

Natural Gas Supply from the Gulf of Mexico

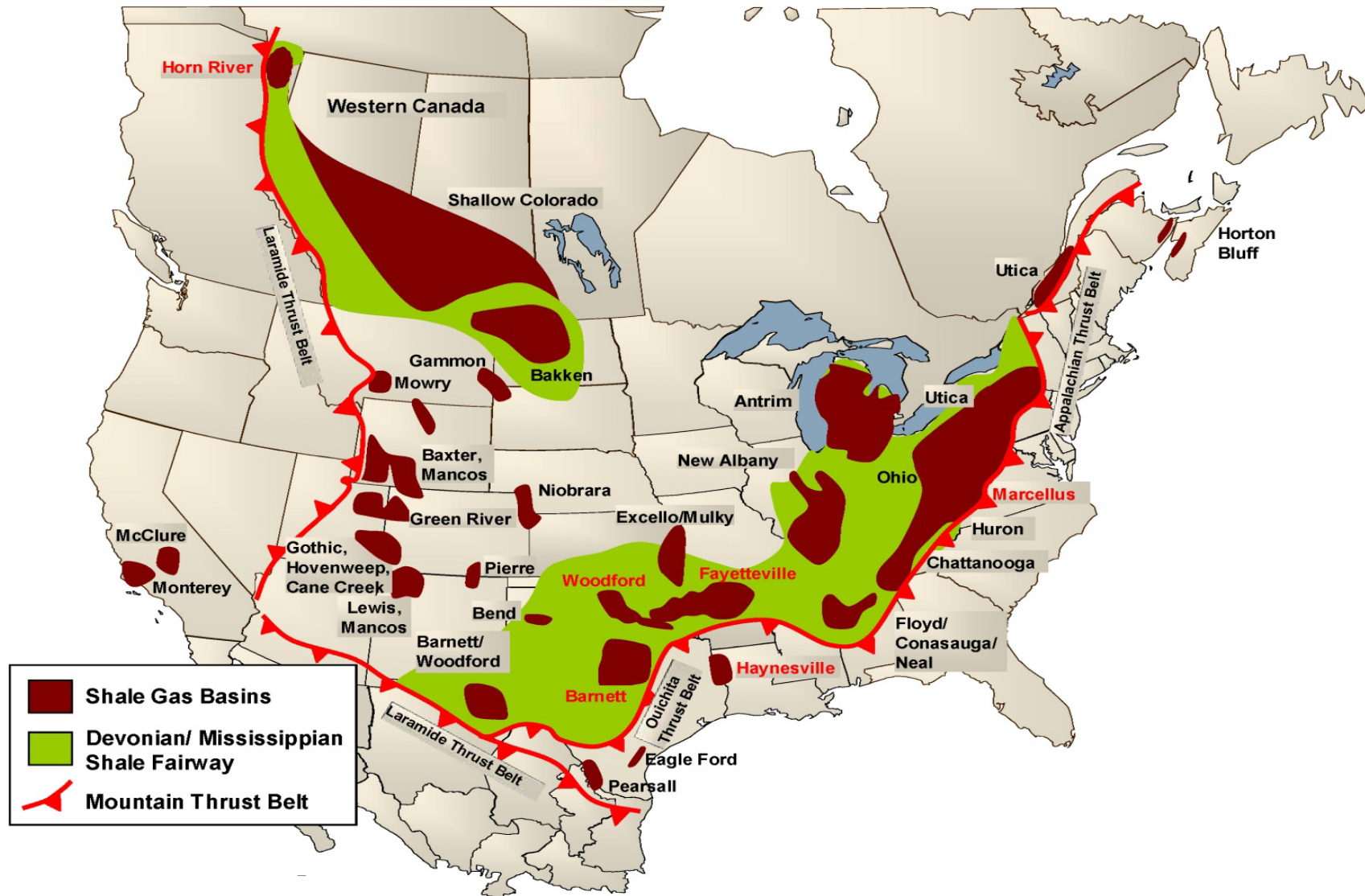




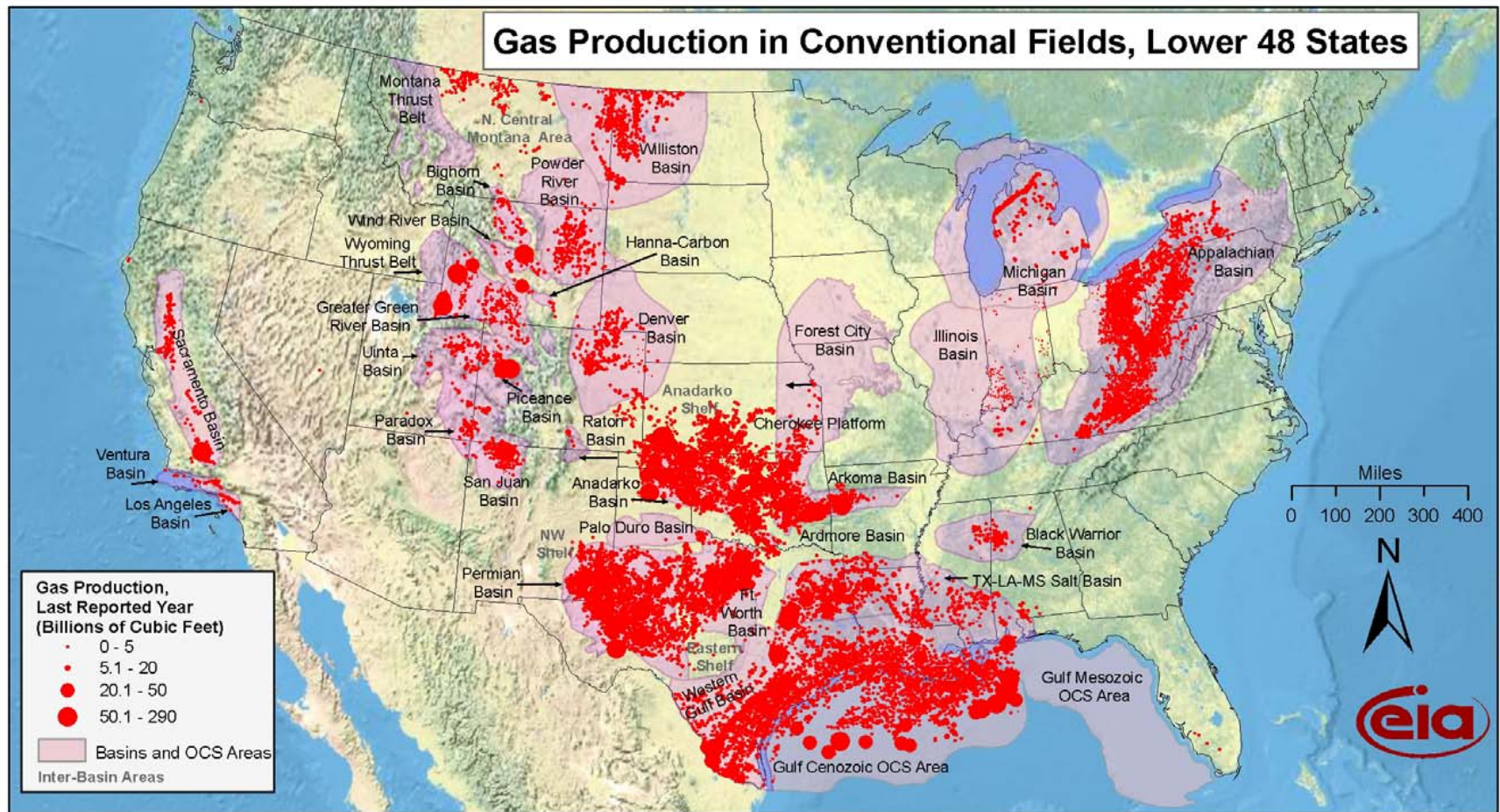
ALERT:
GAME
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