Fracking & the Poor

Presentation to:
17th Annual Wyoming Oil & Gas Fair

By:
John Harpole

September 19th, 2013
Who I Am

• 33 years in the Oil & Gas Industry

• Appointed by Gov. Owens to Low Income Energy Commission in 1998

• Energy Outreach Colorado Board Member since 2006

• Author of RIK-LIHEAP 2005 Energy Policy Act

• Friend of many low income energy advocates

• Son of Phil & Mary
A critique of the energy industry’s response to the anti-fracking craze

• “Quite honestly John, you guys sound like a bunch of engineers responding to an insurance company audit.”
• “You spend too much time on abstract ideology or get lost in the policy weeds.”
• “Tell people how your industry helps them.”
May 13th, 1966
35 Years of Energy Bills
World Primary Energy Demand

Fossil fuels account for almost 90% of the growth in energy demand between now and 2030
Population Growth from 1950-2050
Quality of Life is Strongly Correlated with Electricity Consumption

Source: CIA World Factbook, 2007
Russia, Iran and Qatar Form Natural Gas Cartel

10/21/2008 in Tehran, Iran

Qatar's Deputy Premier and Minister of Energy and Industry, Abdullah bin Hamad Al-Attiya

Iranian Oil Minister, Gholam Hossein Nozari

Alexei Miller, Chief of Russia's state gas monopoly - Gazprom
### Existing Terminals with Expansions

<table>
<thead>
<tr>
<th>Location</th>
<th>Capacity (Bcf/d)</th>
<th>Operator</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Everett, MA</td>
<td>1.035 Bcf/d</td>
<td>Tractebel</td>
</tr>
<tr>
<td>B. Cove Point, MD</td>
<td>1.0 Bcf/d</td>
<td>Dominion</td>
</tr>
<tr>
<td>C. Elba Island, GA</td>
<td>1.2 Bcf/d</td>
<td>El Paso</td>
</tr>
<tr>
<td>D. Lake Charles, LA</td>
<td>1.2 Bcf/d</td>
<td>Southern Union</td>
</tr>
</tbody>
</table>

### Approved Terminals

1. Hackberry, LA : 1.5 Bcf/d, (Sempra Energy)
2. Port Pelican: 1.0 Bcf/d, (Chevron Texaco)

### Proposed Terminals – FERC

3. Bahamas : 0.84 Bcf/d, (AES Ocean Express)
4. Bahamas : 0.83 Bcf/d, (Calypso Tractebel)
5. Freeport, TX : 1.5 Bcf/d, (Cheniere / Freeport LNG Dev.)
6. Fall River, MA : 0.4 Bcf/d, (Weaver’s Cove Energy)
7. Long Beach, CA : 0.7 Bcf/d, (SES/Mitsubishi)

### Proposed Terminals – Coast Guard

8. Gulf of Mexico: 0.5 Bcf/d, (El Paso Global)
9. California Offshore : 1.5 Bcf/d, (BHP Billiton)
10. Louisiana Offshore : 1.0 Bcf/d (Gulf Landing – Shell)

