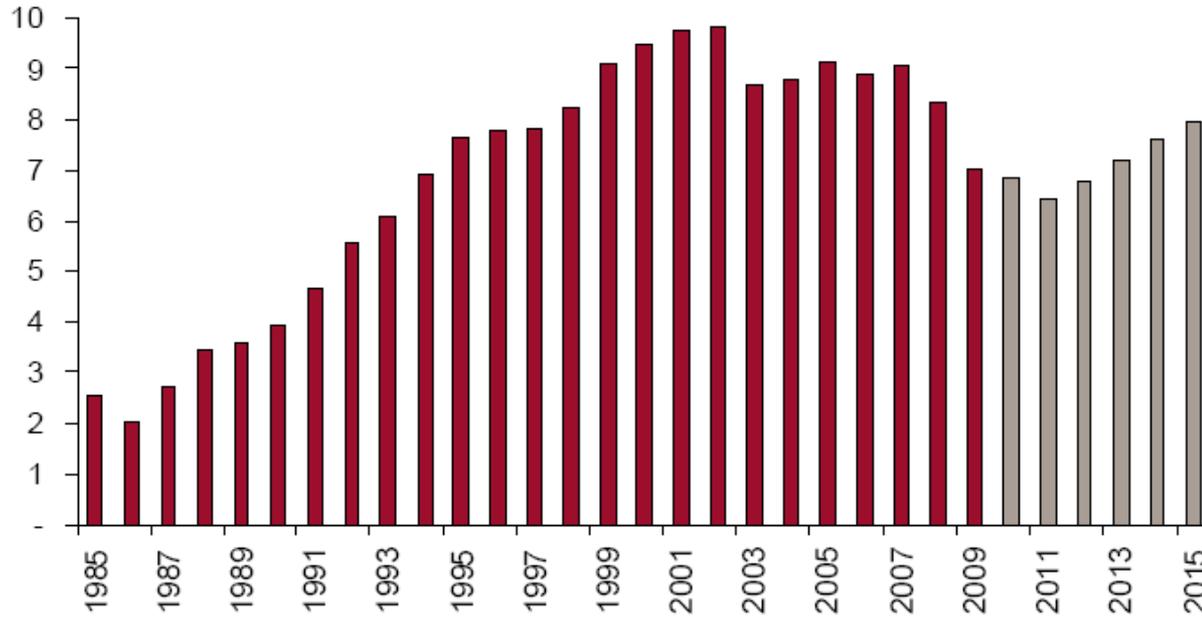


Source: EIA, Credit Suisse estimates

- During the 1990s, the ability of the U.S. to meet demand with domestic production was significantly eroded. The escalating rate of depletions and seemingly limited production plays left the industry skeptical of rebalancing without a significant call on imports or demand destruction.
- Now, with the expansive growth of domestic resources, the ability to satisfy demand requirements from growth in domestic production will likely allow the U.S. to become less dependent upon imports.

Robust U.S. Supplies Might Hamper CAD Import Recovery

(CAD Imports. Bcf/d)

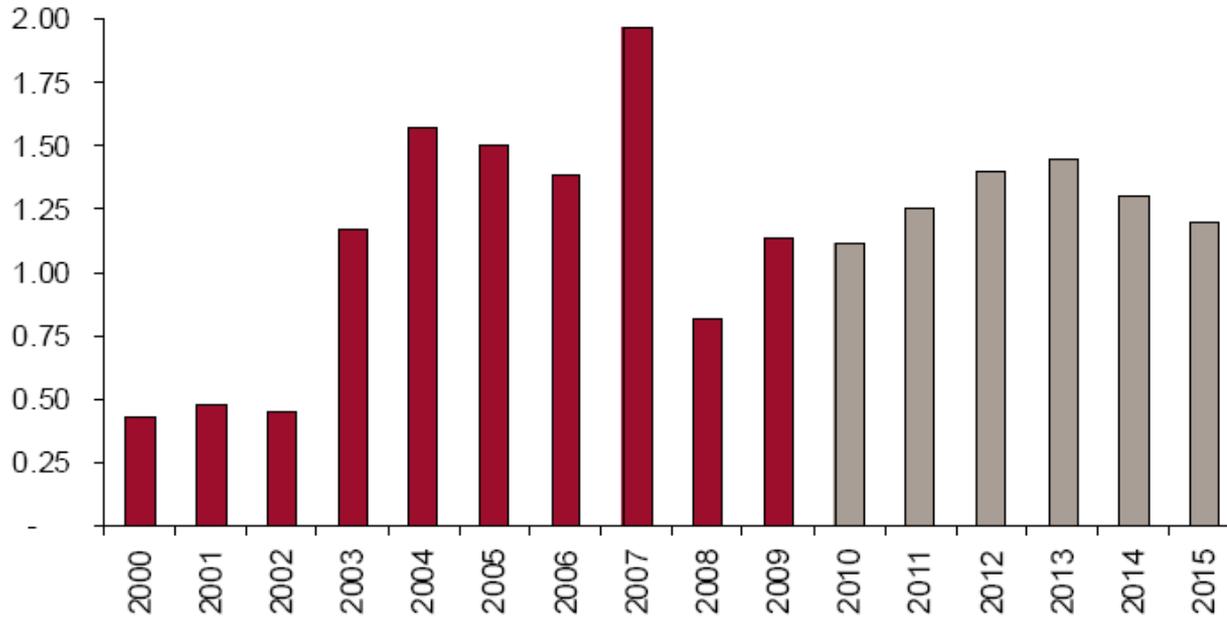


Source: EIA, Credit Suisse estimates

- We think that the combination of rising domestic production and new pipeline development will likely relegate Canada into becoming (once again) the marginal U.S. supplier.
- Although pipeline imports might begin to recover in 2012, there is a strong possibility that demand growth will be entirely met by domestic production on a go-forward basis. **For this reason, we highlight that Canadian imports are at significant risk of displacement.**

LNG Pared Back to Contract Minimums

(LNG Imports, Bcf/d)



Source: EIA, Credit Suisse estimates

- We expect U.S. LNG imports to remain roughly flat over the next five years, with the average daily send-out (mostly from east coast facilities) hovering around long-term contract minimum levels.
- The significant rise in unconventional production last year put the U.S. on the path toward self-sufficiency, which in turn created a butterfly-effect in the global markets. For the international markets, the large influx of new LNG supplies, which were originally ear-marked for the U.S., is being displaced to Europe and Asia.

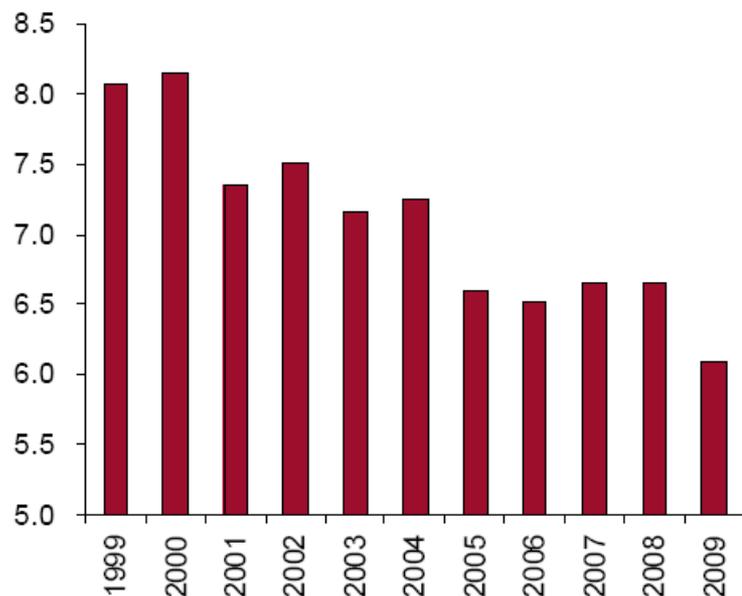
U.S. Demand Outlook

Reviving Hope for a '30 Tcf Market' ...