!!!

Gas Shales!!

- 100+ years of cleaner burning natural gas

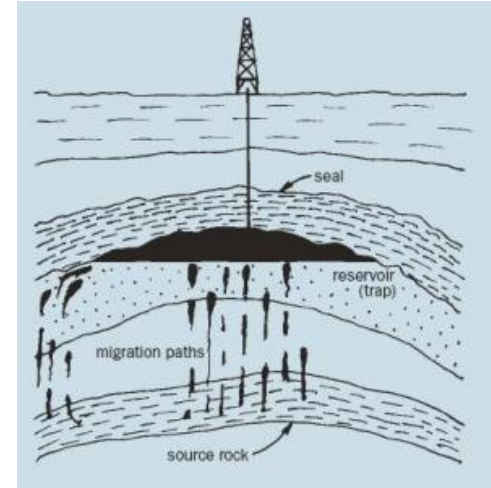
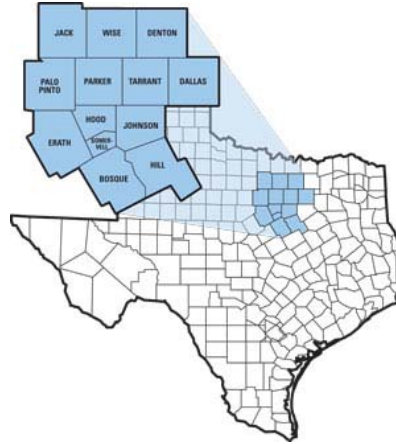


