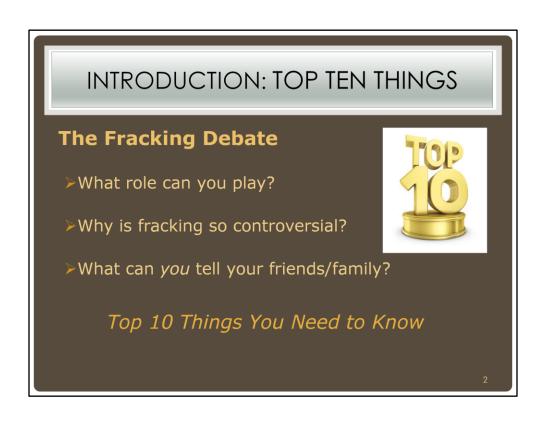


Good morning on this mid-term election day 2014! I am sure if you are like me, you are glad to see and end to robo calls, dueling ads and direct mail.

As we gather together in Houston, voters are going to the polls in Denton, TX; Santa Barbara County, Mendocino County, San Benito County in California. Athens County; Gates Mills; Kent and Youngstown, Ohio to vote on whether to ban hydraulic fracturing/fracking. In Colorado, a last minute deal kept a ban off the state ballot. Five cities in Colorado have banned fracking and cities in California, Hawaii, New Jersey and New Mexico have banned the practice. The state of New York has had a moratorium in place since 2008. More initiative campaigns are expected as we move to the 2016 election.



Why is an O & G stimulation technique the subject of public debate?

What are the issues?

Why should you get involved?



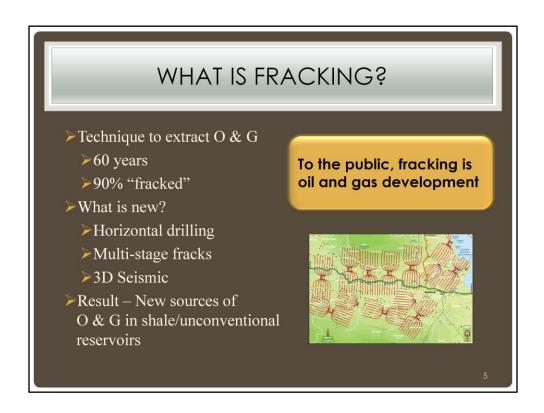
First, royalty owners – you have a unique perspective. Focus group polling in Colorado identified your voice as "trusted."

The U.S. is the only nation where minerals can be owned by individual citizens. You live with the direct impacts of development and can share stories on what mineral revenue means to your family – a family farm saved, or a daughter or son with a college degree.



To those in the larger oil and gas industry, service providers like lawyers or accountants and even state and federal regulators – you have credibility with your family and friends. They know you and trust you.

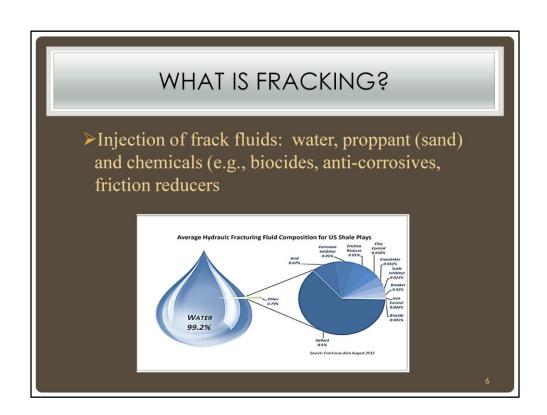
You need to educate yourself on the debate and, with respect, share your perspective when your friends and family raise their concerns with fracking.

