

**BOLD MOVES**  
**BIG FUTURE**



**PENNSYLVANIA PUBLIC UTILITY  
COMMISSION**

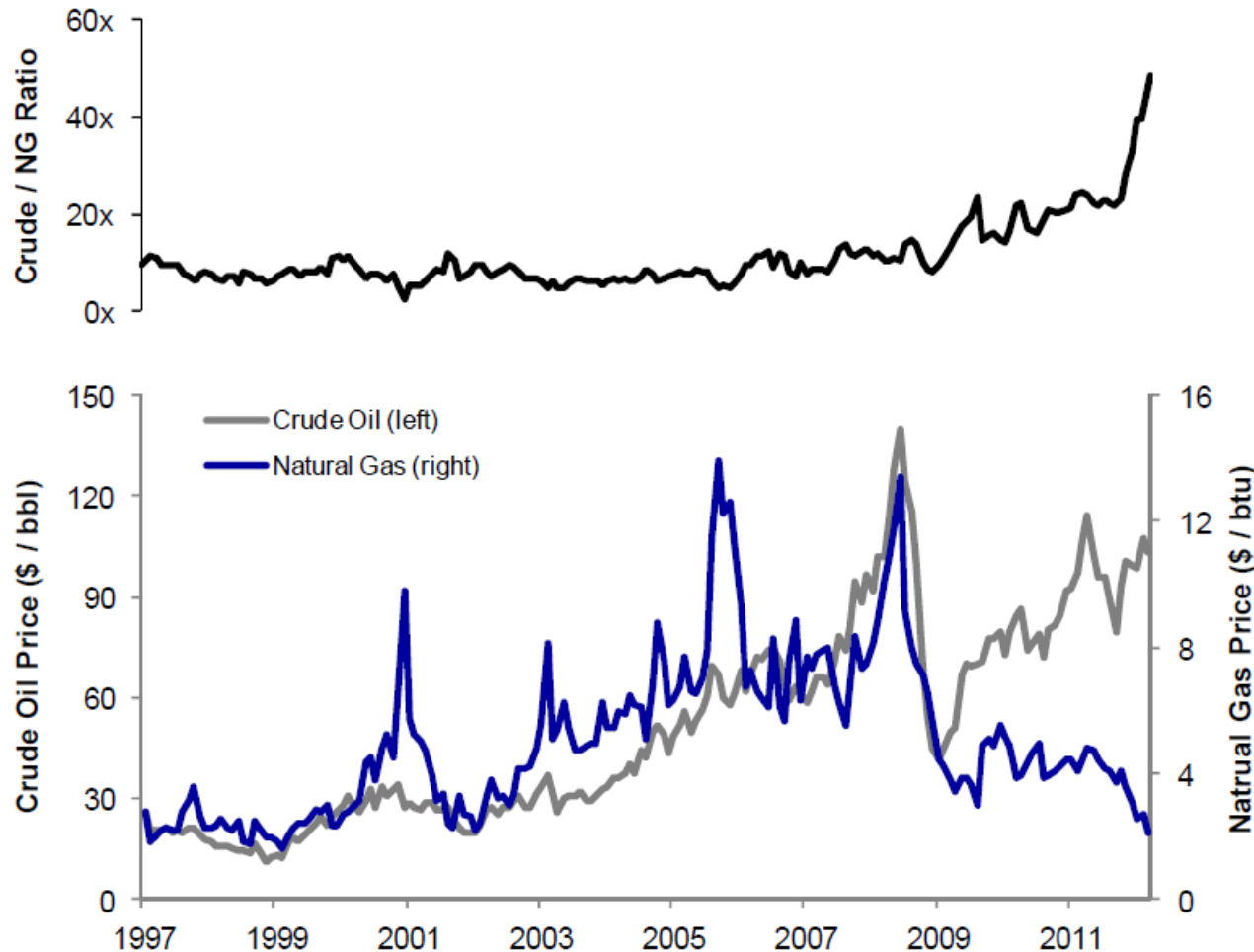
**MAY 31, 2012**

# ITEMS FOR DISCUSSION

- I. LONG TERM PRODUCTION OUTLOOK
- II. NATURAL GAS DEMAND FACTORS
- III. MARKET BOTTLENECK SOLUTIONS
- IV. LESSONS LEARNED