Natural Gas Supply Sources

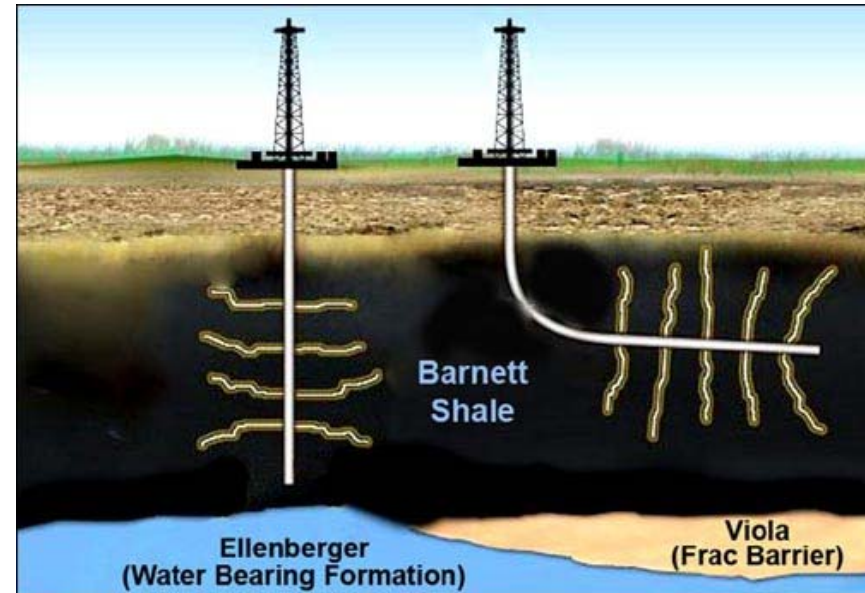
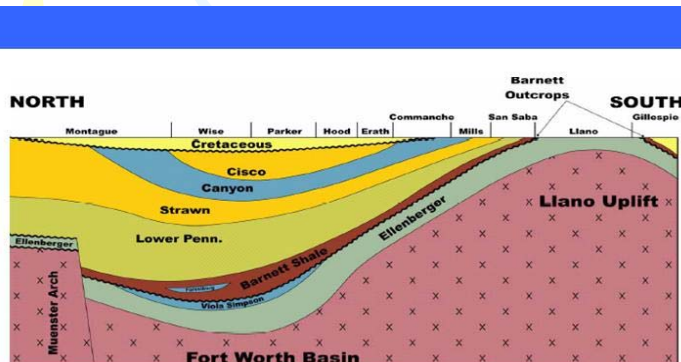


Source: Energy Information Administration based on data from HPDI, IN Geological Survey, USGS
Updated: April 8, 2009

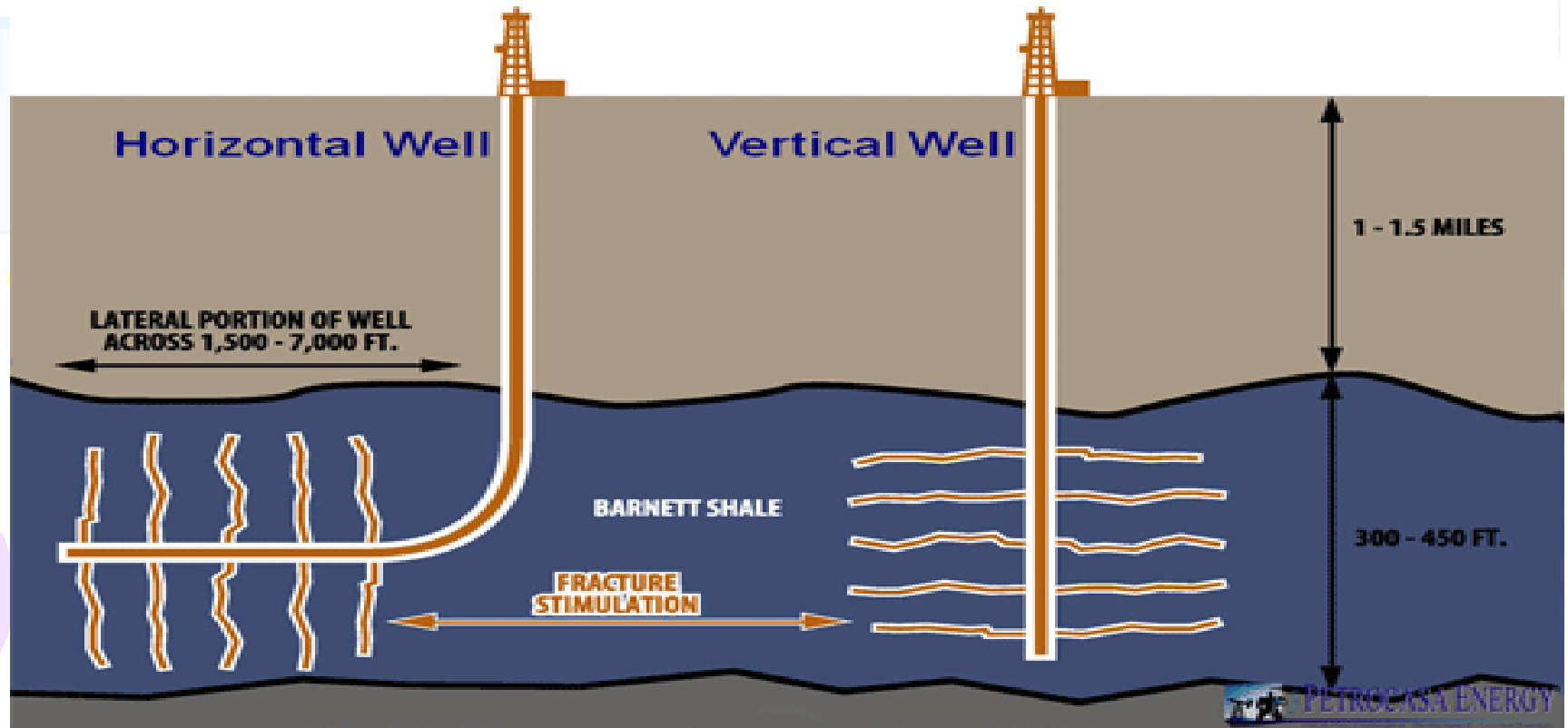
2002- Shale Plays Mitchell Energy Led the Way