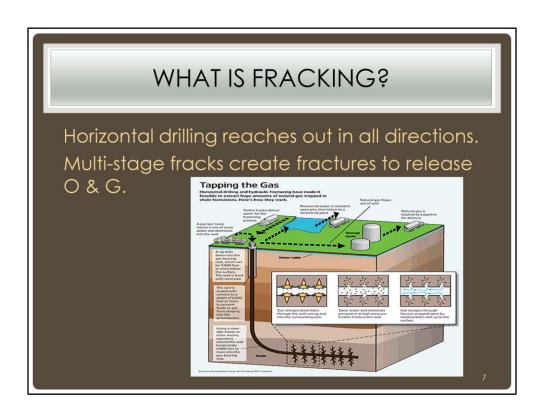


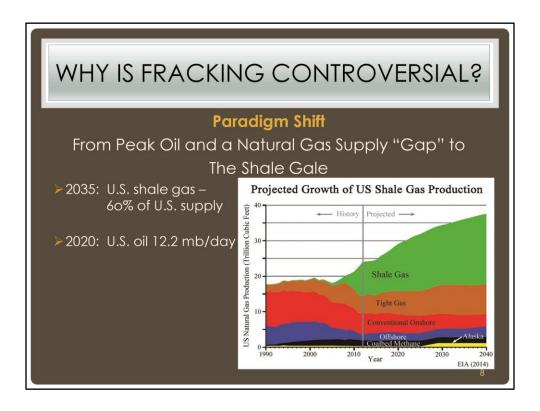
Fracking is a technique to stimulate or extract oil and gas – it's been around for 60 years and today 90% of oil and gas wells are fracked.

But beginning in 2003, fracking was married up with horizontal drilling to unleash the resources in unconventional, shale formations. Unlike conventional formations with pools or large pockets of oil or natural gas, unconventional deposits find oil or gas trapped in tight sands or shale rock. Over the last decade, the U.S. went from tight gas supplies and 60% imported oil to abundant domestic resources as a result of this new application of an old technology.

Key Point: in the public debate, fracking <u>is</u> oil and gas development, *not* just this technique. When discussing concerns with "fracking," a narrow focus on only the technique of "fracking" will miss the mark with your friends and family – they will be thinking of the oil and gas industry as a whole.



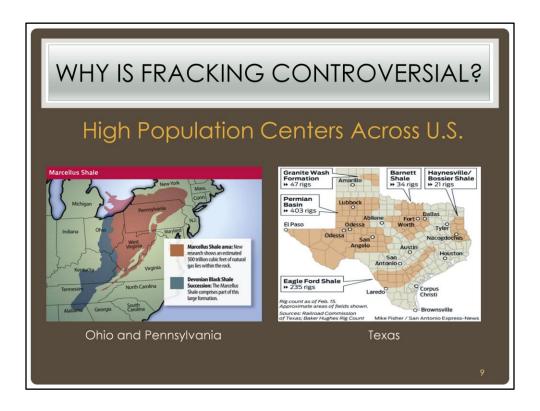




This new abundance of domestic oil and gas is a paradigm shift from where we thought we were headed as recently as 2005 – continued reliance on oil imports and increased LNG imports. When I was in office, a mere 10 years ago, I was testifying on the impact of a natural gas supply gap on our economy and the national security risks of importing 60% of our oil.

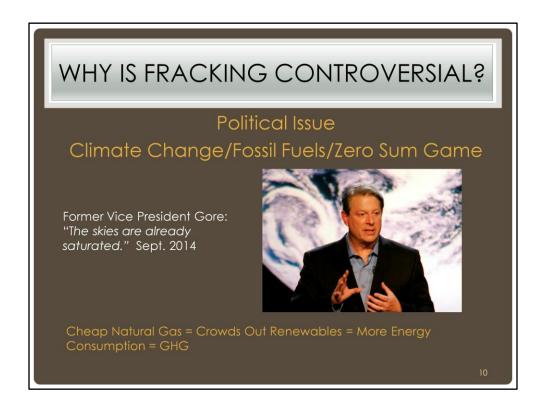
Since 2004, U.S. oil production has increased by an astonishing 56%.

This should be great news!



Two main reasons why this paradigm shift is viewed with concern:

The first is local – The impacts of O & G development in urban and rural areas that may not have experienced oil and gas development ever or not in many decades. For example, the Front range of CO, and communities in PA, OH, Dallas/Fort Worth.



The second is global – Climate Change. Burning fossil fuels is the primary source of CO2 which contributes to climate change. Ten years ago, the U.S. was running out of natural gas and importing oil, and O & G prices were high. This was a favorable environment for higher priced alternative energy.