- **A decade ago the utility industry discussed the possibility of realizing a 30 Tcf market by 2010 based upon significant growth in electric power demand.** Fast forward to the present day, and last year marked the first time that the industry has surpassed the total demand marker established a decade earlier.
- Generally, over the next five years, we expect that i) industrial demand will be capped by industry's lack of reinvestment and exodus abroad, whereas the remaining U.S. gas intensive industrial consumers (such fertilizer and petrochemical plants) are already at maximum capacity utilization levels; and ii) efficiency measures focused on the core heating demand segment, residential and commercial users, will offset the potential growth associated with new service orders. **This implies that the only real opportunity for demand growth (once again) rests with electric power consumers.**
- **We expect that these new environmental rules will radically alter the manner in which electricity is generated in the U.S., shifting a significant portion of load onto cleaner-burning fuels.** And, as a result, we believe utilities will be forced to lean more heavily on natural gas, not just as a provisional "bridge fuel" but as a permanent base-load solution for meeting future demand.
- The snowball effect of cheap energy? There are other obvious areas of demand growth, such as a surge in space-heating with the economic recovery and/or unanticipated expansion of gas-intensive manufacturing in the U.S., that suggest our estimates are probably far too conservative. **However, even our moderate view on demand points to a 30 Tcf by 2025.**

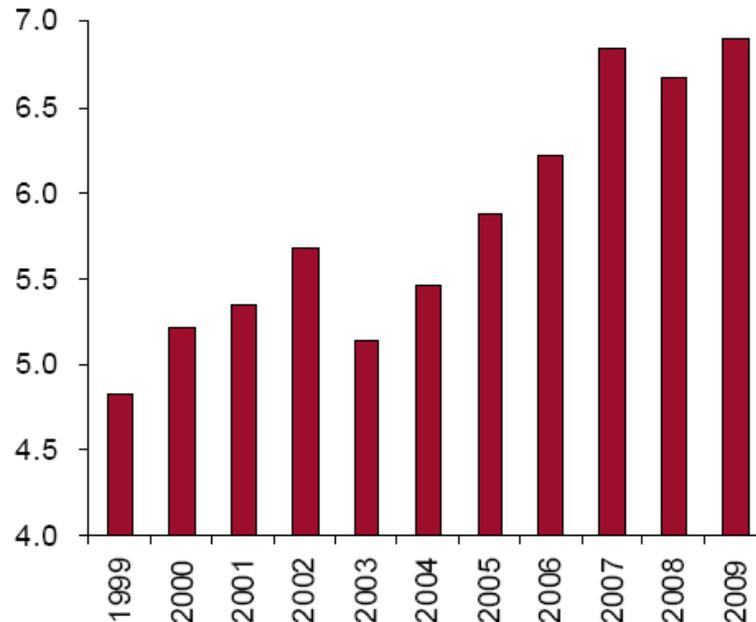
U.S. Consumption Stagnates on Rising Costs

U.S. Industrial Demand (Tcf)



Source: EIA

U.S. Electric Power Demand (Tcf)

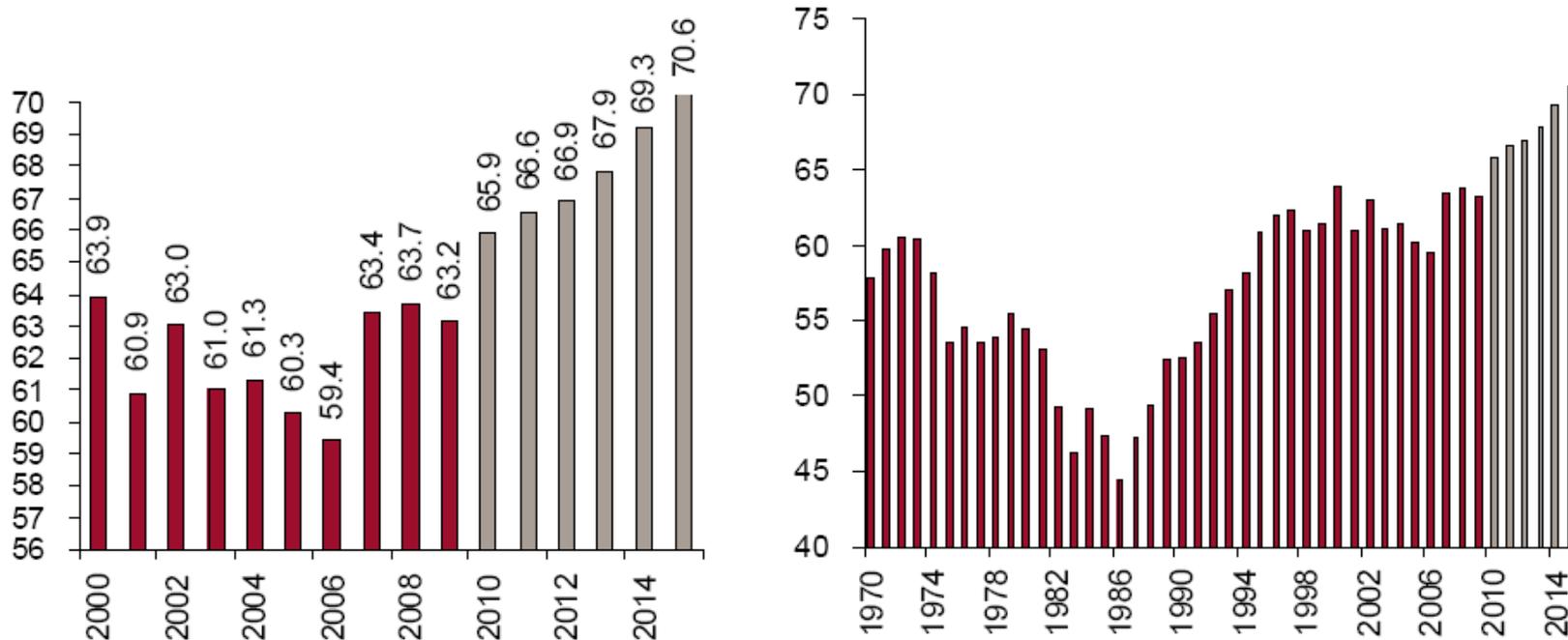


Source: EIA

- **Unfortunately, rising natural gas prices largely derailed this ambition by halting demand growth.** Even though electric power demand has grown by more than 40% or 5.9 Bcf/d since 2000, roughly $\frac{3}{4}$ these gains or -4.5 Bcf/d were forfeited by the industrial consumers, which in turn kept total demand flat.

Building Toward a 30 Tcf Market?

Total U.S. Demand, Bcf/d

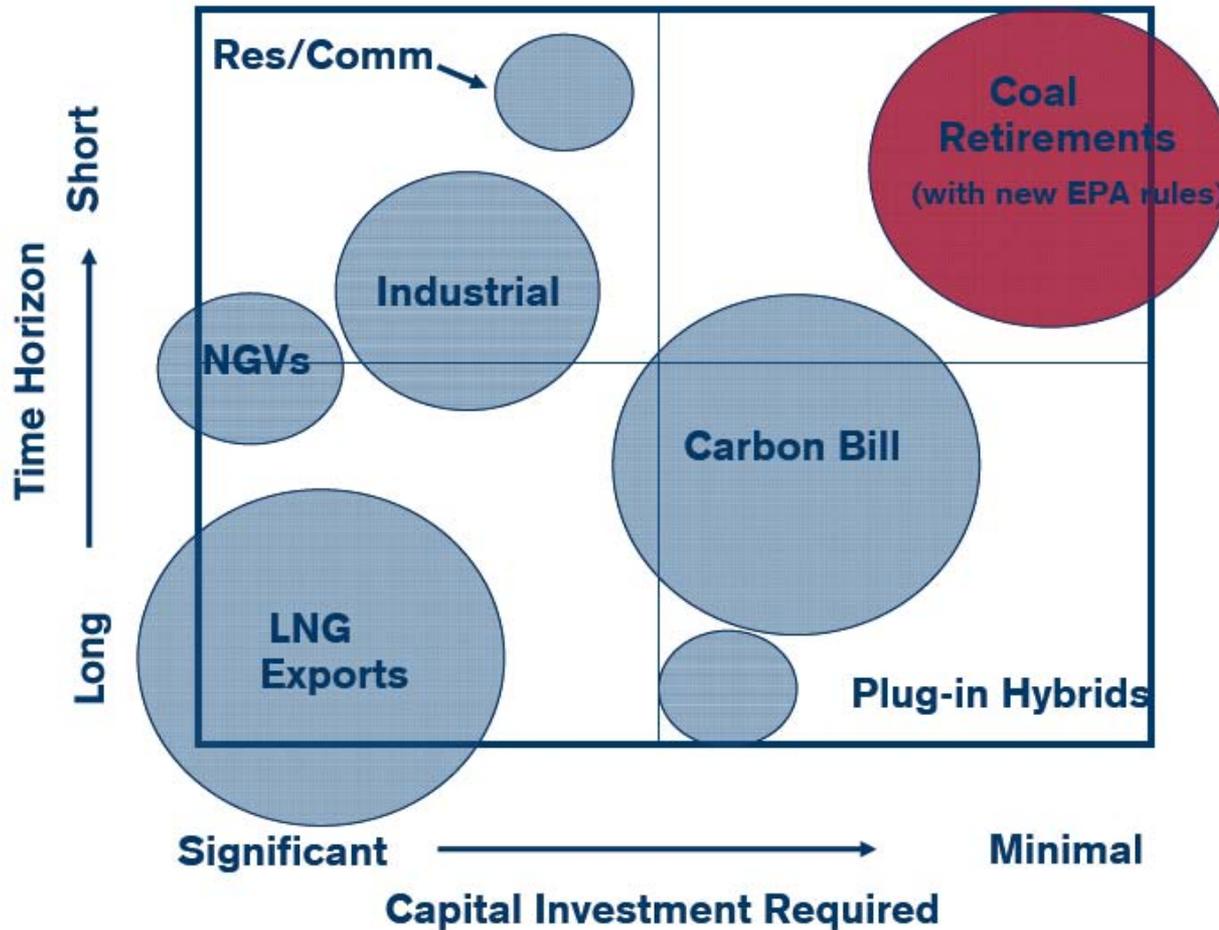


Source: EIA, Credit Suisse estimates

- We note that both the steep decline in natural gas use in the 1970s and the reversal that took place in the late 1980s were rooted in strategic policy changes. **Looking out on the horizon, the most apparent opportunity for gas growth will likely come from coal plant environmental retrofits and/or retirements triggered by new regulations.**

