

What the Frack is Happening Down There?!

natural gas drilling in the Marcellus
Shale and efforts to stop it

sh(A)dbush collective, pittsburgh, pa
www.shadbushcollective.org

Outline

- drilling in the marcellus shale
- impacts on our health and our communities
- but the authorities will protect us, right?
- don't we get a piece of the pie?
- stop frackin' around!

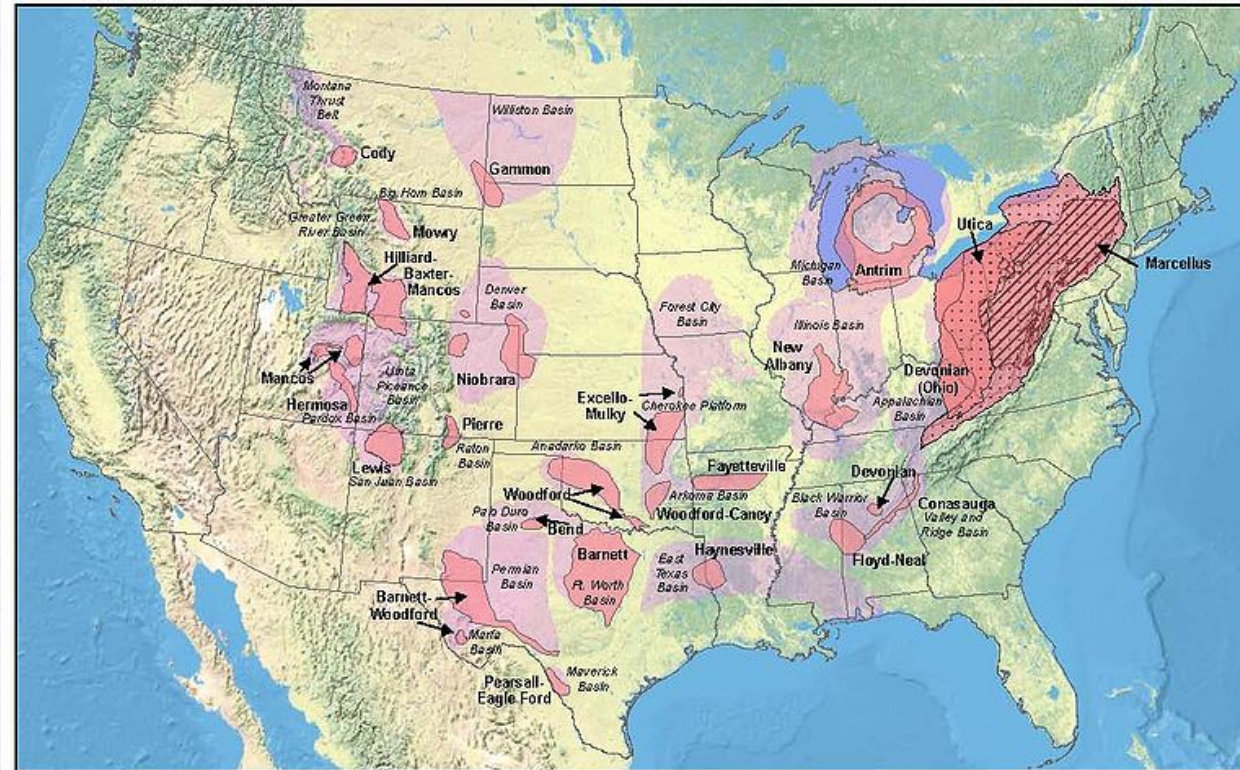


natural gas drilling in the marcellus shale

a look at the drilling process

Shale “Plays”

- “Frontier” of oil and gas industry
- Oil and gas held in pore spaces of deep sedimentary formations
- Reserves are accessed through hydraulic fracturing and horizontal drilling techniques
- The Marcellus and Utica Shales represents the largest unconventional gas reserves in the U.S. [1]



United States Shale Gas Plays



Shale Gas Plays
Basins

Stacked Appalachian Plays

Marcellus
Utica
Devonian (OH shale)