That is no longer true.

While cheap natural gas is helping to push coal out of power plants, which is a positive development for climate change concern because of the lower carbon footprint of natural gas, abundant natural gas is a threat to renewables and arguably takes away the urgency to act.

In September, at the big climate march that took place in NYC, VP Al Gore made this argument on why natural gas is not a "bridge fuel" to a better future.

- 1) Natural gas is still a carbon fuel and contributes to CO2 emissions, and
- 2) Natural gas harms adoption of renewables.



At both the local and national/global levels there is sustained messaging to the public to stoke a "fear of fracking." Fracking <u>just</u> sounds bad and environmental groups have done an effective job on associating bad <u>not</u> good things with fracking.



This messaging has included celebrities; we have had movies – Gasland and Gasland II, The Promised Land, attacking fracking. And, in September, 2014 Neil Young released his new anti-fracking anthem, "Whose Gonna Stand up and Save the Earth?" The song urges us to "ban fracking now."

Cue 1:20

# WHAT IS YOUR MESSAGE?

# **BIG PICTURE**

We care how O & G is developed.

O & G is regulated and on-going research informs new regulations.

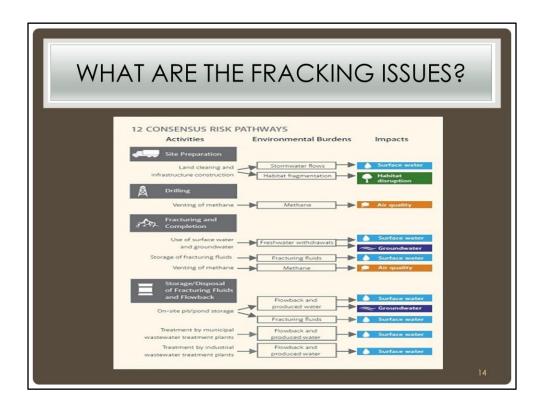
U.S. O & G improves our national security, economy and quality of life.

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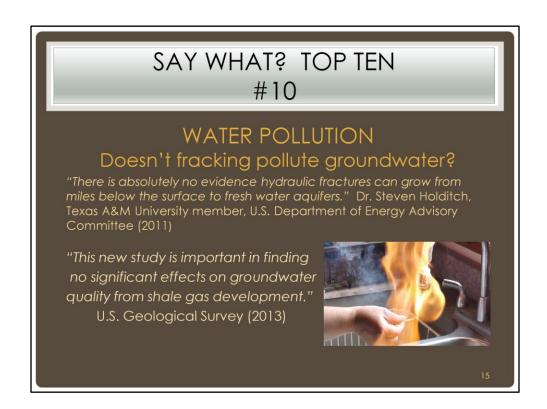
# First the Big Picture

Three key points to keep in mind as you talk to your friends and family.

- 1) You <u>care</u> about how oil and gas is developed.
- 2) Oil and gas is regulated and new research and new policies are making regulations more strict, not less.
- 3) Domestic oil & gas improves U.S. national security, U.S. economy and our quality of life .



So let's shed some light on the concerns people raise about fracking, so you can be ready for your friends and family. So here are my Top 10 Fracking Issues:



#10 – Water Pollution

There is a concern that fracking pollutes groundwater and results in flaming faucets as portrayed in Gasland.

After repeated studies, <u>NO</u> evidence that fracking deep underground results in contamination of water supply. A recent September 2014 DOE Study in the Marcellus shale made the same conclusion as the earlier studies depicted on the slide. The Colorado Oil and Gas Conservation Commission (COGCC) website explains why the "flaming faucet" in "Gasland" was not the result of fracking.