Electric Power Demand Drives Medium-term Growth

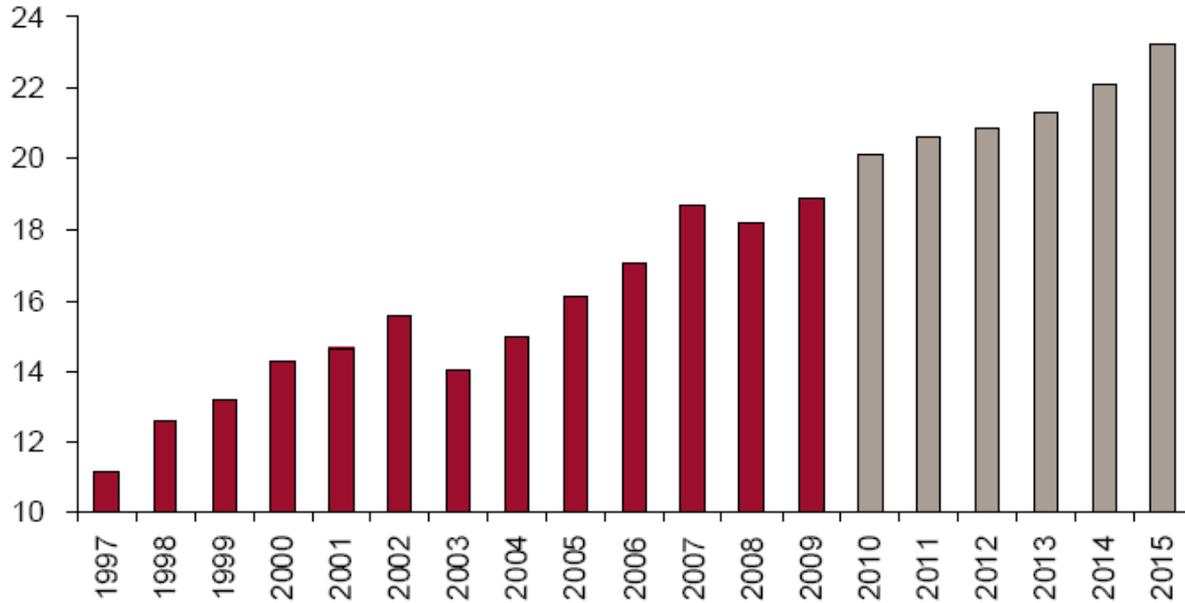
Demand Growth Drivers (sized by opportunity)



Source: WoodMac, Credit Suisse

Electric Power Demand Holds the Key to Growth

U.S. Electric Power Demand, Bcf/d

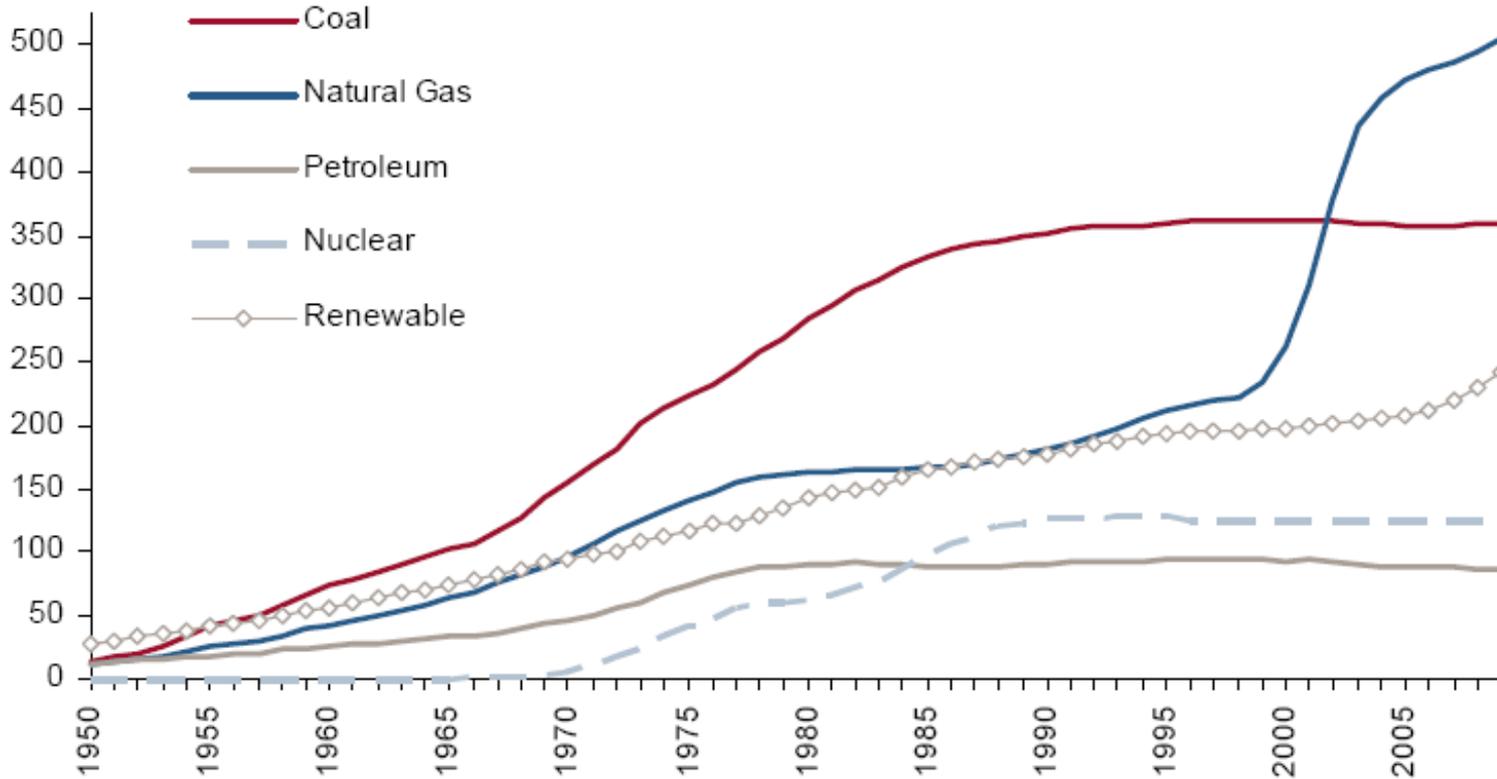


Source: EIA,, Credit Suisse estimates

- **We expect the combination of fuel-switching, environmental regulations and new capacity additions to trigger a 3 Bcf/d increase in electric power demand by 2015.**
- While fuel competition will likely exert a more significant sway over demand during the next few years, the industry's adaptation to new regulations will shape the longer trend. In addition, dispatch decisions, which will impact gas demand over the next five years, will be meted out based upon the existing installed capacity base which is biased in favor of natural gas.