### Planned Terminals

11. Brownsville, TX : n/a, (Cheniere LNG Partners)
12. Corpus Christi, TX : 2.7 Bcf/d, (Cheniere LNG Partners)
13. Sabine, LA : 2.7 Bcf/d (Cheniere LNG)
14. Humboldt Bay, CA : 0.5 Bcf/d, (Calpine)
15. Mobile Bay, AL: 1.0 Bcf/d, (ExxonMobil)
16. Somerset, MA : 0.65 Bcf/d (Somerset LNG)
17. Louisiana Offshore : 1.0 Bcf/d (McMoRan Exp.)
18. Belmar, NJ Offshore : n/a (El Paso Global)
19. So. California Offshore : 0.5 Bcf/d, (Crystal Energy)
20. Bahamas : 0.5 Bcf/d, (El Paso Sea Fare)
21. Altamira, Tamulipas : 1.12 Bcf/d, (Shell)
22. Baja California, MX : 1.3 Bcf/d, (Sempra)
23. Baja California : 0.6 Bcf/d (Conoco-Phillips)
24. Baja California - Offshore : 1.4 Bcf/d, (Chevron Texaco)
25. Baja California : 0.85 Bcf/d, (Marathon)
26. Baja California : 1.3 Bcf/d, (Shell)
27. St. John, NB : 0.75 Bcf/d, (Irving Oil & Chevron Canada)
28. Point Tupper, NS : 0.75 Bcf/d (Access Northeast Energy)
29. Harpswell, ME : 0.5 Bcf/d (Fairwinds LNG – CP & TCPL)
30. St. Lawrence, QC : n/a (TCPL and/or Gaz Met)
31. Lázaro Cárdenas, MX : 0.5 Bcf/d (Tractebel)
32. Corpus Christi, TX : 1.0 Bcf/d (ExxonMobil)
33. Gulf of Mexico : 1.0 Bcf/d (Tractebel)
34. Sabine, LA : 1.0 Bcf/d (ExxonMobil)
35. Providence, RI : 0.5 Bcf/d (Keyspan & BG LNG)

### December 2003

*Source: Pat Wood, Federal Energy Regulatory Commission, LNG Ministerial Conference Presentation*
EVALUATION IN GAS WELL COMPLETION TECHNOLOGY
- THE KEY TO TODAY'S NATURAL GAS REVOLUTION

- Conventional Reservoir
  - 1850's to present

- Tight Sands
  - Single-stage HF
  - 1950's to 1990's

- Tight Sands
  - Multi-stage HF
  - 1990's to present

- Shale – horiz well +
  - Multi-stage HF
  - 2000 to present

Multi-stage hydraulic fracture stimulation (HF) unlocks gas in unconventional reservoirs

Source: America’s New Natural Gas, America’s Natural Gas Alliance
Lower 48 states shale plays

Source: Energy Information Administration based on data from various published studies.
Updated: May 9, 2011
Fracture Treatment in 1949

12 Miles East of Duncan, OK

Source: Platts Gas Daily, April 15, 2013
Drilling Distance

Source: Colorado Oil & Gas Association, *Hydraulic Fracturing and Water*
Domestic production of shale gas has grown dramatically over the past few years.

Shale gas production (dry) in billion cubic feet per day:
- Rest of US
- Bakken (ND)
- Eagle Ford (TX)
- Marcellus (PA and WV)
- Haynesville (LA and TX)
- Woodford (OK)
- Fayetteville (AR)
- Barnett (TX)
- Antrim (MI, IN, and OH)

Sources: LCI Energy Insight gross withdrawal estimates as of January 2013 and converted to dry production estimates with EIA-calculated average gross-to-dry shrinkage factors by state and/or shale play.
Shale gas leads growth in total gas production through 2040

U.S. dry natural gas production
tillion cubic feet

Source: EIA, Annual Energy Outlook 2013 Early Release
Forecasts for Shale Gas Resource?

- 2008 - 347 TCF - Energy Information Administration (EIA)
- 2008 - 840 TCF - Navigant for Clean Skies Foundation
- 2009 - 616 TCF - Potential Gas Committee (PGC)
- 2011 - 827 TCF - Energy Information Administration (EIA)
- 2013 – 1,073 TCF - Potential Gas Committee (PGC)

Source: Various resource estimates
THE SUPPLY CURVE HAS MOVED

According to the Potential Gas Committee, during the last two years, the future gas supply estimate for the US rose nearly 25% to a 48-year record of 2,688 TCF.
The “Ferrari” Affect Substantially Reduces The Likelihood Of Price Spikes