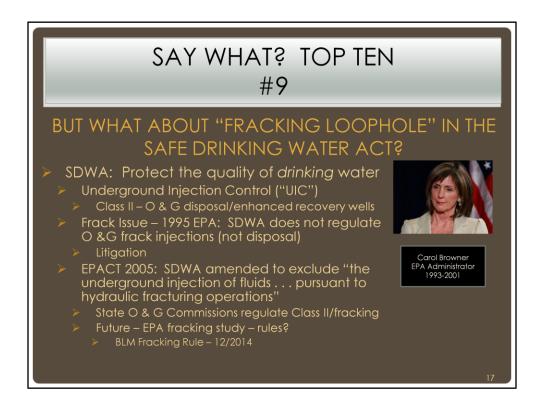


But, oil and gas development can pollute surface and groundwater. (This is a good example of the public's understanding that "fracking" = oil and gas development.)

- Poorly handled surface activities resulting in spills or leaks
- Poor construction of well bores and cementing resulting leaks.

Industry standards and state and federal regulations address these issues requiring spill reports and setting well integrity standards.

In Colorado, Noble Energy and Colorado and CSU are pioneering real time, on-line groundwater monitoring by the public.



#9 - Doesn't Oil and Gas Have a Fracking Loophole?

Let's look into this charge.

Federal Safe Drinking Water Act (SDWA) protects a subset of groundwater - drinking water aquifers.

In the mid – 90's, an environmental group challenged Alabama and EPA for not regulating fracking under the SDWA. EPA and the state regulated fracking injections not as permanent disposal under the SDWA, but as an O & G stimulation technique more appropriately regulated by state oil and gas commissions.

 Result: After litigation, the court rejected EPA's initial approach, but did allow EPA and the state to use a different SDWA provision to regulate simulation. Then, the goal was to put the certainty back into how EPA managed fracking. In 2005, Congress enacted EPACT which included the SDWA fracking exclusion, to restore treatment of fracking as not regulated by the SDWA.

2014 Situation – EPA is looking at new fracking regulation in a study commenced in 2009 and Bureau of Land Management (BLM) will issue a frack regulation addressing disclosure and well integrity by the end of 2014.

# SAY WHAT? TOP TEN #8 Doesn't Fracking Use Up a Lot of Water? Fracking uses 2 to 20 million gallons/per well Less than 1% of total water use Fracking typically uses clean water Concern locally and in drought-prone states Recycle: Method: mechanical skimming, chemical reaction, reverse-osmosis filtering and biological treatment Halliburton: technique to use briny, brackish water to frack Noble/CSU: Study on recycling flowback water Colorado School of Mines: cryogenic fracking

#8 – Doesn't Fracking Use Up a Lot of Water?

Most of a frack job is water (97 – 99%)

2 – 20 million gallons per well

Sounds like a lot of water, but relative to total water use in most states, it is less than 1%. In fact, in most states it is closer to .01% of total water use.

But, there are issues:

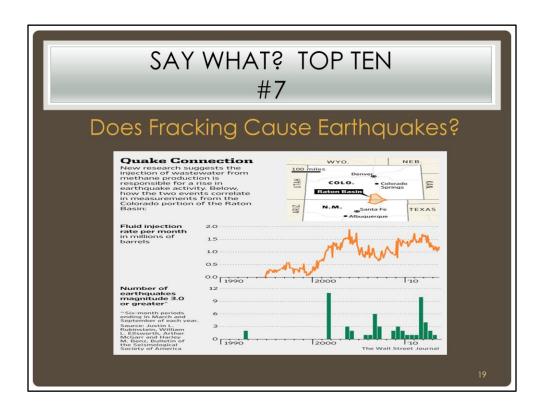
Locally -

Water used for fracking can strain total supplies and raise prices for agriculture.

Fresh water is "dirtied" for use in frack jobs

### Future -

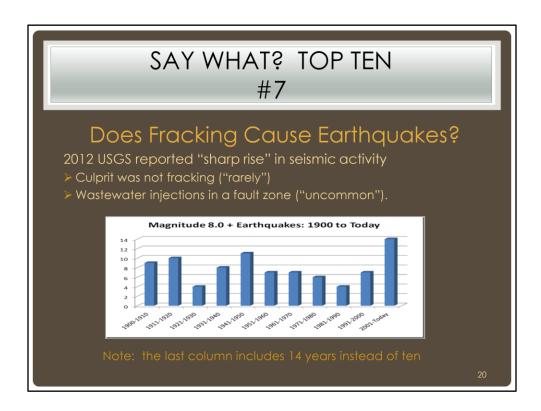
Recycling – 40% of frack jobs in PA use recycled water, not clean water. In Colorado, at the School of Mines, waterless fracking (cryogenic/nitrogen) is being studied.