# THE RESULT OF THE “SHALE GALE”



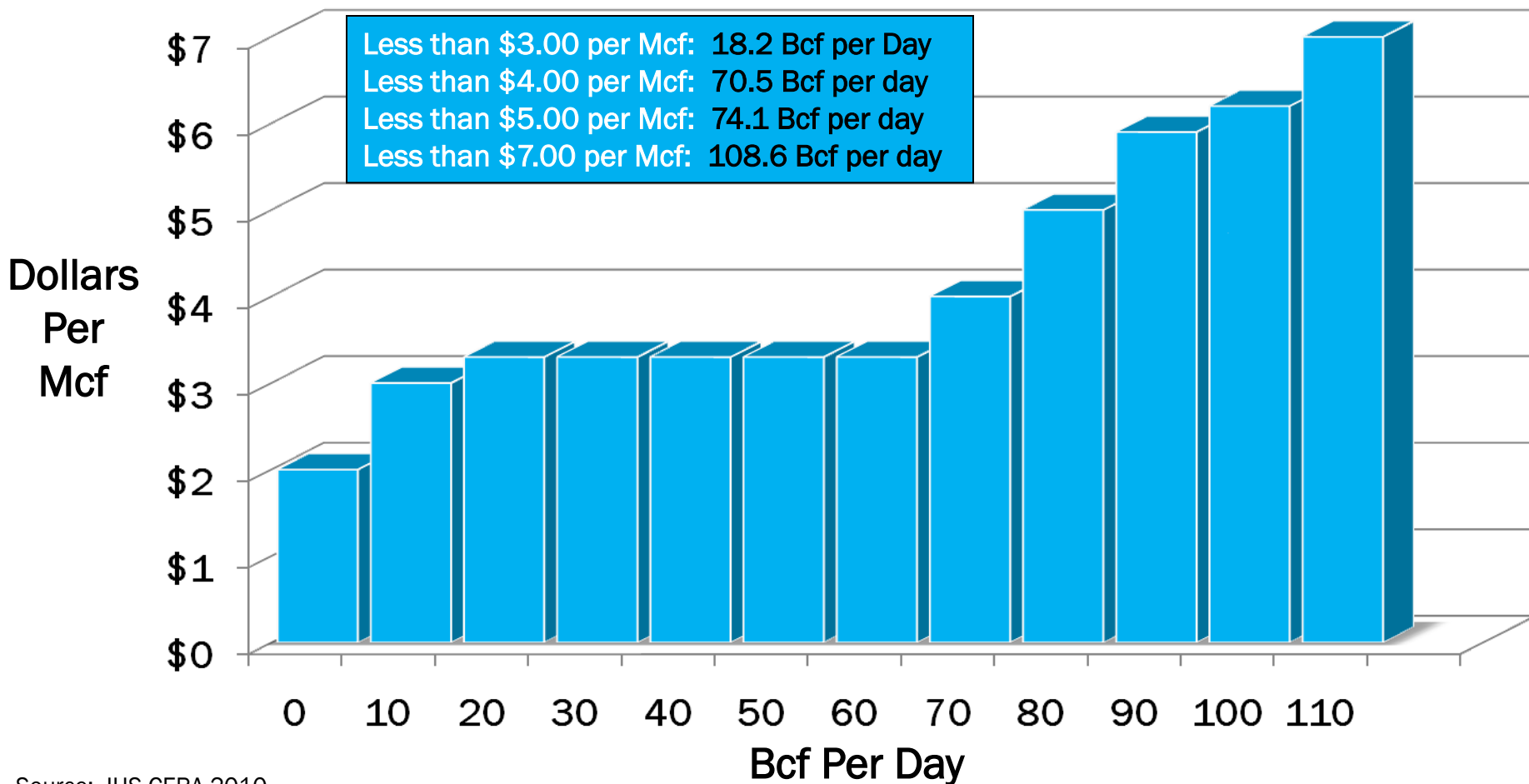
Source: FactSet Research Systems

- When NYMEX Mcf was **\$7.20**, commodity portion of CNG was **\$1.00/GGE**
- When NYMEX Mcf was **\$3.60**, commodity portion of CNG was **\$0.50/GGE**
- When NYMEX Mcf was **\$1.80**, commodity portion of CNG was **\$0.25/GGE**