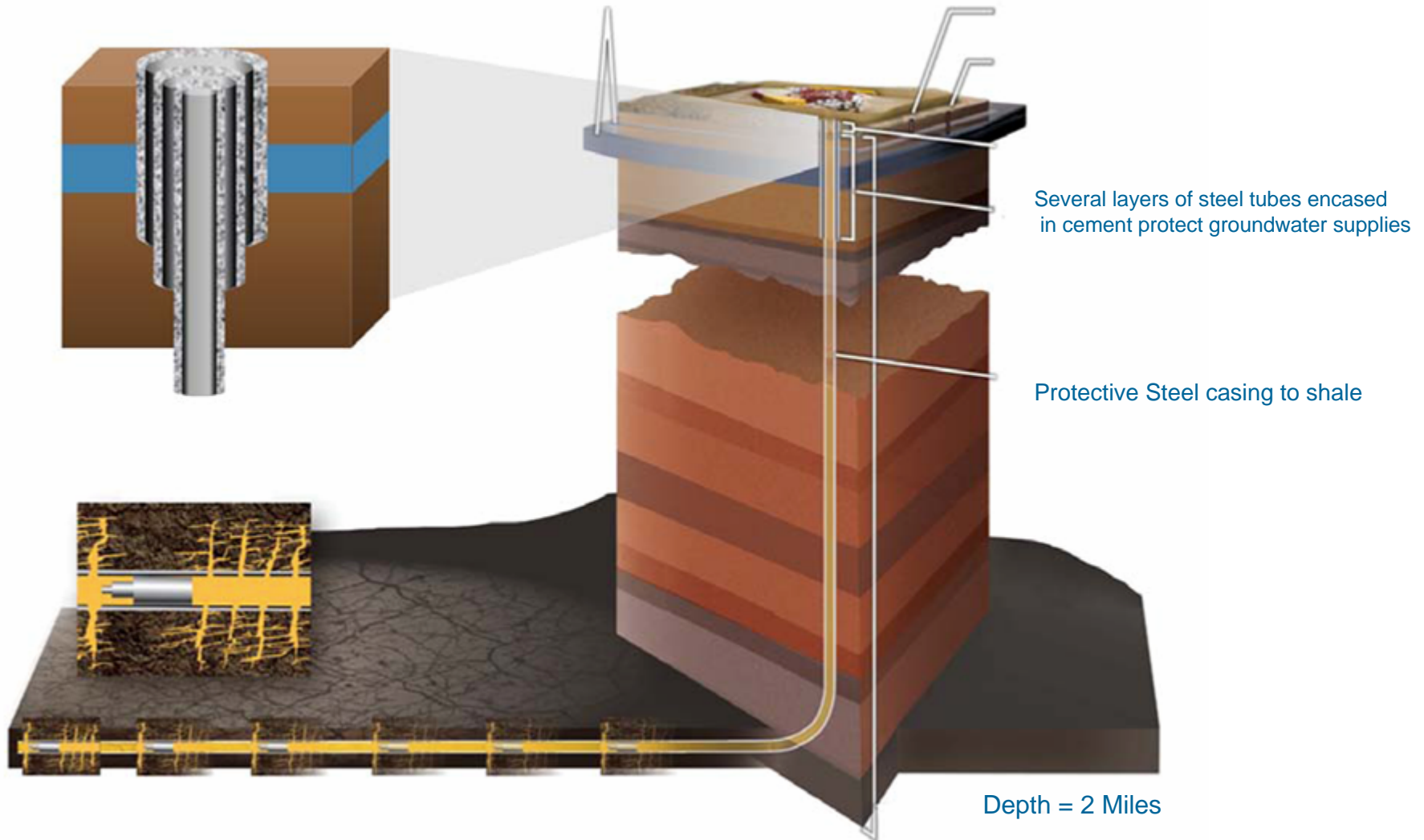
- 1950's-1990's.. George Mitchell produces gas from Ft. Worth Basin
- "small" oil & gas wells for many years
- The "source" --Barnett Shale-"Mother Lode"
- It was under "everything" for 5,000 sq mi!!