One Rig In the Haynesville

6 Month Drilling Curtailment

5 months after drilling restarts, previous production level exceeded

Source: Ponderosa Advisors LLC
Drilling Rig Productivity Continues To Improve

Southwestern Energy Fayetteville Shale

- Time To Drill (Days) 18 21 5
- Wells Per Yr Per Rig 68 2104 4942
- Average Lateral Length (Feet) 2104 4942 1066
- 30 Day Ave. Prod Rate (Mcf/d) 1066 2373 18360
- Unit Prod Additions Per Rig Per Yr (Mcf/d) 18360
- Drill & Complete Costs ($MM) 2.9 2.1

Source: Southwestern Energy Financials
NYMEX Henry Hub Natural Gas Price*
1996 - 2012 Actual

Source: *Average of last three days of trading as published in the Platts Gas Daily Report
World LNG Estimated June 2013 Landed Prices


Updated May 23, 2013
In a single year, the average US home uses 84 MCF of natural gas.

Source: Natural Gas Supply Association
# The Effect of Fracking on Residential Gas Cost

![Image of a gas bill from Xcel Energy](image)

## Gas Service - Account Summary

<table>
<thead>
<tr>
<th>Description</th>
<th>Rate</th>
<th>Quantity</th>
<th>Unit Rate</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Residential Usage Charge</td>
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<td>45 therm</td>
<td>0.090444</td>
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<td>Interstate Pipeline</td>
<td>R</td>
<td>45 therm</td>
<td>0.808828</td>
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<tr>
<td>Natural Gas 4 Qtr</td>
<td>R</td>
<td>45 therm</td>
<td>0.355870</td>
<td>$16.01</td>
</tr>
<tr>
<td>Service &amp; Facility</td>
<td></td>
<td>45 therm</td>
<td>0.016860</td>
<td>$11.94</td>
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<tr>
<td>Total</td>
<td></td>
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<td></td>
<td><strong>$36.65</strong></td>
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<tr>
<td>Franchise Fee</td>
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<td>3.0%</td>
<td>$1.10</td>
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<tr>
<td>Sales Tax</td>
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<tr>
<td><strong>Total Amount</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>$37.75</strong></td>
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</tbody>
</table>
The Effect of Fracking on Residential Gas Cost

• With the gas cost in **Spain** of **$10.05/MMBtu**, the total residential bill would have been:
  
  $67.84

  **80% Increase**

• With the gas cost in **China** of **$13.70/MMBtu**, the total residential bill would have been:

  $82.29

  **118% Increase**
What Fracking Means to Households

2003-2008 NYMEX\(^1\) Avg. Price\(^2\)/MMBtu \(\sim\) $7.21

2012 NYMEX\(^1\) Avg. Price/MMBtu \(\sim\) $2.80

61% Drop

Price Differential/MMBtu \(\sim\) $4.41

Residential Home Heating and Electricity Usage\(^3\)/MMBtu \(\sim\) 7,400,000,000

Residential Cash Savings \(=\) $32,634,000,000

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1 NYMEX – Average last 3 days of close of Natural Gas Contract as reported in Platts Gas Daily Report
2 See Addendum A for supporting documentation
3 Residential Gas Usage – Energy Information Administration
Families saved roughly $32.6 billion in 2012

Windfall to U.S. natural gas consumers (industrial and residential) was closer to $110 billion

That is greater than the annual income of all of the residents in 14 states in 2011
What Fracking Means to Low Income Households

• Roughly 40 million U.S. residential households (36% of 114 million total) are estimated to qualify for LIHEAP assistance.

\[
\text{2012 Residential Cash Savings} = \$32,634,000,000
\]

\[
\text{Percent of households LIHEAP eligible} \times 0.36
\]

\[
\text{2012 LIHEAP Eligible Cash Savings} = \$11,748,240,000
\]

\[
\text{2012 LIHEAP Total Cash Assistance} = \$3,500,000,000
\]

4 US Census Bureau State and County Quickfacts
5 LIHEAP Home Energy Notebook for FY 2009: Appendix B: Income Eligibility Household Estimates; See Addendum A
Fracking and the Poor

By now even the Obama Administration has recognized that the natural gas drilling boom has led to more high-wage jobs, more secure energy supplies and lower manufacturing costs. But one of the biggest benefits from fracking and other new drilling technologies is often overlooked: the windfall to American consumers, especially the poor.