November 2008

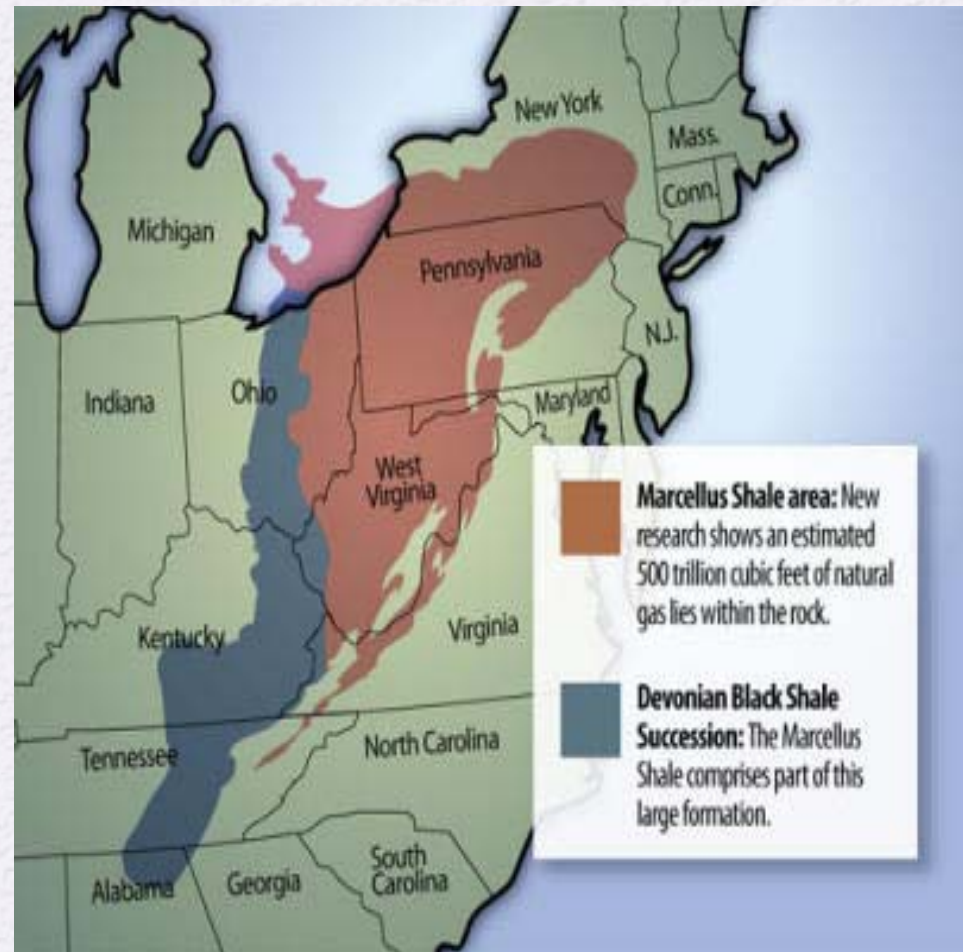
Miles
0 150 300 600



[1] Geological society of America. *Marcellus Shale Gas*.
<http://geology.com/articles/marcellus-shale.shtml>.

The Marcellus Shale

- Extends from southern NY, across PA, WV and eastern OH
- Between 3,000 and 9,000 underground
- Estimated 363 trillion cubic feet (TCF) of recoverable natural gas[1], enough to supply the U.S. for nearly 15 years[2].



[1] Esch, Mary, 2008. Estimated gas yield from Marcellus shale goes up: Albany, NY, Associated Press, November 2008. Article cites information published by Chesapeake Energy Corporation.

[2] US Energy Information Administration, 2009.

Why Now?

Why is the Marcellus Shale being developed so rapidly now?

- Advanced technologies - horizontal drilling allows gas to be extracted more economically [1]
- Estimates of total reserves in the Marcellus have increased [2]
- Conventional gas is projected to decline [3]
- Regulations are lacking and the industry is not waiting for the DEP or EPA to catch up

[1] US Energy Information Administration. Drilling Sideways. 1993

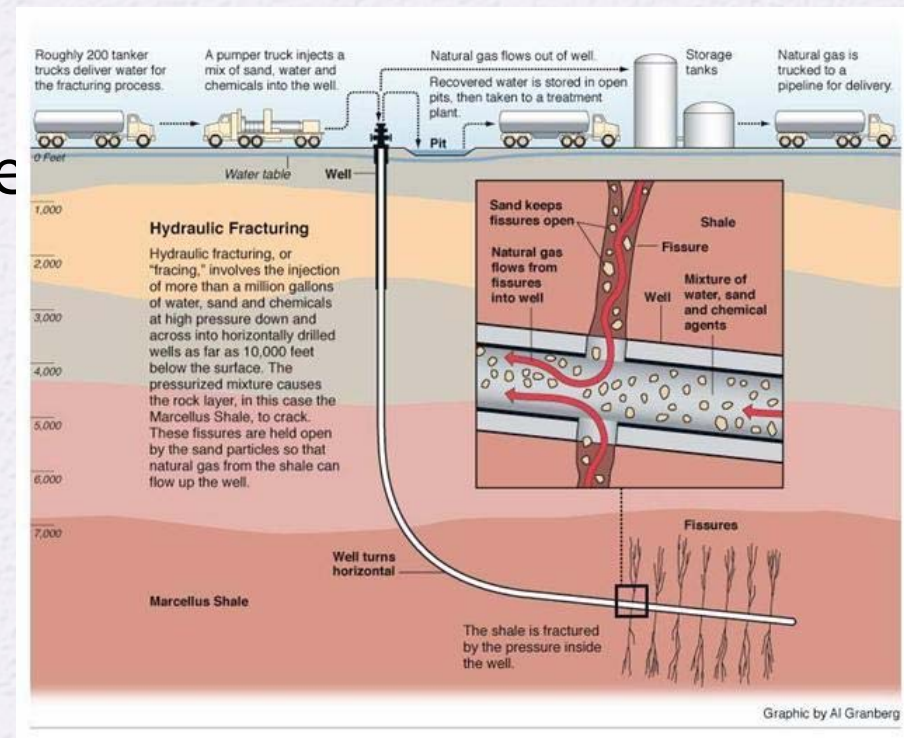
[2] Esch, Mary, 2008. *Estimated gas yield from Marcellus shale goes up*. AP, November 2008. Article cites information published by Chesapeake Energy Corporation.