#7 – Does Fracking Cause Earthquakes?

There are ongoing studies on the relationship between oil and gas development to observed and felt seismic events. U.S. Geological Survey has been doing studies for several years on that relationship. USGS has examined both fracking and waste water disposal as a trigger for seismic events.

The USGS studies absolve fracking from blame for earthquakes, but some studies indicate waste disposal wells – wells disposing of frack fluids at pressure – as a possible culprit.



Although initial studies have found a connection to some waste water disposal wells, there is not a 100% connection. Thousands of disposal wells over decades result in no seismic events – so there are other factors at play. This may include pre-existing faults that in some instances create seismic events.

### Studies continue.

Just last week, the Texas RR Commission, the states O & G regulator, put in place new regulations to require O & G companies to consult with USGS on the location of disposal wells and retained the power to deny a permit or shut-in well if a seismic event is probable.

Similar actions and studies are occurring in Oklahoma.



#6 – Doesn't Fracking Pollute the Air, Contribute to Climate Change and Cause Health Problems?

Oil and gas is an industrial process using diesel-powered equipment handling fluid minerals that emit, involves construction activities and truck traffic that results in dust (particulate matter) – a pollution.

And, what is new is the higher well density and duration of unconventional drilling which has resulted in local concerns and a number of research projects on air quality.

EPA/states regulate air quality.

For example, EPA ordered -

2008 - 90% reduction of NOX for O & G diesel

2012 - Reduction of ozone pollutants and methane from natural gas wells

More federal oil and gas air quality controls on the way. EPA is looking at ozone/methane controls for oil and a federal rule directed at methane emissions. In 2014, Colorado enacted first state law to directly reduce methane emission



Concerns are raised about the local impacts of development on public health and this is an area that needs more study and is getting it. Anecdotal evidence of headaches, nausea, unpleasant odors, but to date lacking peer-reviewed science.

In the meantime, existing CWA, CAA and SDWA regulations have emission standards to protect human health.

Future – more regulation is on the way.



Issue #5 – Doesn't Fracking Lower The Quality of Life?

Oil and gas development is an industrial activity that will result in negative impacts to property values and quality of life in local areas. Yes, it will bring jobs and tax revenue, but it also brings truck traffic and change to communities. And, admit it, none of us want an oil and gas well next door, particularly if we don't receive any direct benefit in the form of a royalty.

In Colorado, Anadarko and Noble are taking significant steps to reduce their development footprints.

Concentration of facilities
Closed loop drilling
Piped, not trucked water
Use of natural gas, not diesel for equipment

And, enhancing communication/cooperation with communities.



An area of concern to me is the number of independent players who help to develop a well. One bad actor among the sub-contractors can ruin a company's reputation and destroy the community's trust. The wastewater contractor who bids a good price might be illegally dumping waste water. How can industry ensure that all contractors act to a high standard?

We have contracts and we can pursue legal actions to ensure accountability, but I think the industry needs to create a shared value of excellence and accountability up and down the team.

So those are the environmental challenges that your friends and family may raise.

What are the positives?



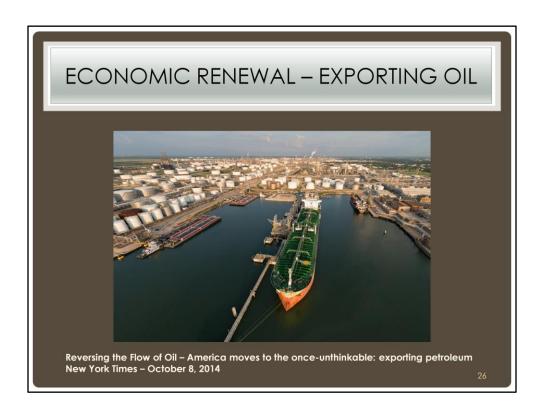
#4 – Fracking Contributes to U.S. Economic Renewal

In 2014 the U.S. Federal Reserve reported that since 2006 low natural gas costs boosted U.S. manufacturing by 3%, raised investment by 10% and direct jobs by at least 2%.