Capacity Additions Impact Fuel Reliance

Capacity Additions by Year, 000 MW

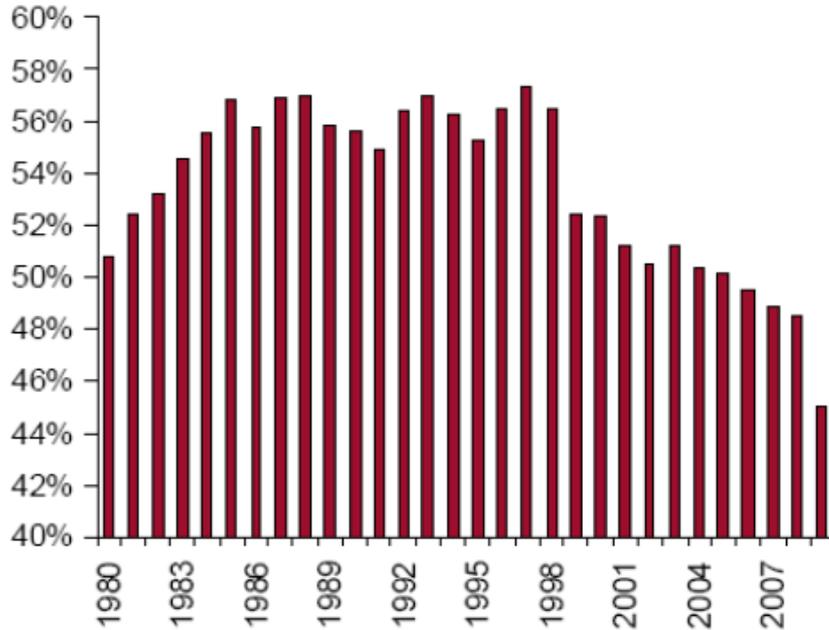


Source: Credit Suisse estimates

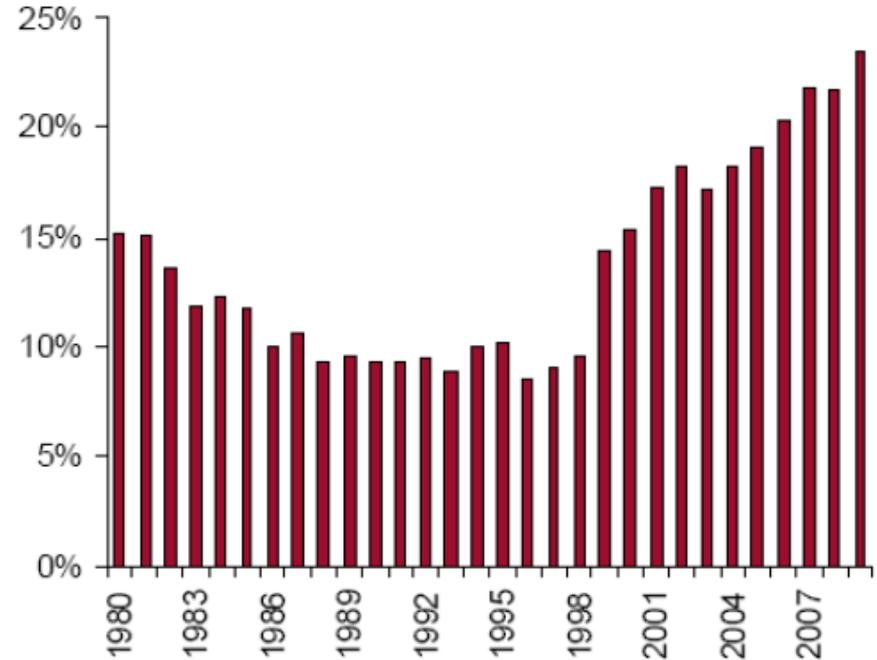
- **We expect the U.S. to become increasingly dependent upon natural gas and that the combination of forced coal retirements and fuel switching will simply amplify this underlying trend.**

Near-term Electric Power Demand Shaped by Fuel Competition

Total Market Share Served by Coal



Total Market Share Served by Gas



Source: Ventyx, EIA and Credit Suisse estimates

- Over the last decade, natural gas generators have increased market share at the expense of coal plants. While the longer-term trend was set in motion by the significant build-out of new natural gas-fired generation as coal development stagnated in the country. More recently, the change in dispatch dynamics has been spurred on by fuel economics.

Expiration of Low-Cost Coal Hedges Contribute to Fuel-Switching

Delivered Fuel Costs Reported by U.S. Coal Plants, \$/mmbtu



Source: Ventyx, EIA and Credit Suisse estimates

- **While overall delivered costs for coal have risen since 2006, more significant escalation has occurred in the key Southeast region, where coal-to-gas switching is more prevalent.** One explanation for the rise in reported costs by utilities is that some of the low-cost fuel hedges have begun to roll off. In fact, taking a closer look at EIA monthly fuel filings, we note that Southeast generators have become much more exposed to spot prices than generators operating in other regions.

Longer-term Trend Informed by Environmental Changes

- New EPA rules likely to impact gas demand as early as 2012. By 2015, we envision that natural gas demand will rise by 4.39 Bcf/d from 2009 levels to 23.5 Bcf/d.
- 5 Major EPA Rules Impact Gas Demand:
 - EPA regulation of **greenhouse gases** (“GHGs”).
 - **Section 316(b)** of the Clean Water Act regulating cooling intake structures.
 - Section 112 of the Clean Air Act regulating **hazardous air pollutants** (“HAPs”) by requiring the installation of maximum achievable control technology (“MACT”).
 - EPA’s **Clean Air Transport Rule** (“CATR”).
 - Rules managing **coal combustion residuals** (“CCRs”).

Section 316(b) of the Clean Water Act

NERC Assessment if 316(b) Impact by 2018

	Moderate Case			Strict Case		
	Derated (MW)	Retired (MW)	Total	Derated (MW)	Retired (MW)	Total
ERCOT	322	5,055	5,377	316	5,295	5,611
FRCC	177	862	1,039	164	1,367	1,531
MRO	400	1,259	1,659	400	1,264	1,664
NPCC-NE	194	2,504	2,698	180	2,904	3,084
NPCC-NY	347	3,011	3,357	327	3,618	3,946
RFC	1,532	5,503	7,035	1,526	5,661	7,187
SERC-Central	388	71	459	388	71	459
SERC-Delta	282	5,524	5,806	282	5,524	5,806
SERC-Gateway	296	526	822	295	543	838
SERC-Southeastern	209	469	678	209	469	678
SERC-VACAR	378	664	1,042	377	689	1,066
SPP	143	933	1,076	141	994	1,135
WECC-CA	227	5,055	5,283	182	6,881	7,063
WECC-AZ-NM-SNV	5	773	778	5	773	778
WECC-NWPP	40	129	169	40	129	169
WECC-RMPA	16	184	200	16	184	200
TOTAL	4,954	32,522	37,476	4,848	36,366	41,214

Source: NERC

- Section 316(b) is aimed at minimizing the environmental impact of cooling water intake structures on fish and other aquatic life by requiring that the “location, design, construction and capacity of cooling water intake structures reflect the best technology available”.
- Of the four pending policies reviewed in detail, NERC concluded that Section 316(b) would have the greatest impact on forced unit retirements with ~41 GW at risk.

Maximum Achievable Control Technology (MACT)

NERC MACT Impact by 2018

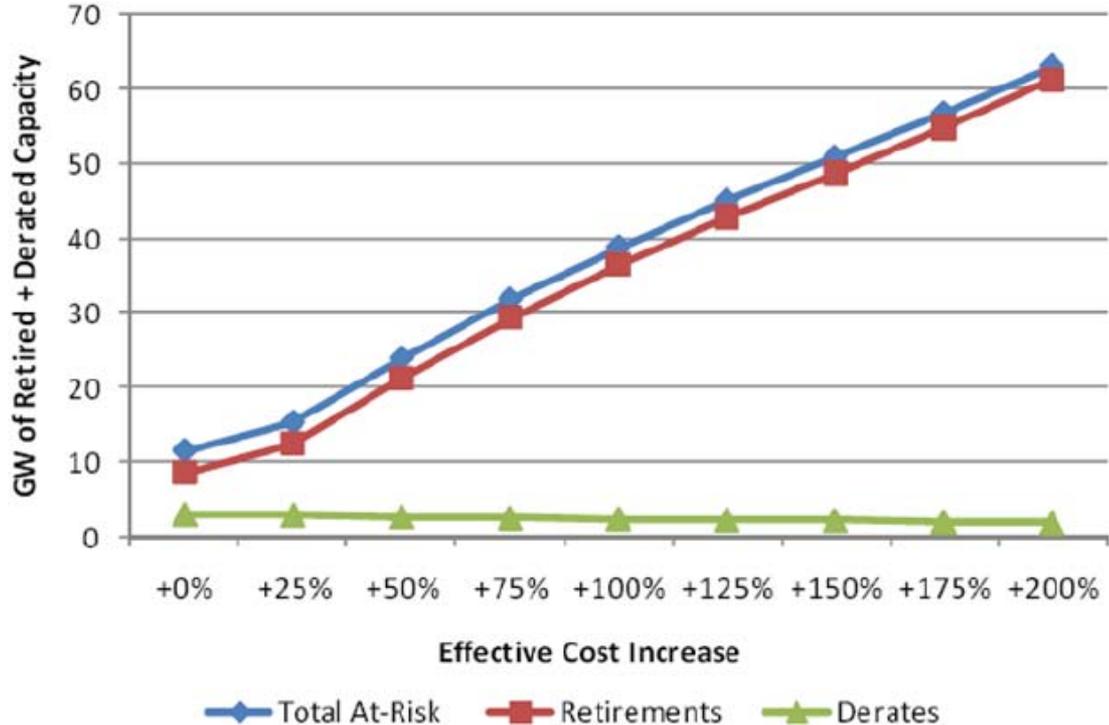
	Moderate Case			Strict Case		
	Derated (MW)	Retired (MW)	Total	Derated (MW)	Retired (MW)	Total
ERCOT	73	0	73	73	0	73
FRCC	16	0	16	78	121	199
MRO	144	708	853	144	764	908
NPCC-NE	25	0	25	32	616	647
NPCC-NY	16	58	74	16	694	710
RFC	514	2,540	3,055	1,060	5,493	6,553
SERC-Central	167	184	351	305	1,000	1,305
SERC-Delta	70	46	116	69	95	164
SERC-Gateway	100	96	196	110	365	475
SERC-Southeastern	227	140	367	337	1,208	1,545
SERC-VACAR	132	970	1,102	255	2,649	2,905
SPP	130	52	181	130	52	181
WECC-CA	3	0	3	3	0	3
WECC-AZ-NM-SNV	49	1,580	1,629	49	1,580	1,629
WECC-NWPP	73	129	202	73	129	202
WECC-RMPA	10	100	110	10	100	110
TOTAL	1,750	6,602	8,352	2,746	14,865	17,611

Source: NERC

- EPA must look to emission levels achievable by the best-performing 12% of the regulated operating units in developing the standards for defined hazardous air pollutants.
- NERC envisions that roughly 18 GW of coal-fired generation will either be retired or derated by 2018.