[3] White, Bill. *State's consultant says nation is primed for using Alaska gas*. December 2005. Energybulletin.net

The Drilling Process

Drilling and Fracking [1]

- Well drilled ‘a mile down and a mile out’
- Aquifers sealed off from well by cement casing
- 3-9 million gal. of water, sand, and chemicals injected into well
- Shale is fractured releasing gas from pore spaces



The Drilling Process



The Drilling Process

Production [1]

- After fracking, well is tested by flaring
- Wellhead put in place through which gas will flow
- Well may be productive for several years
- Well may be fracked multiple times over many years



Flaring above Pittsburgh Mills Mall Marcellusprotest.org



Wellhead, Hickory, PA.
<http://www.donnan.com/images/Marcellus-37.jpg>

[1] Pa League of Women Voters. *Marcellus Shale Natural Gas Extraction Study*. 2009.
<http://palwv.org/issues/MarcellusShale/Marcellus%20Shale%20Study%20Guide%20Parts%201-5.pdf>

Well-site Infrastructure



- **Tanker Trucks:** massive volumes of water as well as heavy equipment are trucked on to site
- **Roads:** Local roads are damaged, new roads are built through people's property and state lands
- **Wellpads:** 3 - 5 acres cleared and leveled
- **Frack Ponds:** large impoundments store toxic "flowback" water



Drilling Process

Processing and Transport

- **Dehydration and Condensate Tanks:** water and other liquids removed, other gases, including VOCs vented off [1]
- **Gathering and Processing Facilities:** liquify hydrocarbon by-products (propane, butane), distribute gas to pipelines [2]
- **Compressor Stations:** pressurize gas along pipeline; significant exhaust emissions
- **Pipelines:** deliver gas to markets; major development underway, companies can gain rights-of-way through eminent domain [3]



[1] Colburn, Theo. *Chemicals in Natural Gas Operations*. The Endocrine Disruption Exchange. <http://www.endocrinedisruption.com/chemicals.videoplayer.php>

[2] NiSource Gas Transmission and Storage. *NiSource Midstream Services and MarkWest Liberty Midstream & Resources Announce Commencement of Majorsville Processing Complex*. Marcellus-shale.us.

[3] McNulty, Timothy. *Pipeline companies may see eminent domain*. Pittsburgh Post-Gazette. Nov. 2010

Water and Frack Fluid

Withdrawals

- Millions of gallons of water are initially withdrawn from local streams and rivers
- Much of this freshwater can never be recovered

Flowback

- 20% of the frac fluid mixture comes back to the surface through the well [1]
- “Flowback” contains chemicals used in the initial mixture plus heavy metals, radioactive materials and brines from within the geology

Water and Frack Fluid

Frack Ponds

- Temporary storage of flowback before it is brought to treatment plants or recycled
- Volatile organic compound emissions

Deep Well Injection

- Only eight in the entire state
- Permitted to accept only 800,000 gallons a month [1]



[1] Lee, Sara. "Marcellus Gas Drilling". *Pennsylvania From Below*. May 2010.