Oil prices have dropped as a result of low demand and new supply – selling for under \$3 for the first time in years.

## What does that mean?

Every one cent drop in gas at the pump = \$1 billion drop in annual energy spending or about \$50 less per month for the American household. That is a meaningful number for senior citizens and low income citizens.

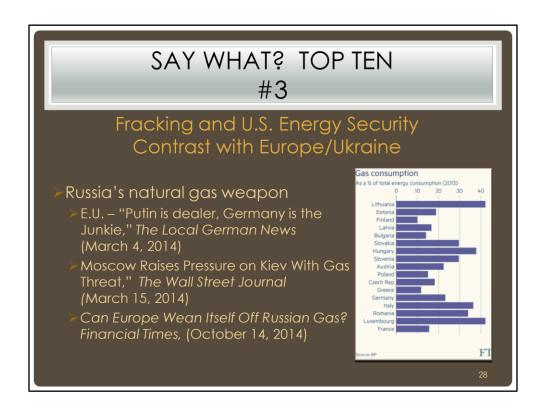


This is the Tanker BW Zambesi in July 2014 sailing to South Korea for the first sale of U.S. crude oil outside of North America in 40 years – since Jimmy Carter put on his sweater in 1975!



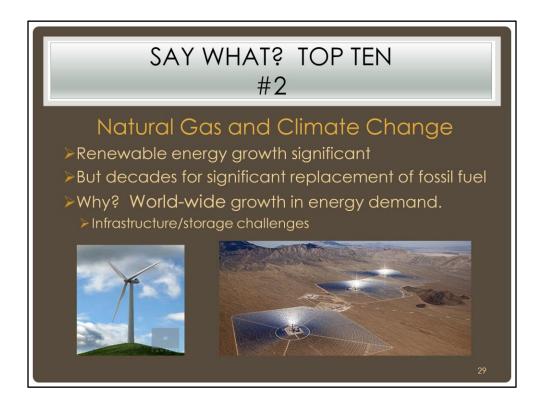
#3 – Fracking Improves US Energy Security

- 1) In October 2014, IMF in the "World Economic Outlook" noted the difference that shale gas development made in the U.S. economy when contrasted with Europe. A significant boost in U.S. manufacturing exports and an expanding economy. In Europe not so much.
- 2) Wood Mackenzie in October 2014 noted that U.S. oil and gas output grew 42% in 7 years and that by 2025 we will be energy independent.
- 3) Turmoil in the Mideast Israel/West Bank; Libya; Iraq; Nigeria; Syria; but oil prices are down, not up. U.S. oil made the difference.



And, we have the example of the Ukraine (and Europe) and Russia. Russia wields the energy weapon to control Ukraine and its western allies.

Our domestic resources allow us to control our own destiny – we are no longer dependent on foreign suppliers. That is fundamental to our national security.



#2 – Natural Gas From Fracking is a Positive for Climate Change

Al Gore doesn't like natural gas as a bridge fuel and wants a turn to renewables to address climate change. But that can't happen for several years. We have made remarkable progress with renewables – the amount of electricity from wind and solar has grown 950% since 2005. But renewable energy is still a "drop in the bucket" in the context of domestic and world energy demand.

Global energy demand grows 41% 2012 – 2035

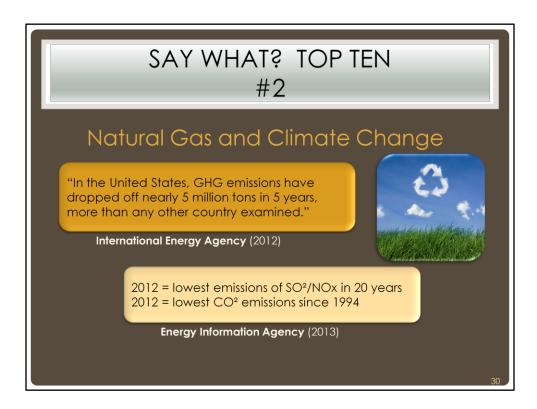
<u>Domestic Renewables</u> – EIA reports renewables now account for 12% of U.S. electricity. Renewables contribution will rise to 16% in 2040.