MACT Retirement Risk Rises as Costs Increase

NERC Sensitivity of MACT Retirements



Source: NERC

- NERC suggests that the risk of retirement substantially increases as the cost of retrofitting existing plants rises. As costs rise, the retirements soar from the low estimate of 11.4 GW to 63 GW.

Clear Air Transport Rule (CATR)

NERC CATR Impact by 2015

	Moderate Case			Strict Case		
	Derated (MW)	Retired (MW)	Total	Derated (MW)	Retired (MW)	Total
ERCOT	0	0	0	91	0	91
FRCC	0	0	0	16	0	16
MRO	0	33	33	216	1,007	1,223
NPCC-NE	0	162	162	14	370	384
NPCC-NY	0	0	0	22	50	73
RFC	67	1,667	1,734	552	2,192	2,744
SERC-Central	15	0	15	154	136	290
SERC-Delta	0	0	0	127	29	155
SERC-Gateway	0	878	878	171	35	206
SERC-Southeastern	60	0	60	258	230	488
SERC-VACAR	0	0	0	130	1,056	1,186
SPP	0	0	0	202	115	317
WECC-CA	0	0	0	0	0	0
WECC-AZ-NM-SNV	0	0	0	0	0	0
WECC-NWPP	0	0	0	0	0	0
WECC-RMPA	0	0	0	0	0	0
TOTAL	142	2,740	2,882	1,952	5,221	7,173

Source: NERC

- We assume that the final CATR will largely curtail interstate cap and trade activities, which means that attainment will probably be met by unit-based reductions. This rule will largely impact coal-fired generation in those states that have more heavily relied upon allowances for meeting predecessor EPA program obligations.
- Under its 'strict case' scenario, NERC envisions that roughly 7 GW of coal-fired generation will either be retired or derated by 2015.

Coal Combustion Residuals (“CCRs”)

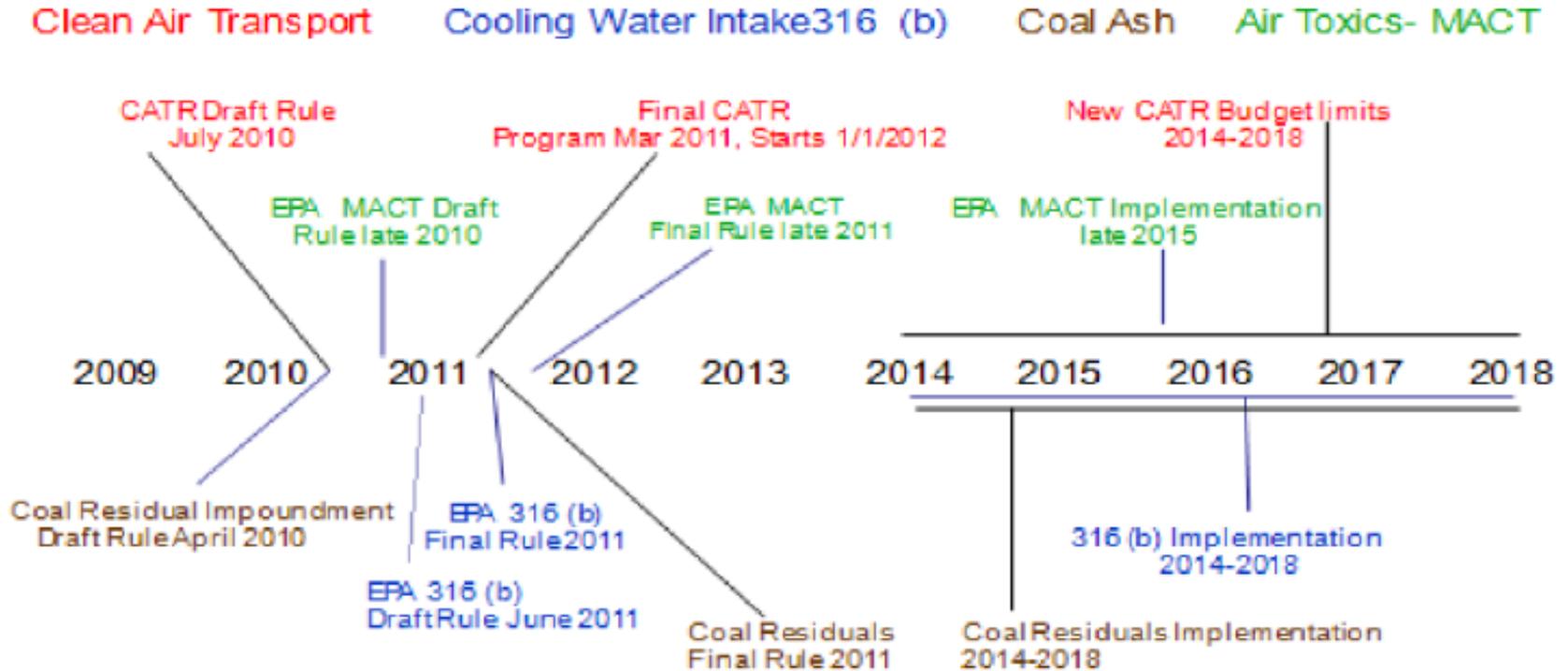
NERC CCR Impact by 2018

	Moderate Case			Strict Case		
	Derated (MW)	Retired (MW)	Total	Derated (MW)	Retired (MW)	Total
ERCOT	0	0	0	0	0	0
FRCC	0	0	0	0	0	0
MRO	0	0	0	0	83	83
NPCC-NE	0	0	0	0	0	0
NPCC-NY	0	0	0	0	0	0
RFC	0	0	0	0	0	0
SERC-Central	0	71	71	0	71	71
SERC-Delta	0	0	0	0	18	18
SERC-Gateway	0	86	86	0	86	86
SERC-Southeastern	0	130	130	0	130	130
SERC-VACAR	0	0	0	0	0	0
SPP	0	0	0	0	0	0
WECC-CA	0	0	0	0	0	0
WECC-AZ-NM-SNV	0	0	0	0	0	0
WECC-NWPP	0	0	0	0	0	0
WECC-RMPA	0	0	0	0	0	0
TOTAL	0	287	287	0	388	388

Source: NERC

- In response to the TVA coal ash spill, the EPA proposed regulating coal ash and scrubber waste (CCRs) last year. The draft proposal contained two different approaches in handling CCRs, as either hazardous or non-hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA).
- Roughly 388 MW of coal units are “economically” vulnerable to this rule.

NERC Timeline for Potential EPA Regulations



Source: NERC

- NERC envisions that the greatest impact of these new rules will be felt within the next five years, posing risk to the Planning Reserves Margins by 2015.

Implications of New Environmental Rules?

Nearly 1/3 of U.S. Coal-fired Generation at Risk for Retirement...

U.S. Unscrubbed Coal Units (with no plans to retrofit), MWs

NERC Region	Net Capacity
ERCOT	3,156
FRCC	74
MRO	13,832
NPCC	2,389
RFC	34,768
SERC	37,743
SPP	12,746
WECC	<u>2,939</u>
Total	107,647

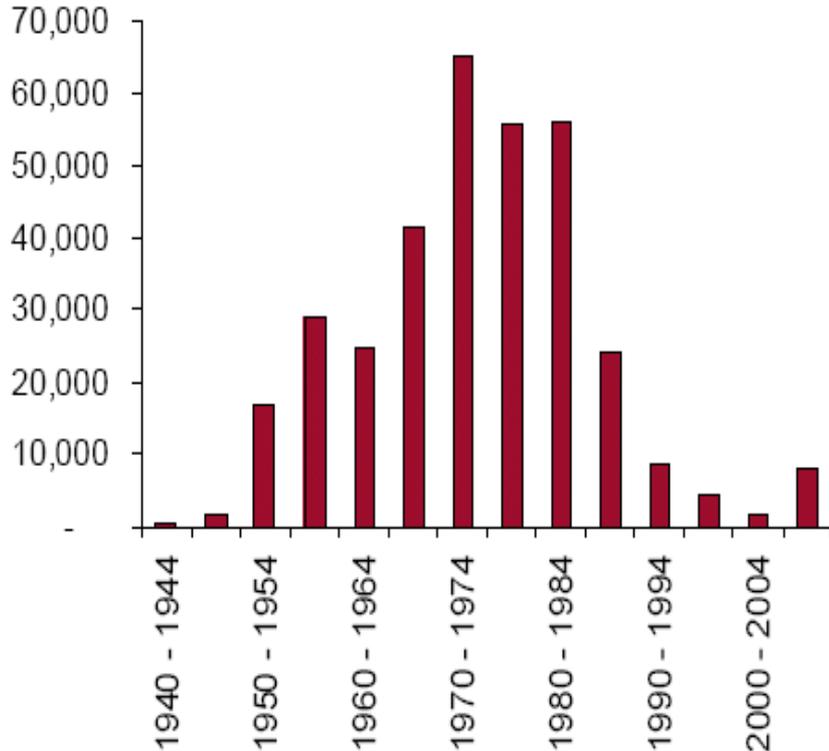
Source: EIA, Ventyx and Credit Suisse estimates

- In our view, the range of capacity at risk of early retirement is 20 GW to 108 GW of coal-fired generation.
- The lower boundary is established by the amount of retirements already announced, while the upper boundary is set by the amount of generation that has yet to announce plans to install the necessary environmental controls to meet the new regulations.