Water and Frack Fluid

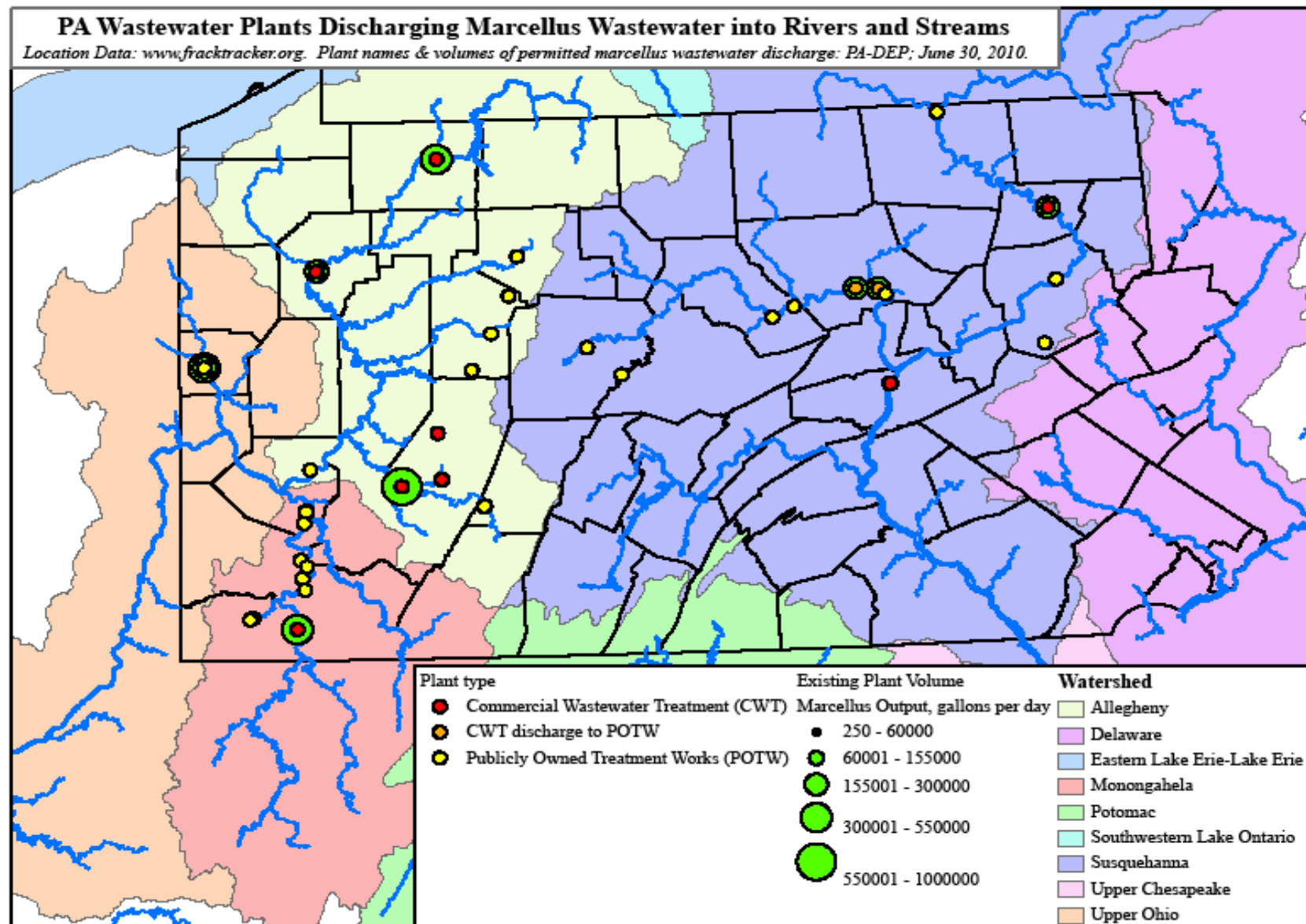
Wastewater Treatment Plants

- 41 facilities permitted to accept frack fluid. 22 municipal plants (1MGD) 11 commercial plants (2.7 MGD), 4 combined commercial - municipal (.8MGD) [1]
 - *total permitted amount 4.5 millions of gallons per day*
- Municipal plants can only dilute frack fluid before discharging into waterways
- Commercial wastewater treatment plants remove metals and oils. Only a few remove salts (TDS).
- New regulations limit TDS discharges in surface waters. Existing permits, however, are grandfathered in.[2]

[1] fracktracker.org

[2] Personal interview with Marcus Cole, DEP Office of Wastewater Management January 2010

Water and Frack Fluid



Water and Frack Fluid

Recycling

- Flowback can be diluted with fresh water and reused for fracking
- DEP estimates 70% of frack fluid is now being recycled
- But DEP could not account for more than 1/5 of frack fluid disposal in 12 month period [1]

[1] Caruso, David. Pa allows dumping of dainted waters from gas boom. *AP*. January 3, 2010

Getting at the Gas

Leases

Gas companies must obtain a lease for gas rights from landowners

Landowners receive an initial per-acre signing bonus and collect royalties on production

Gas leases are legal and binding contracts which landowners cannot get out of until they expire

Companies offer pre-packaged lease agreements, but like any contract the terms of the lease are up for negotiation

Getting at the Gas

Permits

- Wells permitted by PA DEP
- Permit requirements [1]:
 - locations – proximity to streams, buildings
 - erosion and sediment control plan
 - water withdrawal and storage plan
 - wastewater plan
 - \$2,500 bond per well or \$25,000 blanket bond
 - reporting on well status, production

[1] PA House of Representatives. *Regulation of Marcellus Shale Drilling*.
<http://www.pahouse.com/gibbons/marcellus-docs/drilling-regulations.asp>



impacts on our
health and
communities

Health & Community Impacts

To assess potential health impacts, we must ask:

- *What is it?*
- *How are we exposed?*

What goes in?

Fracking fluid

- Chemicals are added to the fracking water: “friction reducers, corrosion inhibitors, biocides, oxygen scavengers, scale reducers”
- Under PA law, companies must disclose the chemicals they use, but not the proportions. The PA DEP provides a list on their website. However, we should question whether it is complete. TEDX found that many products did not fully list their ingredients.
- Thousands of chemicals are now available for industrial use. Because our legal system says chemicals are safe until proven dangerous, the research simply hasn't been done to investigate their impact on our health.
- Even with these knowledge gaps - many of the fracking chemicals are known to have serious impacts on our health.

PA-DEP's list of fracking chemicals

Chemicals Used by Hydraulic Fracturing Companies in Pennsylvania
 For Surface and Hydraulic Fracturing Activities
 Prepared by the Department of Environmental Protection
 Bureau of Oil and Gas Management
 Compiled from Material Safety Data Sheets obtained from Industry

1,2,4-Trimethylbenzene	Glycol Ethers (includes 2BE)
1,3,5-Trimethylbenzene	Guar gum
2,2-Dibromo-3-Nitrilopropionamide	Hemicellulase Enzyme
2,2-Dibromo-3-Nitrilopropionamide	Hydrochloric Acid
2-butoxyethanol	Hydrotreated light distillate
2-Ethylhexanol	Hydrotreated Light Distilled
2-methyl-4-isothiazolin-3-one	iron Oxide
5-chloro-2-methyl-4-isothiazotin-3-one	Isopropanol
Acetic Acid	Isopropyl Alcohol
Acetic Anhydride	Kerosine
Acie Pensurf	Magnesium Nitrate
Alcohol Ethoxylated	Mesh Sand (Crystalline Silica)
Aliphatic Acid	Methanol
Aliphatic Alcohol Polyglycol Ether	Mineral Spirits
Aluminum Oxide	Monoethanolamine
Ammonia Bifluoride	Naphthalene
Ammonia Bisulfite	Nitrioltriacetamide
Ammonium chloride	Oil Mist
Ammonium Salt	Petroleum Distillate Blend
Ammonia Persulfate	Petroleum Distillates
Aromatic Hydrocarbon	Petroleum Naphtha
Aromatic Ketones	Polyethoxylated Alkanol (1)
Boric Acid	Polyethoxylated Alkanol (2)
Boric Oxide	Polyethylene Glycol Mixture
Butan-1-01	Polysaccharide
Citric Acid	Potassium Carbonate
Crystalline Silica: Cristobalite	Potassium Chloride
Crystalline Silica: Quartz	Potassium Hydroxide
Dazomet	Prop-2-yn-1-01
Diatomaceous Earth	Propan-2-01
Diesel (use discontinued)	Propargyl Alcohol
Diethylbenzene	Propylene
Dodecylbenzene Sulfonic Acid	Sodium Ash
E B Butyl Cellosolve	Sodium Bicarbonate
Ethane-1,2-diol	Sodium Chloride
Ethoxylated Alcohol	Sodium Hydroxide
Ethoxylated Alcohol	Sucrose
Ethoxylated Octylphenol	Tetramethylammonium Chloride
Ethylbenzene	Titanium Oxide
Ethylene Glycol	Toluene
Ethylhexanol	Xylene
Ferrous Sulfate Heptahydrate	
Formaldehyde	
Glutaraldehyde	

These are just not good for you.