<u>Global Renewables</u> – IEA reports renewables make up 20% of global electricity supply in 2011. Renewables contribution will grow to 31% by 2035.

Bottom line - We will rely on fossil fuels for decades.

In the U.S. in 2040, we still will need 89% fossil energy.

In the World in 2035, we will still need 69% fossil energy.



The good new is the switch from coal to natural gas saw U.S. GHG emissions drop to levels not seen since the 1990's. That is because natural gas emits half the carbon that coal emits.

The U.S. is now close to 10% below 2005 GHG levels which is more than halfway towards meeting President Obama's initial goal of a 17% reduction by 2020.



#1 – U.S. Energy Independence is a Bi-Partisan Issue!

# SAY WHAT? TOP TEN #1

# U.S. Energy Independence An Issue We Can All Agree On

- "Natural gas, if extracted safely, it's the bridge fuel that can power our economy with less of the carbon pollution that causes climate change."
- "My administration will keep working with the industry to sustain production and job growth while strengthening protection of our air, our water, and our communities."



2014 State of the Union

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# SUM UP YOUR MESSAGE

- > Fracking is regulated
- > Fracking benefits the American economy
- > Fracking does help the "little guy" (royalty owner and low prices at the pump)
- Fracking protects the U.S.

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Fracking and the U.S. energy revolution is, on balance, good news. Like all industrial activities, there are environmental and social impacts. We live in a nation of laws and on-going studies result in new, tougher regulations.

This is a development we can all be proud of.

# KNOW THE ISSUES

### **RESOURCES**

- GOVERNMENT

  \*\* Environmental Protection Agency
  www2.epa.gov/hydraulicfracturing
- \*Your state Oil and Gas Conservation Commission

\* Interstate Oil & Gas Compact Commission http://groundwork.iogcc.org/topics-index/hydraulic-fracturing

\*GAO "Unconventional Oil and Gas Development: Key Environmental and Public Health Requirements," GAO-12-874 (Sept. 2012) http://www.gao.gov/products/GAO-12-874

\* GAO "Oil & Gas Updated Guidance, Increased Coordination and Comprehensive Data Could Improve BLM's Management & Oversight," GAO-14-238 (May 2014) http://www.gao.gov/products/GAO-14-238

\*Congressional Research Service

"An Overview of Unconventional Oil & Natural Gas: Resources and Federal Actions (January 2014) http://fas.org/sap/crs/misc/R43148.pdf

"Hydraulic Fracturing. Selected Legal Issues" (Nov. 2013) http://fas.org/sgp/crs/misc/R43152.pdf

"Hydraulic Fracturing and Safe Drinking Water Act Issues (Ap. 2012) http://fas.org/sgp/crs/misc/R41760.pdf

# KNOW THE ISSUES

### **RESOURCES CONTINUED**

<u>UNIVERSITY</u>
\* University of Colorado, Center of the American West - "FrackingSENSE: Air, Water, Gas;" FrackingSENSE 2.0 (2013-2014 lectures/podcasts) and O &G Glossary

http://centerwest.org/projects/energy/glossary
http://centerwest.org/projects/energy/glossary
http://centerwest.org/events/airwatergas-4
\* Colorado University Law School – "Intermountain Oil & Gas BMP Project: Federal Laws

Stanford University - Annual Review of Environment and Resources (2014) available – Environ.annualreview.org "The Environmental Costs and Benefits of Fracking."

INDUSTRY
\*Your state's Oil and Gas Association

\* IPAA, Energy in Depth www.energyindepth.org/tag/hydraulic-fracturing/

NGO \* Environmental Defense Fund

www.edf.org/climate/what-is-fracing

\* Resources for the Future – "Pathways to Dialogue: What the Experts Say about the Environmental Risks of

www.rff.org/centers/energy\_economics\_and\_policy/Pages/Shale-Gas-Expert-Survey.aspx

# THANK YOU

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