50-60 GWs of Coal Generation Likely to Retire by 2020...

Aging "At Risk" Coal Capacity

(MW of Installed Coal Capacity by Online Year)



(< 300 MW Coal Units Built Before 1970, MW)

NERC Region	Net Capacity
MRO	4,912
NPCC	1,860
RFC	21,454
SERC	19,064
SPP	1,281
WECC	2,092
Total	50,661

Source: EIA, Ventyx and Credit Suisse estimates

- We believe the plants that are the most vulnerable are i) smaller coal plants, ii) with nameplate capacity of less than 300 MWs, iii) built before the 1970s, and iv) that do not have scrubbers installed – these plants account for 51 GW of coal-fired capacity.

Ranking Coal Plants by Efficiency Further Confirms Retirements

U.S. Coal Plants Ranked by Age and Heat Rate, GWs

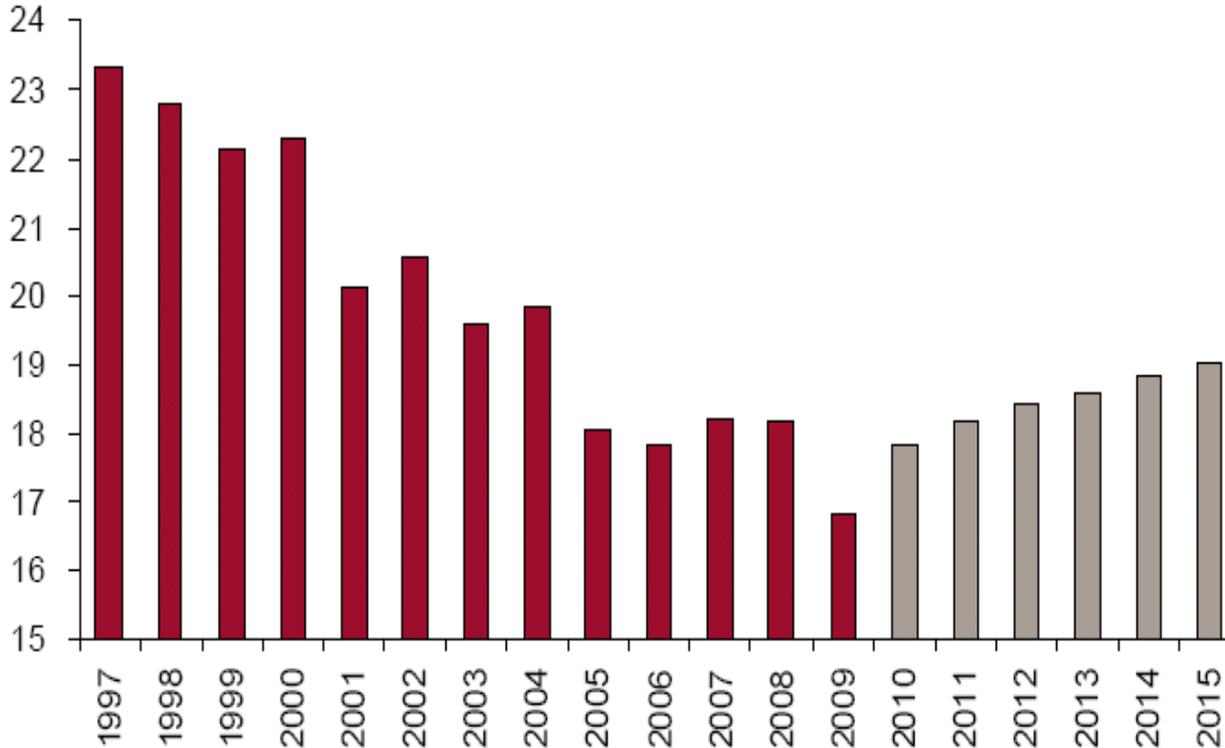
	>12,000	11,000 - 12,000	10,000 - 11,000	<10,000	Subtotal
Before 1960	4.1	6.9	21.2	17.3	49.5
1960-1970	1.8	6.1	22.5	38.9	69.3
1970-1980	1	6.2	49.3	71.7	128.2
1980-1990	0.7	7.7	40	37.3	85.7
1990-	0.3	4.3	6.5	23.3	34.4
Subtotal	7.9	31.2	139.5	188.5	

Source: EIA, Ventyx and Credit Suisse estimates

- Retiring all plants built before 1970 that have an 11,000 heat rate or worse would risk ~40 GW of capacity.

Industrial Growth Bumping Up Against Capacity Limits

U.S. Industrial Demand, Bcf/d

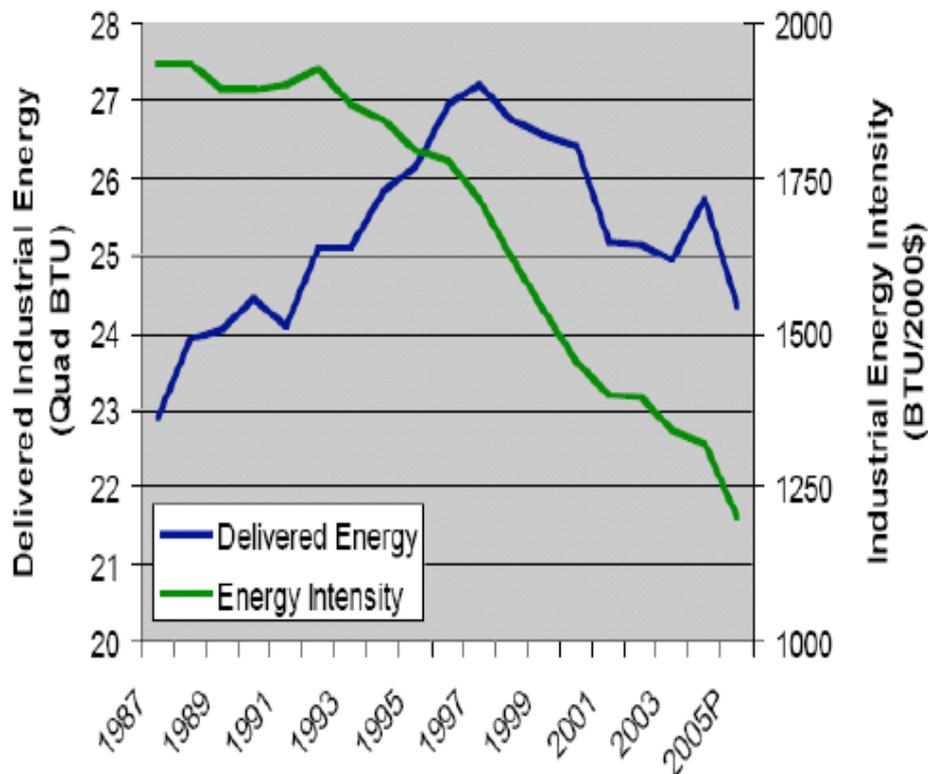


Source: EIA, Credit Suisse estimates

- **Although we envision full recovery for industrial demand by 2012, we think overall growth will be limited by the lack of reinvestment, with 2015 demand called only +1.23 Bcf/d higher than current levels.**
- Without significant capital reinvestment industrial demand will be capped at ~20 Bcf/d.

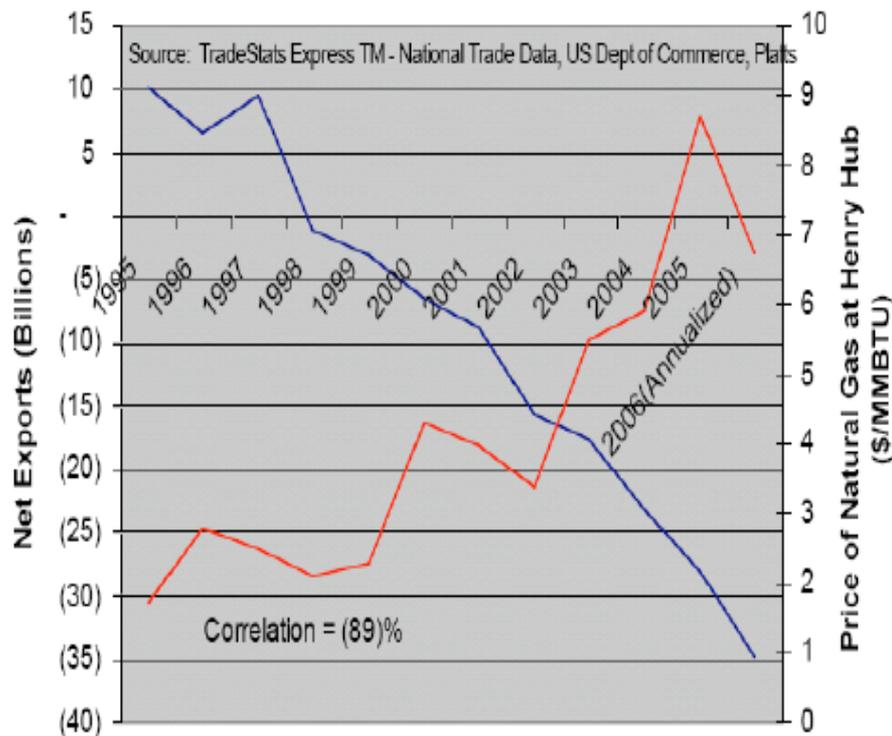
Efficiency Gains and Outsourcing Limit Industrial Growth