**1 Mcf = 8 gasoline gallon equivalents / 1 Mcf = 7.2 diesel gallon equivalents**

# SHALE PRODUCTION ECONOMICS PROVIDE SUBSTANTIAL PRICE RISK SECURITY TO CNG CONSUMERS

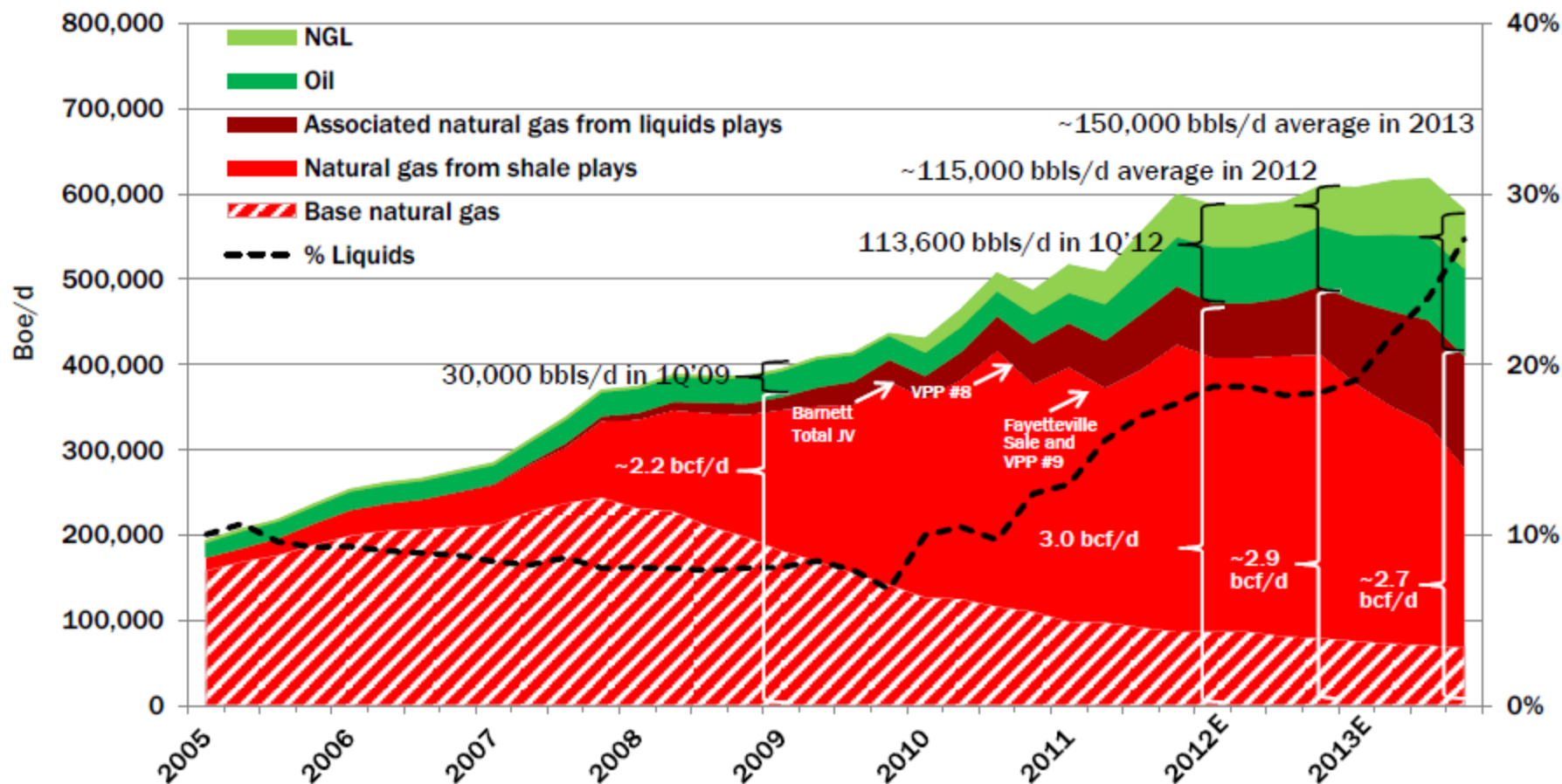
**Breakeven Henry Hub Price for Productive Capacity\* of Analyzed Plays**