A commercial name,
not a chemical formula.

Antifreeze
(mmm, yum)

← ???

← Mothballs- a neurotoxin

← Blend of what?

← This is like saying
"protein" What protein?

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What's in that fracking fluid?

Pennsylvania discloses the chemicals used by the drilling companies

By SANDY LONG

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PENNSYLVANIA — It's something many people in the Upper Delaware region want to know: what chemicals are being used by the natural gas industry in its drilling processes?

The Pennsylvania Department of Environmental Protection (DEP) notes that while companies may keep their fracking "formulas" proprietary, the individual ingredients are public record in Pennsylvania. The agency supplied *The River Reporter* with a list of chemicals that may be used during the fracking process. Any of them may be present in the wastewater generated and may be stored temporarily in open pits at the site.

We asked researchers at The Endocrine Disruption Exchange (TEDX) to analyze the list for its potential health effects. TEDX

is a non-profit organization that reviews and interprets scientific research focused on the effects of synthetic chemicals on human and animal health. TEDX president Dr. Theo Colborn has published, lectured and testified extensively on the effects of chemicals on the developing endocrine, immune, metabolic and nervous systems.

The tables and graphs presented here were generated by that organization. Of the 54 chemicals on the list, several were synonyms for the same chemical (e.g. Isopropylal, Isopropyl Alcohol, Propan-2-ol). When this occurred, the names were combined to create a final list of 54 chemicals.

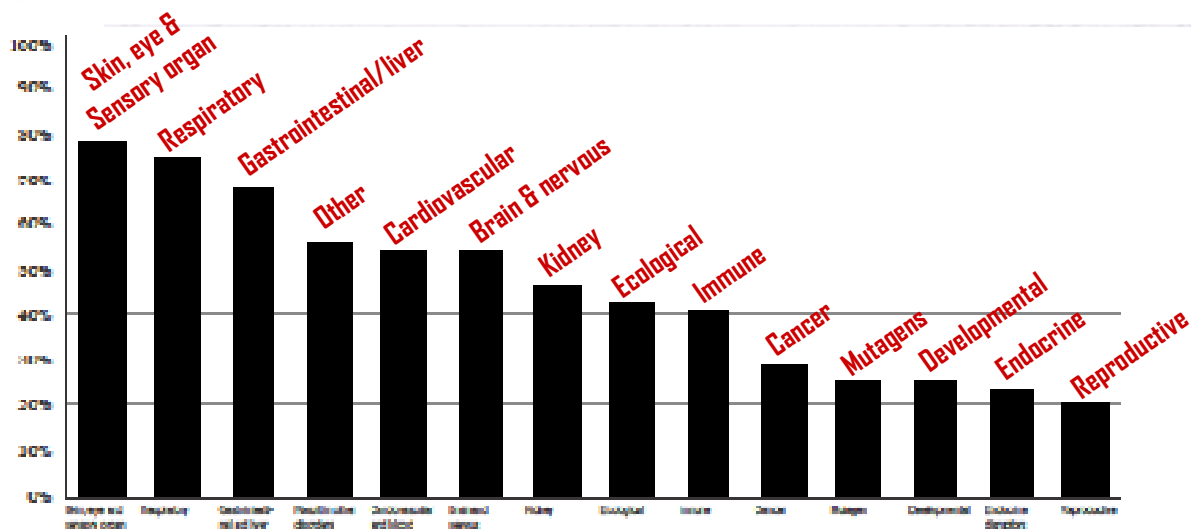
TEDX staff searched the literature for health effects associated with the 54 chemicals and broke them into 16 different health effect categories commonly used in government toxicological literature. The table below shows the number of chemicals out of the 54 that have effects on at least 10 health categories.

Chemical	# of Categories	Chemical	# of Categories
2-hydroxyethanol	13	Monoethanolamine	11
Ethanol	13	Dioxet	10
Formaldehyde	13	Acetic Anhydride	10
Glutaraldehyde	13	Isopropanol	10
Benic Acid	12	Propargyl Alcohol (Prop-2-yn-1-ol)	10
Fluoro-1,3-dial (methylene glycol)	12	5-chloro-2-methyl-4-isothiazolin-3-one	10
Ethylene Glycol	12	Sodium Bicarbonate (NaHCO ₃)	10
Methanol	11	Diesel	10

Fracking chemicals associated with ten or more health effect categories.

Controlling fracking fluids

54 chemicals identified by the DEP as being used in fracking fluids, and the percentage of which have effects on health categories



Most of the chemicals in the above chart were associated with skin, eye and sensory organ irritation and toxicity, followed by respiratory effects, gastrointestinal and liver effects.

The "Other" category includes such effects as death, tooth effects, etc. The most often cited effect in this category is the ability of the chemical to cause death.

The "Ecological" category refers to damage to a wide variety of birds, fish, amphibians, or other equally species.

What comes back out?