U.S. Industrial Energy Consumption and Energy Intensity



Source: National Petroleum Council (NPC)

Trade Balance for Energy Intensive Industry

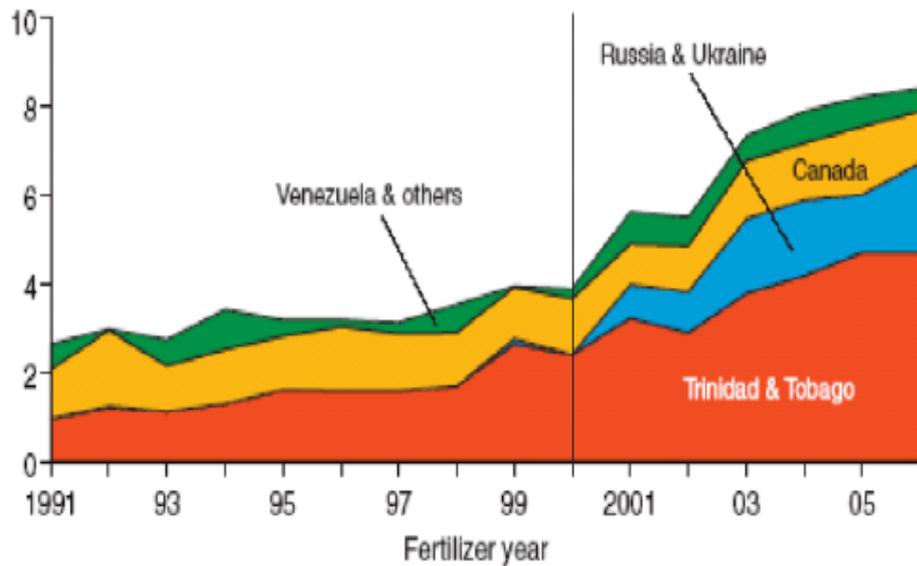


Correlation = (89)%

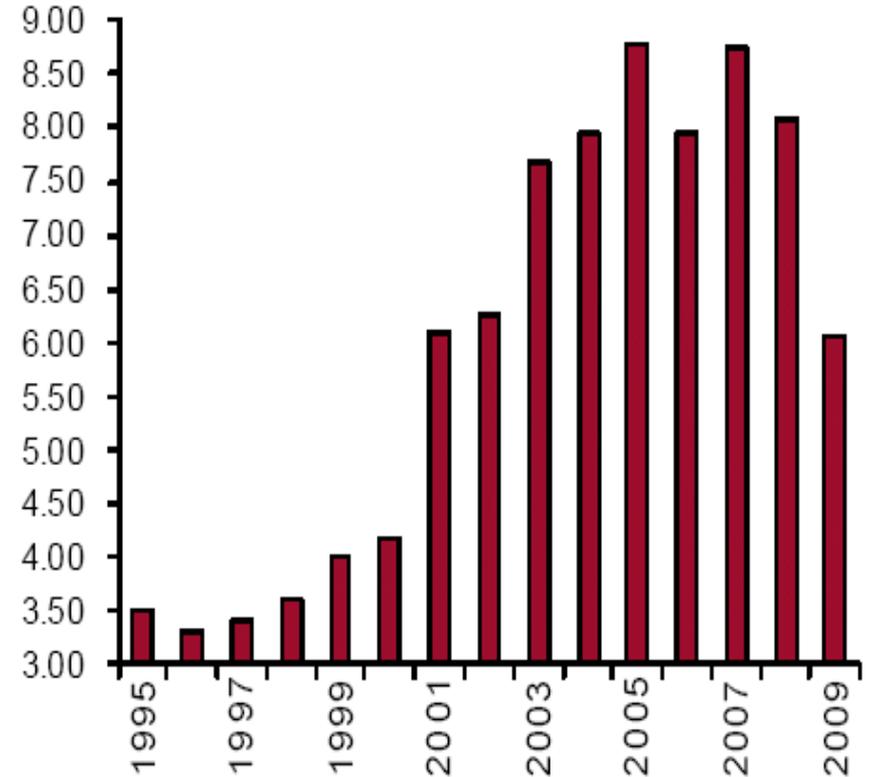
- Efficiency gains and the migration of operations outside the U.S, have resulted in lower domestic industrial demand for natural gas despite the significant growth of industrial production indices.

Case Study: U.S. Fertilizer Plants

U.S. Ammonia Imports by Country (Million Tons)



Total U.S. Ammonia Imports by Year (Million Tons)

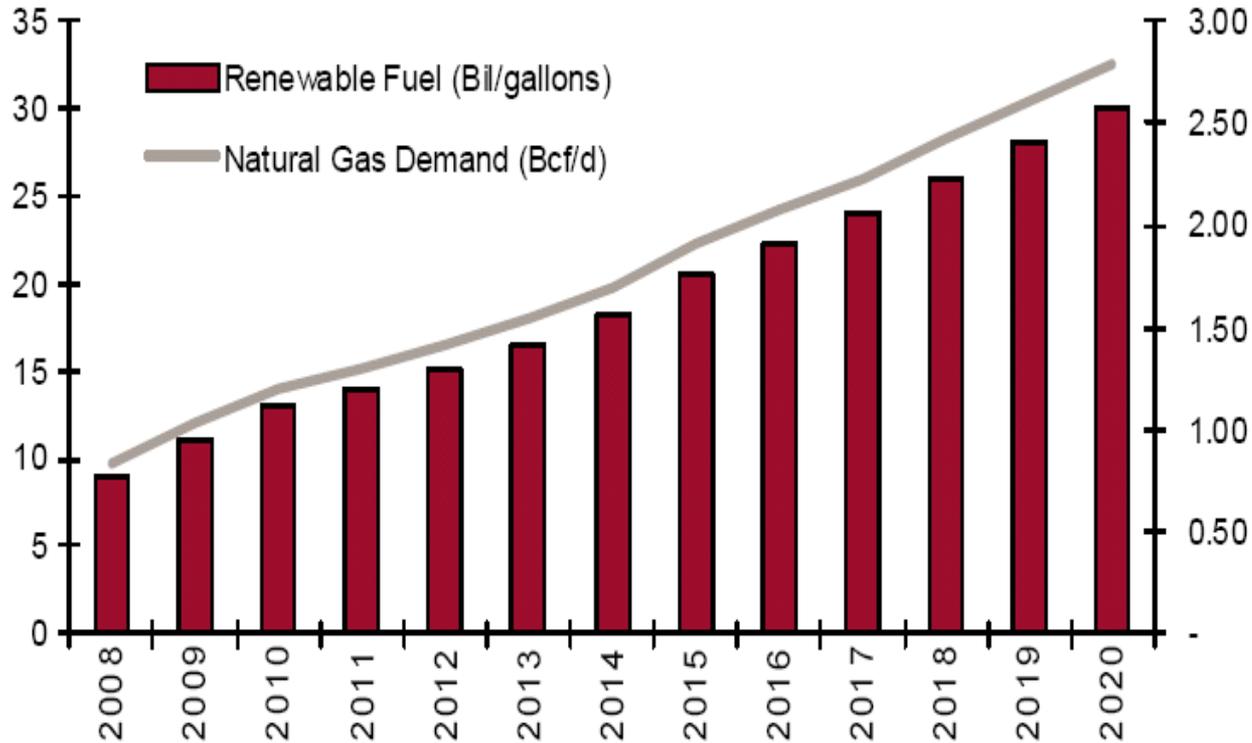


Source: USDA

- Between 2000 and 2006, the total number of U.S. ammonia plants declined from 40 to 25, with the largest declines recorded in smaller facilities with production capacity of less than 500,000 tons/yr. As a result of closing these small plants, **the U.S. lost 40% of its production base.**

Ethanol Demand Growth Might Surprise...