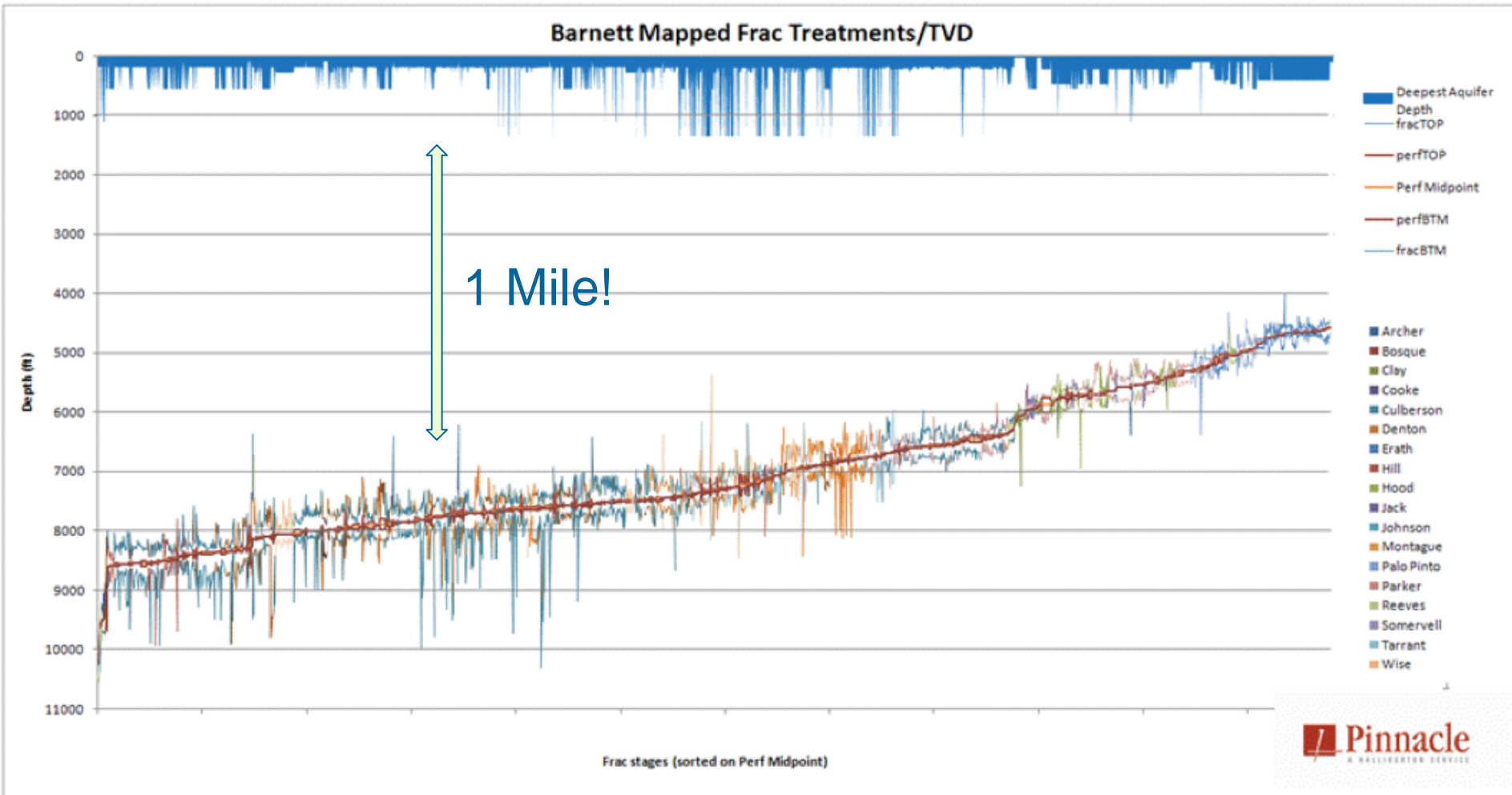
Shale Gas Supply



Shale Plays: Aquifer Protection



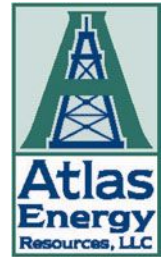
Depth of Affected Region Affected by Hydraulic Fracturing



Fisher (2010)

<http://nwis.waterdata.usgs.gov/nwis/inventory>

Domestic Independent Producers



Shale Discoveries = Barnett, Haynesville, Fayetteville, Marcellus, Bakken, Eagle Ford, Niobrara, Antrim, etc