- 20-80% of the fracking fluid, including all the chemical additives, plus:
 - High levels of mineral salts – saltier than seawater (Total Dissolved Solids = TDS) [2,3]
 - Metals and heavy metals (same as AMD) [2]
 - Radioactive elements [1,2]
 - BTEX compounds (Benzene Toluene Ethylene Xylene)[2]
- Raw gas – NOT pure when it comes out of the ground. Includes BTEX compounds, sometimes water.
- Drilling solids & mud waste: chemicals are added to ease drilling, plus the tailings contain the same contaminants from deep in the earth (metals, radioactive materials, organic compounds)

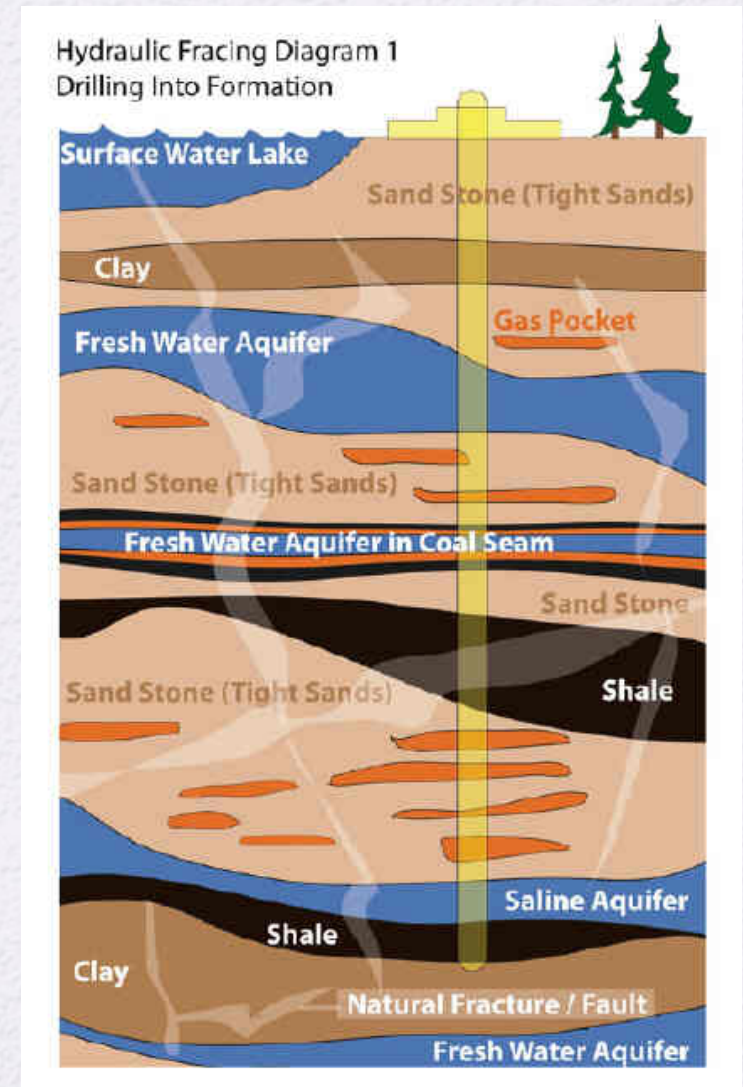
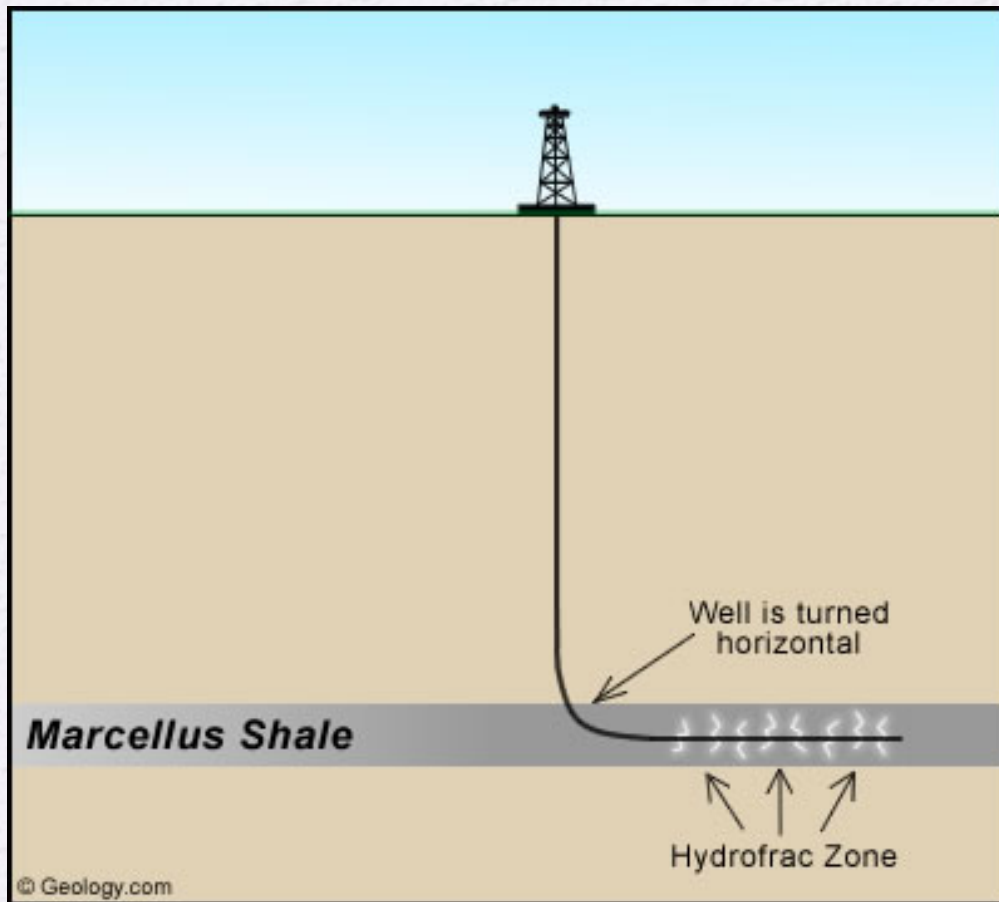
[1] Abrahm Lustgarten, “Is New York's Marcellus Shale Too Hot to Handle?,” ProPublica, November 2009, <http://www.propublica.org/article/is-the-marcellus-shale-too-hot-to-handle-1109>.