Source: IHS CERA 2010

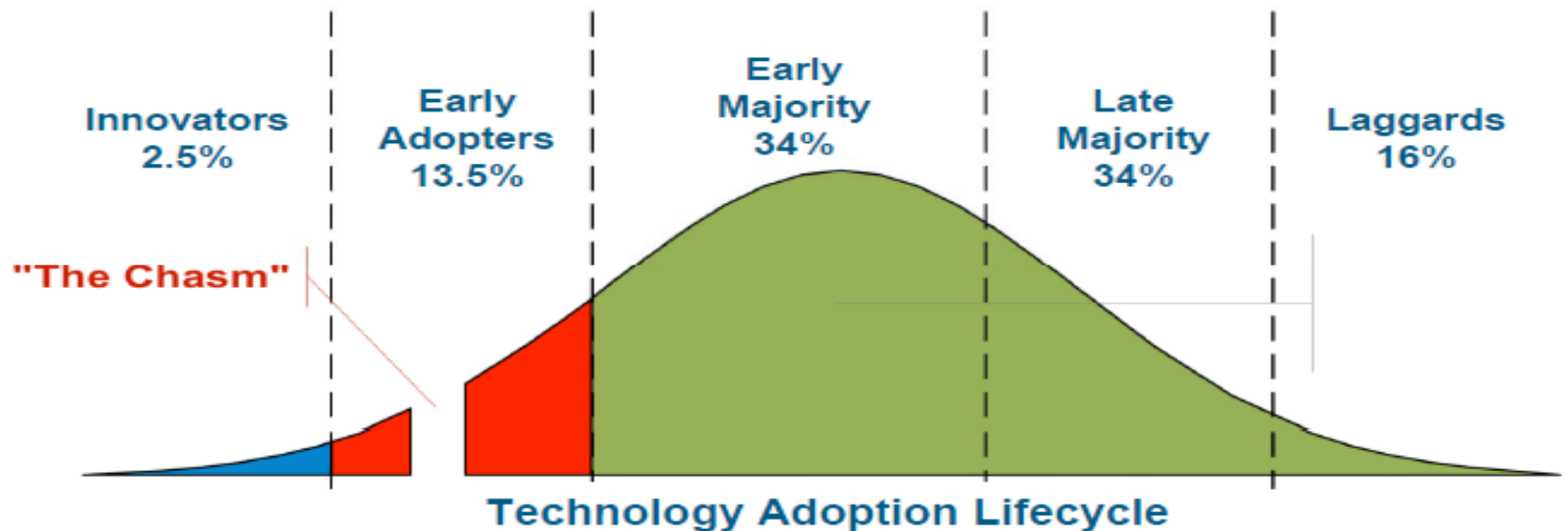
\* Forty years of plateau proved, possible, and potential productive capacity

# CHK'S PROJECTED FUTURE GROWTH IS 100% LIQUIDS



CHK's goal remains to deliver an average of 250,000 bbls/day of liquids production in 2015

# CONSUMER ADOPTION THEORY



- The innovators and early adopters can pave the way for significant technology change that can be utilized by the early majority and late majority.