"The Big Boys"

- Jan '10..TOTAL & Chesapeake—Now #3, \$2.5 Billion!
- March 10'...Exxon-Mobile & XTO Energy—\$41 Billion!!
- May '10..Quicksilver Resources partners with ENI (Italy)
- May '10...Shell...\$4.7 B! buys East Resources (Marcellus)
- Nov '10...Chevron acquires Atlas Energy \$4B! (Marcellus)
- Dec '10...CNOOC....1B! in Chesapeake Energy-Barnett
- Jan '11..Quicksilver lease agreement-Reliance Energy (India)
- Feb 1 '11...CNOOC-1/3 of Niobrara (Colo) with CHK
- May 5 '11...Chevron Buys Chief O&G in Marcellus
- Jan 2012...Marubeni (Japan) in Eagle Ford (52,000 acres)



Can Natural Gas Recover?

WHAT WE HAVE

- Abundant Supplies
- Low Emissions
- Existing Technology
- Domestic Fuel
- Sustainable for Decades
- **CHEAP!!!**

Cost for a BOE = ??

Nat Gas = \$18

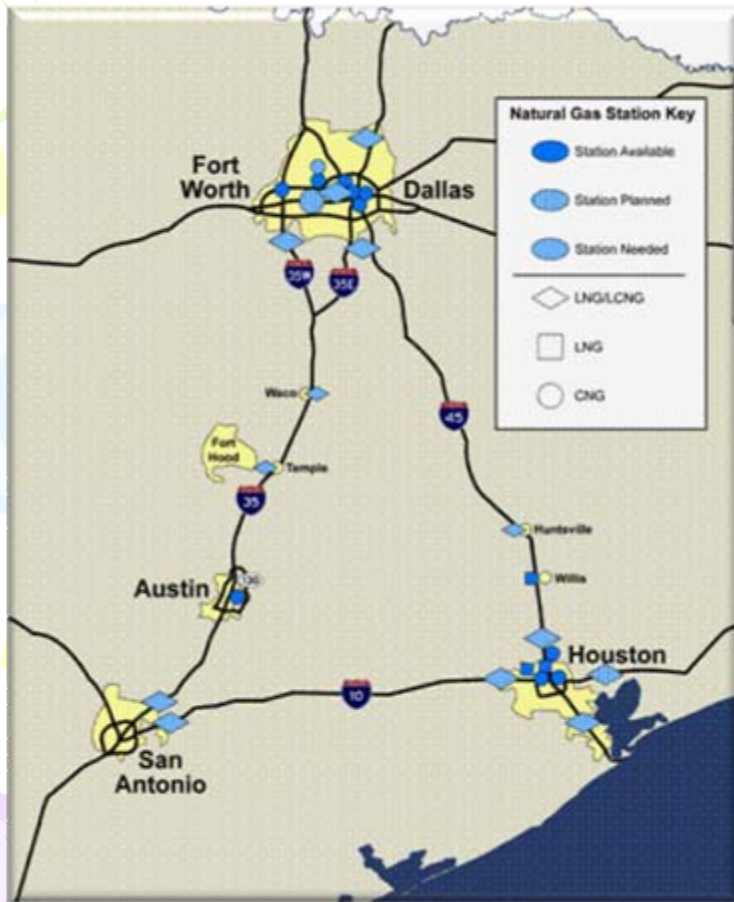
Oil = \$95!!!!!!!

WHAT WE NEED

- Infrastructure
- Incentives
- Better Price
- Demand
- Competition
- **MARKETS!!**



The Texas NGV Triangle (Clean Transportation)



Texas SB-20

- Cooperative effort between natural gas producers, fleet customers and state government.
- 20% of TERP Money (Texas Emissions Reduction Plan)--\$20-\$30 million
- DFW to Austin-San Antonio to Houston
- 20% for new stations offering public LNG and CNG—grants for 20 new stations
- 80% for government rebates for fleet owners for HDVs-500 Trucks

Detroit—GM, Ford, Chrysler



Change for 2012-13!!