[2] Conrad, DrPH, MPH Volz, “Water and Air Impacts, Marcellus Shale Gas Extraction,” December 10, 2010, http://www.chec.pitt.edu/documents/Marcellus%20Shale/Volz_12-10-10_CUPconference.pdf.

[3] Randy Shannon, “The Challenge to Beaver Falls Area Water Quality,” January 15, 2011, https://docs.google.com/viewer?a=v&pid=explorer&chrome=true&srcid=1nXF69pPgPcAfAvIMUUxcBl4yoxGVI8o-55qd18o_7PExlkxf8SCXzoLQIRFV&hl=en.

How are we exposed?

Groundwater contamination



How are we exposed?

Potential groundwater contamination mechanisms:

- Vertical fractures in rock – naturally occurring, or created through hydrofracking [1]
- Faulty well casings
- Faulty well grouting, resulting in flow along outside of well casing

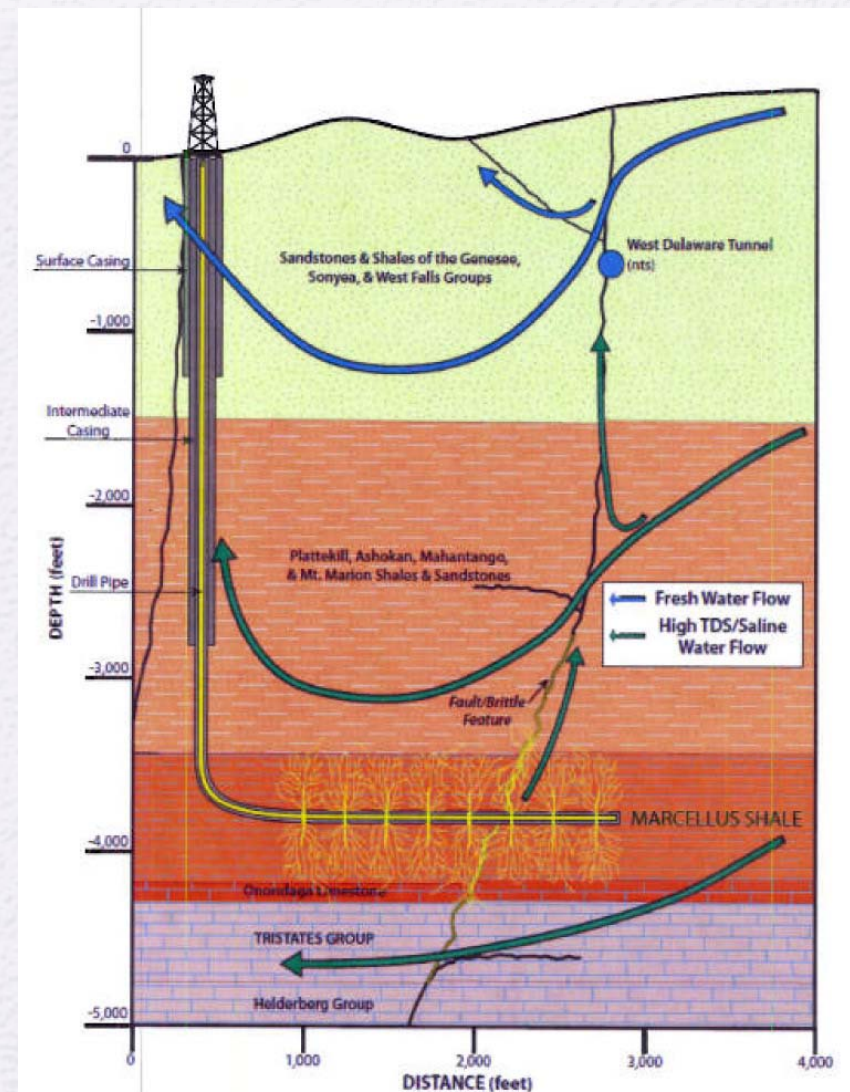


Figure 4-1: Examples of potential flow regime disruption mechanisms

[1] Hazen & Sawyer Environmental Engineers, Final Impact Assessment Report: Impact Assessment of Natural Gas Production in the New York City Water Supply Watershed (New York City Department of Environmental Protection, December 22, 2009), http://www.nyc.gov/html/dep/pdf/natural_gas_drilling/12_23_2009_final_assessment_report.pdf.

How are we exposed?

Surface water contamination



How are we exposed?

- Legal disposal of frackwater into our waterways; municipal sewage treatment plants are currently authorized to accept frackwater, even *though they cannot remove any of the dangerous pollutants.* [1]
- Illegal dumping of frackwater – spreading it on land, into streams, into old mine boreholes...