# NATURAL GAS VEHICLE MARKET PENETRATION



Vehicle Type	U.S NGV Population		U.S Market Penetration (by vehicle count)		U.S Annual NGV Fuel Use (thousand DGE)		U.S. Market Penetration (by fuel use)	
	Low	High	Low	High	Low	High	Low	High
Transit Buses	8,500 <sup>b</sup>	12,200 <sup>e</sup>	12.82%	17.43%	146,616 <sup>a</sup>	153,400 <sup>e</sup>	22.79%	23.59%
Refuse Trucks	1,300 <sup>c</sup>	1,500 <sup>b</sup>	0.95%	1.09%	12,856 <sup>c</sup>	14,833 <sup>c</sup>	1.05%	1.21%
School Buses	1,360 <sup>d</sup>	2,300 <sup>b</sup>	0.27%	0.46%	1,635 <sup>d,g</sup>	2,765 <sup>d,g</sup>	0.30%	0.51%
Medium-Duty Trucks/Vans	10,000 <sup>b</sup>	22,000 <sup>a</sup>	0.35%	0.76%	13,042 <sup>a</sup>		0.15%	
Other Heavy-Duty Trucks	1,600 <sup>a</sup>	3,651 <sup>a</sup>	0.02%	0.04%	3,253 <sup>a</sup>	7,424 <sup>a</sup>	0.01%	0.02%
Light Trucks/Vans	41,000 <sup>a</sup>	71,500 <sup>f</sup>	0.05%	0.09%	15,261 <sup>a</sup>		0.02%	
Passenger Cars	31,000 <sup>a</sup>		0.02%		10,107 <sup>a</sup>		0.01%	
<b>Total</b>	<b>94,760</b>	<b>144,151</b>	<b>0.04%</b>	<b>0.06%</b>	<b>202,770</b>	<b>216,832</b>	<b>0.11%</b>	<b>0.12%</b>

<sup>a</sup>Energy Information Agency, *Alternatives to Traditional Transportation Fuels 2008*, 2010

<sup>b</sup>Yborra, S., *Growth of the NGV Market: Lessons Learned Roadmap for Infrastructure Development*, 2008

<sup>c</sup>Cannon, J., *Greening Garbage Trucks: Trends in Alternative Fuel Use*, 2006

<sup>d</sup>Monahan, P., *School Bus Pollution Report Card 2006*, 2006

<sup>e</sup>American Public Transportation Association, *2010 Public Transportation Fact Book*, 2010

<sup>f</sup>U.S. Census Bureau, *Vehicle In Use Survey*, 2002

<sup>g</sup>U.S. Department of Energy, Energy Efficiency and Renewable Energy, "Transportation Energy Data Book, Edition 28," 2009.

# MARKET SCALABILITY

12,000



## US FOODSERVICE

- 5 CNG Freightliner M2 delivery trucks in service in OKC
- 200 trucks in OKC including North Star subsidiary

4,500



## O'REILLY AUTO PARTS

- 2 CNG Ford trucks operating in OKC market
- 400 LD trucks in OK, many of which are near CNG stations

4,500



## DISH NETWORK

- Working in conjunction with CHK to develop program
- 4,500 vehicles nationwide with none alternative-fueled

35,000



## VERIZON WIRELESS

- 35,000 vehicles in the Telecom Operations division
- Currently running 500 CNG vehicles in NY, TX and CA

12,000



## JB HUNT

- 2 CNG dedicated delivery trucks running in OKC and Tulsa
- Dedicated Contract Services division is primary target



# CURRENT LIGHT DUTY FLEET NUMBERS

- Active Vehicles – 5,181
- Assigned Vehicles – 3,949
  - › Includes 1,322 Assigned CNG Fleet Vehicles
- CNG Fleet – 29.5%



## Current Assigned CNG Fleet Vehicles

State/Location	Count
OK	1,136
LA	158
TX	21
OH	3
CO	2
PA	1
WV	1
<b>Grand Total</b>	<b>1,322</b>

## CNG Count Total

Vehicle Type	Count
Assigned Fleet	1,322
Department & Pool	206
Employee Lease – Oklahoma	274
<b>Total</b>	<b>1,802</b>

# NATURAL GAS TRANSPORTATION SUPPLY CHAIN SYNERGIES:

**IMPRESSIVE WEB OF OPPORTUNITIES FOR ALL STAKEHOLDERS**



Technological Innovation



Infrastructure Buy-In



End User Utilization

Robust Market For State Fleet Vehicles

Technology

Retailers

Fleets

States



FARMERS



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