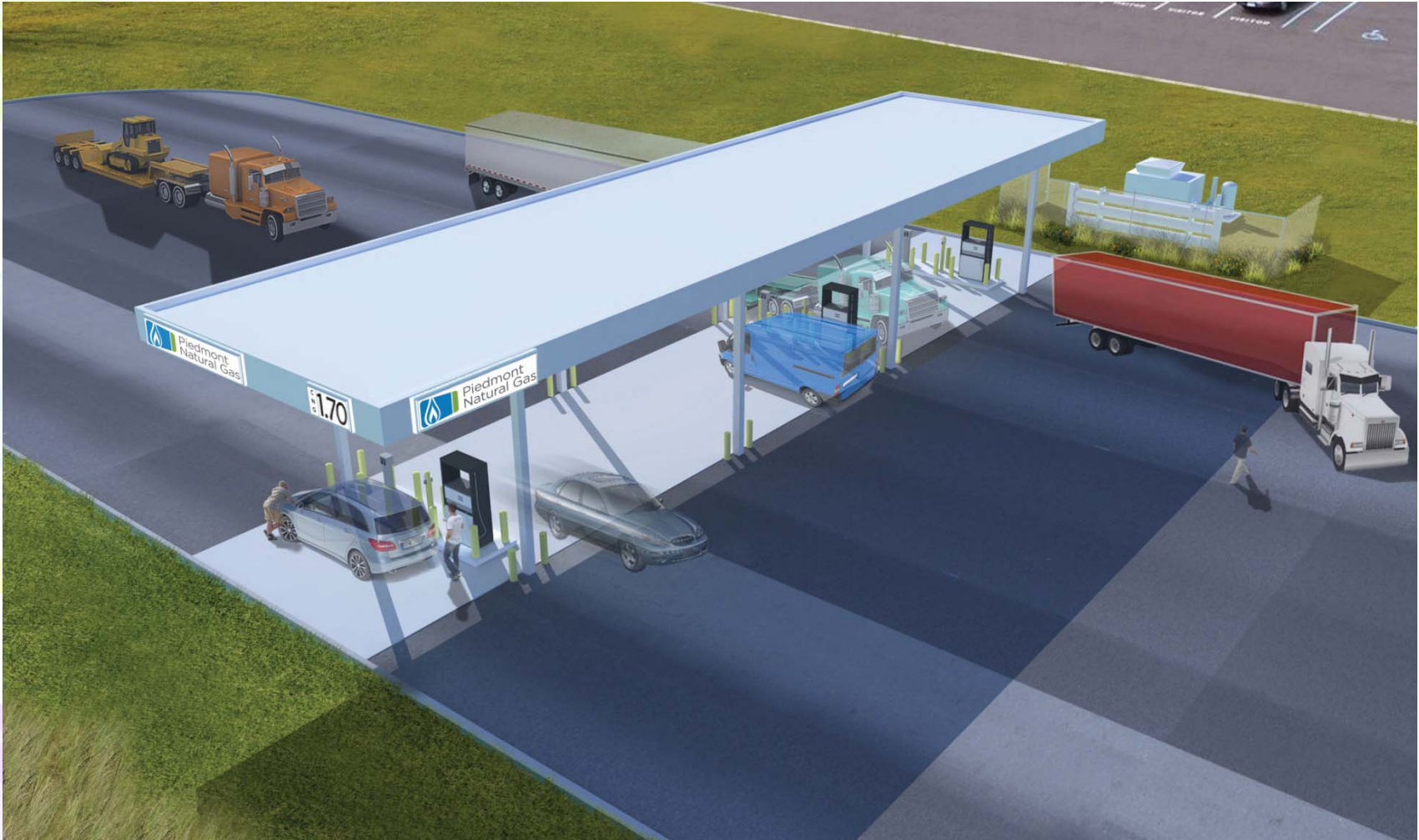


Shell & TA Centers!

Shell Oil and truck stop chain TravelCenters of America agreed to build and operate at least 100 natural gas fueling stations for heavy-duty trucks along U.S. Interstates.



New Public CNG Stations





3M to Make Fuel Tanks for Natural Gas Vehicles

The manufacturing giant, intends to develop less-expensive, higher-performance, lighter, and higher-capacity fuel tanks—which it hopes will jump-start the market for natural gas-fueled vehicles.

Carbon Fiber and new Nanoparticles for extra strength

Up to 20% lighter and 20% greater capacity

Expanding NG Markets!!