RFS Ethanol Production Targets and Associated Gas Demand

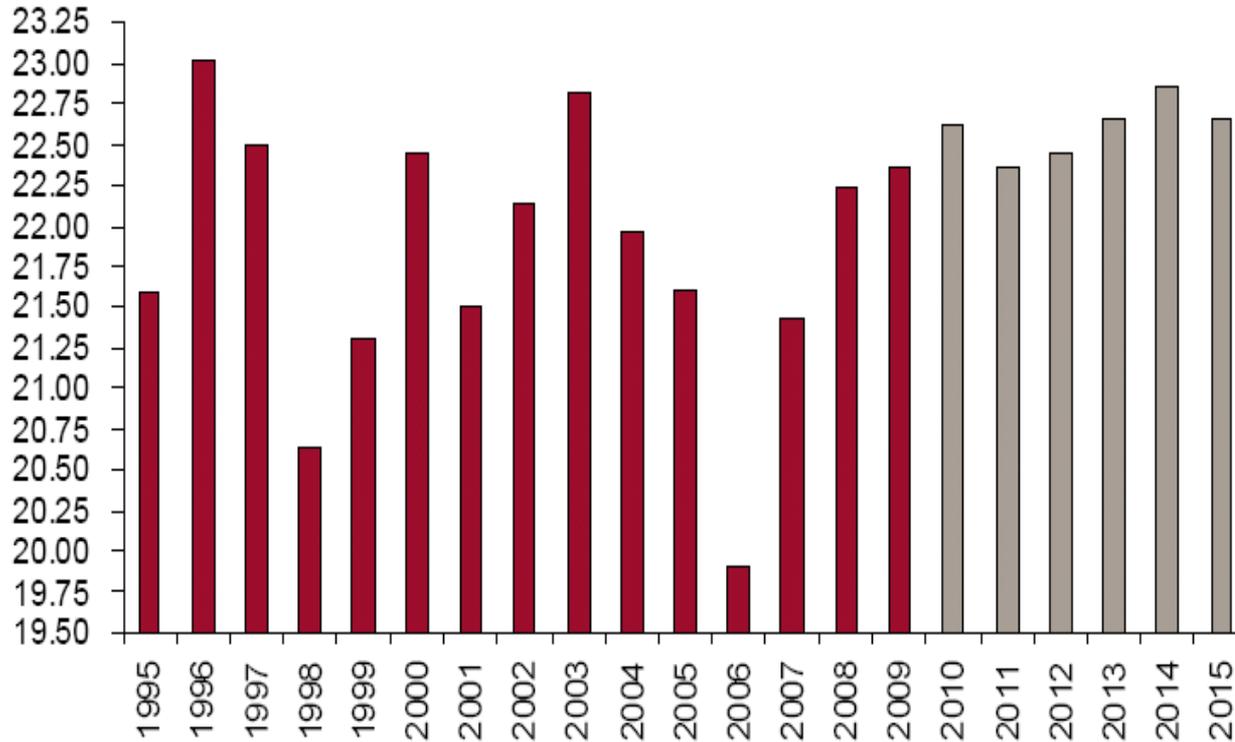


Source: EIA,, Credit Suisse estimates

- Development of new ethanol facilities has largely kept pace with production targets established by the country's renewable fuel standards. Ethanol demand is expected to approach 20.5 billion gallons by 2015, which we estimate would translate into a ~0.7 Bcf/d rise in gas demand.

Structural Impediments to Building Core Demand

U.S. Commercial & Residential Demand, Bcf/d



Source: EIA,, Credit Suisse estimates

- We expect that efficiency gains will largely offset growth associated with new service orders; therefore, we predict that core heating demand will remain flat to 2010 levels over the next five years.

Consumers Have Been Moving Away from Natural Gas

Type of Home Heating, % by Fuel Type (select years 1980-2007)

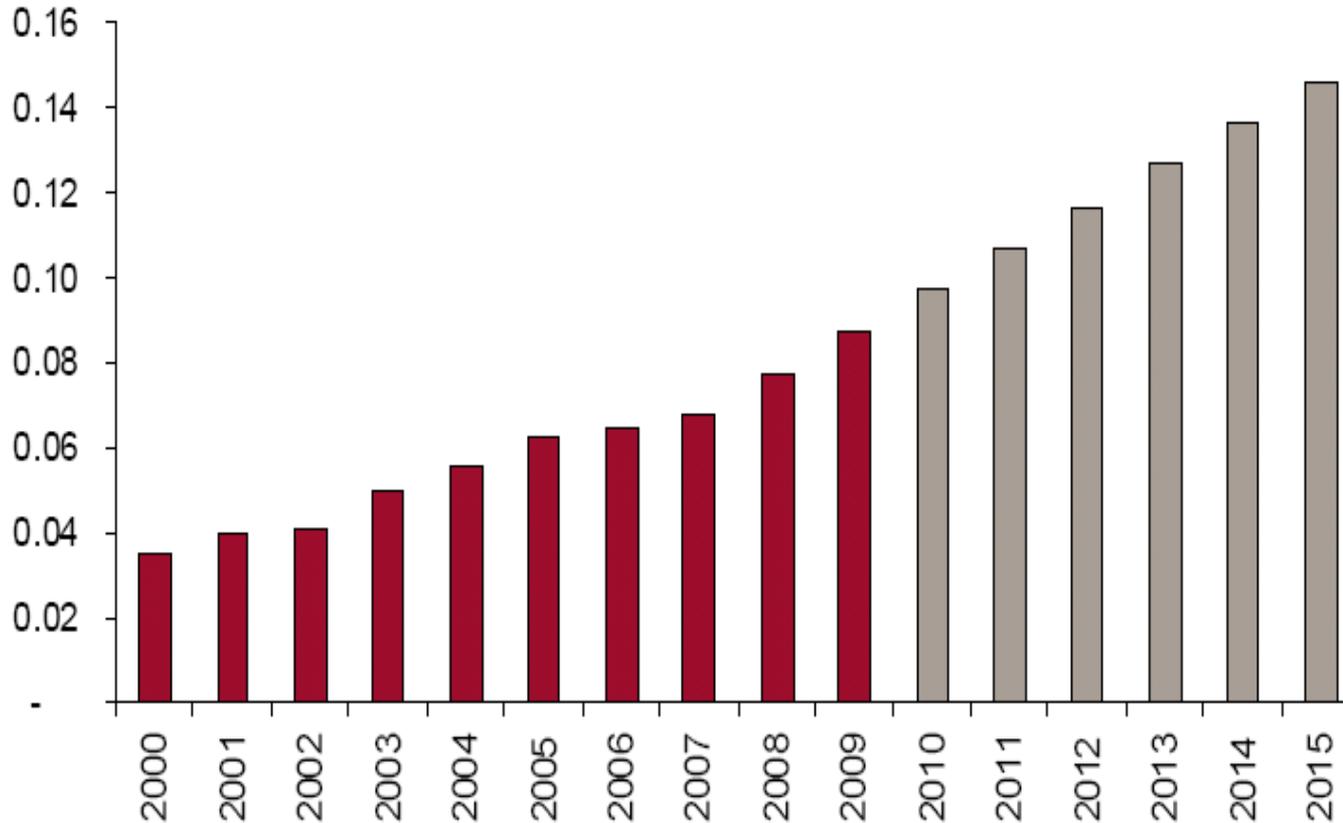
Date	Coal	Fuel Oil	Kerosene	Liquefied Petroleum Gases	Natural Gas	Electricity	Wood	Other	None
1980	0.4	18.1	0.5	5.2	55.4	17.7	1.7	0.1	0.8
1981	0.4	17	0.4	5	55.4	18.6	2.3	0.1	0.7
1983	0.5	14.9	0.5	4.6	55.2	18.5	4.8	0.2	0.8
1985	0.5	14.1	1.2	4.1	51.3	20.8	7.1	0.4	0.6
1987	0.4	14	1.2	4	50.6	22.7	6	0.3	0.7
1989	0.4	13.3	1.1	3.9	50.6	24.6	4.9	0.4	0.7
1991	0.3	12.3	1.1	4.2	50.5	25.5	4.8	0.4	0.9
1993	0.3	11.8	1.1	4.1	50.3	26.5	4.3	0.5	1
1995	0.2	11.2	1.1	4.4	50.4	27.4	3.6	0.7	1.1
1997	0.2	10.2	0.8	5.4	51.3	29.4	1.8	0.4	0.6
1999	0.2	9.8	0.7	5.7	50.9	30.3	1.7	0.2	0.5
2001	0.1	9.3	0.6	5.7	51.3	30.7	1.6	0.2	0.4
2003	0.1	9	0.6	5.8	51.9	30.6	1.5	0.1	0.4
2005	0.1	8.6	0.5	5.7	51.7	31.5	1.3	0.2	0.4
2007	0.1	7.9	0.5	5.5	51.2	32.6	1.3	0.4	0.4

Source: EIA,

- Since 1980, the market share lost by fuel oil has been largely replaced by the use of electricity as a primary heating source.

Natural Gas Vehicles: Down but Not Out

U.S. Natural Gas Vehicle Fuel Consumption, Bcf/d



Source: EIA,, Credit Suisse estimates

- Our five-year growth estimates, predicting natural gas vehicle demand rising from 0.1 Bcf/d in 2010 to 0.15 Bcf/d by 2015, are in stark disagreement with a leading trade organization, which suggests demand is on a much steeper trajectory and will reach 3.4 Bcf/d by 2020.

NGV Infrastructure Constraints Hindering Growth...

- Currently 827 fueling stations for CNG and 38 fuel stations for LNG in the US.
 - Most are privately owned
 - Distribution problems: 24% of CNG and 71% of LNG stations are in CA.
- Long distance vehicles likely provide quickest payback of costs for heavy-duty natural gas vehicles (HDNGVs), but lack of infrastructure and limited driving range limit current penetration.
- Majority of trucks fuel at *non-central bases*, increasing further the need for infrastructure development

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