A new study by the Colorado-based energy broker Mercator Energy quantifies the multi-billion-dollar annual savings to American households through lower utility bills from the fall in natural gas prices.

From 2003-08, shortly before the fracking revolution took hold, the price of natural gas averaged about $7.20 per million BTUs. By 2012 after new drilling operations exploded across the U.S.—from West Texas to Pennsylvania to North Dakota—the increase in natural gas production had slashed the price to $2.80 per million BTUs.

Mercator examined Department of Energy data on natural gas usage to find out how this 61% price decline translated into lower home-heating and electricity bills. According to the federal Energy Information Administration, American households use about 7.4 billion MM BTUs for home heating and residential electricity each year.

Thanks to the lower price for natural gas, families saved roughly $32.5 billion in 2012. (That’s 7.4 billion MM BTUs of residential use of natural gas times the $4.40 reduction in price.) The windfall to all U.S. natural gas consumers—industrial and residential—was closer to $110 billion. This is greater than the annual income of all of the residents in 14 states in 2011.

Mercator’s most notable finding is that the income group helped the most by this bonanza is the poor because energy is a big component of their family budgets. Data from the annual report of the federal Low Income Home Energy Assistance Program (Liheap) show that poor households spend four times more of their income on home energy (10.4%) than do non-poor households (2.6%). That same report says that roughly 40 million households, or 36% of U.S. households, are eligible for Liheap. Though the poor on average spend less overall on heating and electricity, lower natural gas prices have still shaved about $10 billion a year from the utility bills of poor families.

To put it another way, fracking is a much more effective antipoverty program than is Liheap. In 2012, Liheap provided roughly $3.5 billion to about nine million low-income households to subsidize their home-heating costs. New drilling technologies saved poor households almost three times more. Low gas prices benefit nearly all poor households, while Liheap helps fewer than one in four.

These energy savings are especially impressive compared to what residents of other industrialized nations are paying. The natural gas price this summer increased to about $3.70 per million BTUs, but that compares to the roughly $10 that consumers pay in Spain or $13 in China. According to the Mercator analysis, if natural gas prices were that high in the U.S., average home heating bills for millions of Americans would be almost 75% higher.

You’d think that good liberal egalitarians would welcome these financial savings to poor households. Yet most green groups, in particular the Sierra Club, continue to oppose fracking and are using lawsuits and political lobbying to stop it. Rich Hollywood types like Matt Damon propagandize against it. No one is doing more to increase income inequality in America than the affluent environmentalists who oppose natural gas drilling.
• Poor households spend four times more of their income on home energy (10.4%) than do non-poor households (2.6%)

• LIHEAP provided roughly $3.5 billion to about nine million low income households in 2012

• New drilling technologies saved poor households almost 3 times more

• Low gas prices benefit nearly all poor households while LIHEAP helps fewer than one in four
More on Fracking and the Poor
Wall Street Journal September 10, 2013

• A new report from IHS Global Insight estimates that fracking added the equivalent of approximately $1,200 to real household disposable income on average in 2012.

• IHS predicts unconventional oil and gas will contribute more than $2,000 a year by 2015 and $3,500 a year by 2025.