Back-UP Fuel



Base Fuel

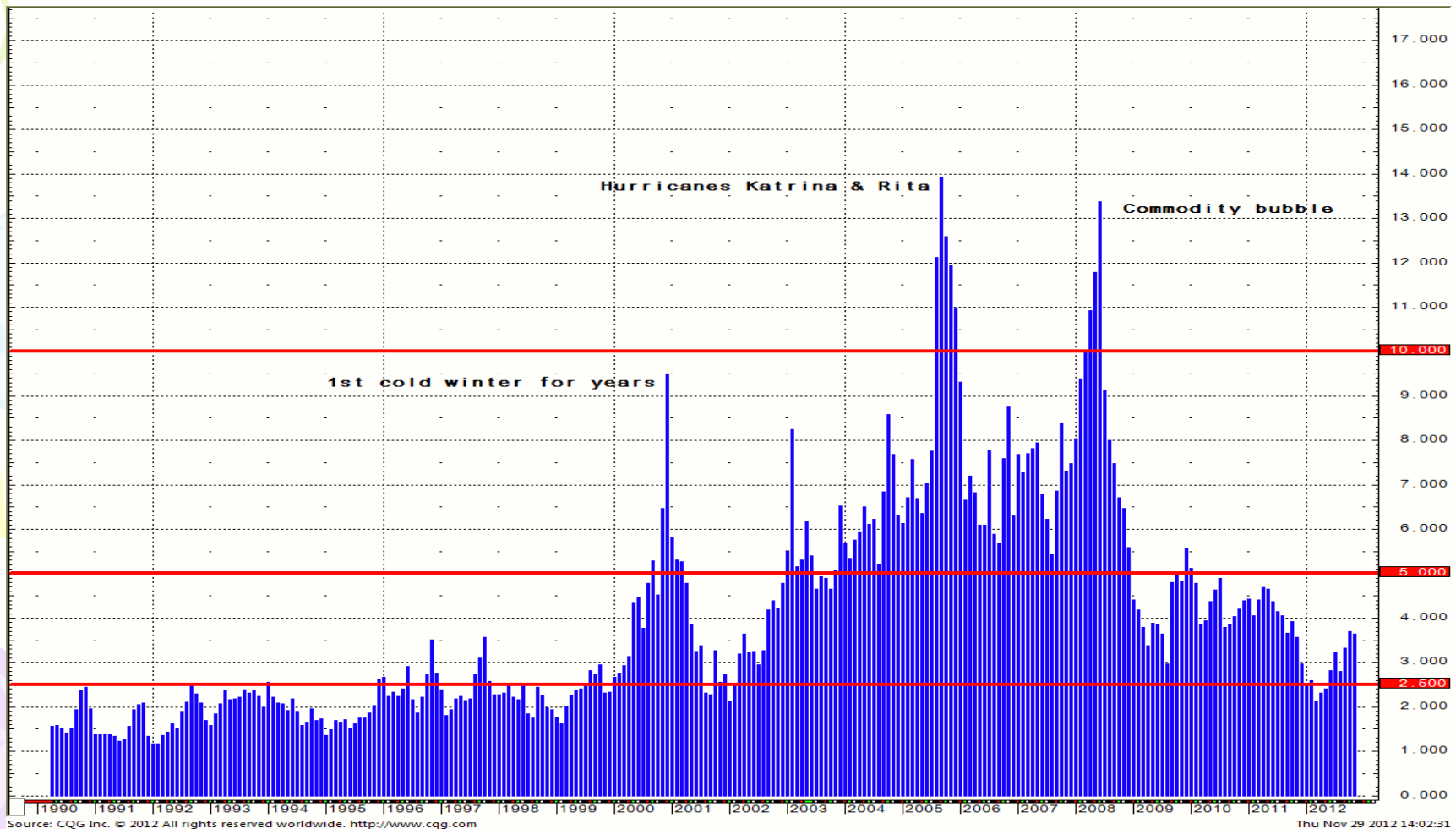


1. CNG
 2. LNG
- Transportation Fuels



Hydrogen Source

NYMEX Natural Gas Futures Prices



Source: CQG Inc. © 2012 All rights reserved worldwide. <http://www.cqg.com>

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Physical Gas Procurement Then and Now

- **MLGW Gas Purchases 1984**

- One supplier
- One pipeline with storage
- One known low fixed cost (tariff rate)

- **MLGW Gas Purchases 2012**

- Up to 50 different physical suppliers
- Manage 3 pipelines and underground storage
- Variable prices ranging from \$2.00 to \$14.75
- Prices change every day, month and season

7 Year Gas Purchase Costs

Year	MMBtu	ACTUAL	
	Purchased	\$/MMBtu	\$ AMT Purchased
2005	42,530,480	\$8.668	\$368,652,444.71
2006	37,641,447	\$7.331	\$275,959,857.00
2007	43,597,597	\$6.546	\$285,389,721.57
2008	45,209,400	\$8.343	\$377,194,500.52
2009	39,505,317	\$3.817	\$150,790,352.79
2010	42,840,795	\$4.419	\$189,315,344.12
2011	35,452,840	\$3.867	\$137,095,103.35
286,777,876			\$1,784,397,324.06

7 Year Pipeline Costs

Year	ANR	Trunkline	PEPL	Texas Gas	Total
2005	\$1,719,449	\$6,827,752	\$0	\$17,319,263	\$25,866,464
2006	\$1,715,815	\$6,615,014	\$0	\$17,071,135	\$25,401,964
2007	\$1,698,222	\$7,368,515	\$1,709,194	\$17,075,860	\$27,851,791
2008	\$1,704,895	\$8,013,819	\$1,471,299	\$17,124,053	\$28,314,066
2009	\$1,697,623	\$8,022,737	\$1,467,268	\$17,099,594	\$28,287,221
2010	\$1,798,556	\$8,032,135	\$1,462,122	\$17,049,192	\$28,342,006
2011	\$1,347,503	\$8,077,736	\$1,434,144	\$17,183,085	\$28,042,469
\$11,682,064		\$52,957,708	\$7,544,026	\$119,922,183	\$192,105,981