• Lower costs for raw materials were passed on to consumers via lower home heating and electricity bills.
More on Fracking and the Poor
Wall Street Journal September 10, 2013

• Wages increased from a surge in industrial activity

• Industry lifted economic growth by $283 billion in 2012, estimated to be $533 billion in 2025

• Industry paid $74 billion in federal and state tax payments, estimated to be $138 billion in 2025
Fox News Coverage Last Weekend

FRACKING AND THE POOR
OIL & GAS BOOM BENEFITS LOW-INCOME FAMILIES

10 INCHES OF RAIN SINCE THE DELUGE STARTED TUES
Fracking helps families, cuts heating, power bills by $32.6 billion, Colorado energy exec says

Cathy Proctor
Reporter
Denver Business Journal
Email | Facebook | Twitter

The mother of John Harpole, a longtime Denver oil and gas executive, kept 35 years of monthly utility bills in a box — making notes in the margins about the weather “in hopes that she could guess what next month’s bill might be,” her son says.

And it’s people like his mother, Mary Harpole — who raised nine children in a home in Denver’s Congress Park neighborhood after her husband died in 1966 — that John Harpole thinks of when he talks about how the oil and gas industry’s use of hydraulic fracturing (or fracking) cut residential utility bills in the United States by $32.6 billion in 2012.

“There’s not a bill in that pile (of utility bills) that is over $90 — maybe a really expensive lunch for some folks — but she...
Global Shale Reserves

Legend
- Assessed basins with resource estimate
- Assessed basins without resource estimate
- Countries within scope of report
- Countries outside scope of report

Source: EIA; Dr. Jim Duncan, ConocoPhillips, *Decoding the Relevance of Abundant Supply*, 2011 COGA Presentation
Resource potential in North America is massive – with the Rockies accounting for a significant fraction

Major global shale gas and LTO opportunities

Technically recoverable shale gas (trillion cubic feet) and LTO (Billion barrels) resources

1. Only countries included in EIA study
Job Creation

• America’s Oil & Natural Gas Industry supports 9.2 million men and women across the US in a wide range of highly skilled, well-paying professions

Source: energycreation.org article on job creation
Revenue Creation

• The US Oil and Natural Gas industry contributes $86 million a day in taxes, royalties and other fees – about $31 billion a year

Source: The Energy Stimulus
Conclusions

• Since 1949, 1,400,000 wells have been hydraulically fractured in the US…No one has ever been able to demonstrate that it is harmful to human health

• Low natural gas prices will significantly advance the general public health and welfare
  – Conversion coal to gas, reduced air emissions
  – Energy security, job creation & lower energy costs for low income households
Conclusions

• Increased industry activity in urbanized areas and environmentally sensitive areas should be addressed in a collaborative manner without **demonizing** oil and gas development

• What is more important to environmental groups, creating an **ideological enemy** (oil & gas development) with an artificial bogeyman (hydraulic fracturing) or advancing society?
Contact Information

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Citations for Report

All of the information utilized for this report is a compilation of information pulled from the following data sources:
Ponderosa Advisors LLC
Blue, Johnson Associates, Inc.
Chris Wright, Liberty Resources
Office of Fossil Energy
Office of Oil Gas Global Security Supply
U.S. Department of Energy
Raymond James and Associates, Inc.
Charif Souki, Cheniere Energy Inc.; Cheniere Research
U.S. Federal Energy Regulatory Commission
Institute for Energy Research (IER)
Energy Information Administration (EIA)
Bernstein Research
Western Energy Alliance
Sutherland LNG Blog
Colorado Oil and Gas Association
### Addendum A

Average price calculation between 2003-2008 using NYMEX average pricing

<table>
<thead>
<tr>
<th>Year</th>
<th>Average Price per MMBtu</th>
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<tbody>
<tr>
<td>2003</td>
<td>$5.441</td>
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<tr>
<td>2004</td>
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<tr>
<td>2005</td>
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<tr>
<td>2007</td>
<td>$6.934</td>
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<tr>
<td>2008</td>
<td>$8.952</td>
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</tbody>
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2003-2008 NYMEX\(^1\) Avg. Price/MMBtu = $7.21

Full PDF URL:

41,767,370 Households