Contaminated marsh near Hickory, PA



Waterville, PA – flowing into Pine Creek
dearsusquehanna.blogspot.com



Dead patches on field after frackwater was dumped
Txsharon.blogspot.com
(This is Texas but it's happening here too)

[1] Permitting Strategy for High total Dissolved Solids (TDS) Wastewater Discharges (Pennsylvania Department of Environmental Protection, April 11, 2009), http://files.dep.state.pa.us/Water/Wastewater%20Management/WastewaterPortalFiles/MarcellusShaleWastewaterPartnership/high_tds_wastewater_strategy_041109.pdf.

It's our drinking water

New York City Department of Environmental Protection

Impact assessment of natural gas production in the New York City water supply watershed. 2009.

“Based on the latest science and available technology, as well as the data and limited analysis presented by the New York State Department of Environmental Conservation (DEC), **high-volume hydrofracking and horizontal drilling pose unacceptable threats to the unfiltered fresh water supply of nine million New Yorkers,**” said Acting DEP Commissioner Steven W. Lawitts. “New York City has invested \$1.5 billion to protect the watershed and prevent degradation of the water supply, and to maintain its Filtration Avoidance Determination (FAD). **The known and unknown impacts associated with drilling simply cannot be justified.**”

Shouldn't the people of Pittsburgh deserve clean water as much as New Yorkers do?

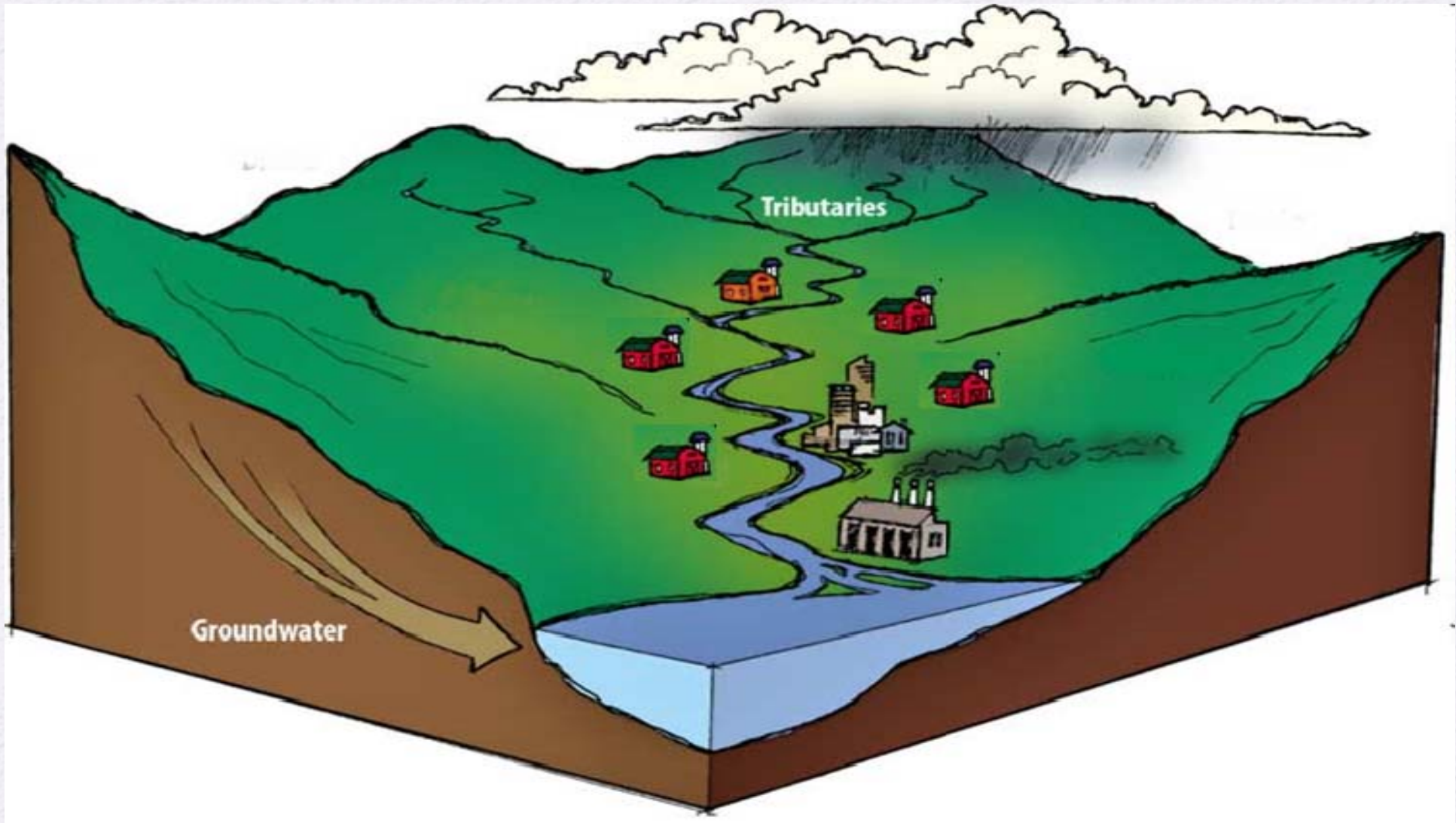
How are we exposed?

Air pollution

- The hydrocarbon compounds, and many of the fracking chemicals, evaporate into the air. (Volatile Organic Compounds – VOCs)
- Some parts of the drilling process deliberately release vapors into the environment – venting of condensate tanks, storage of frackwater in open pits, flaring of gas wells.
- Any leak in the well rig, the storage units, the condensate tanks, or the pipelines will result in VOC emissions.
- VOC emissions combine with diesel emissions to form ozone – smog.

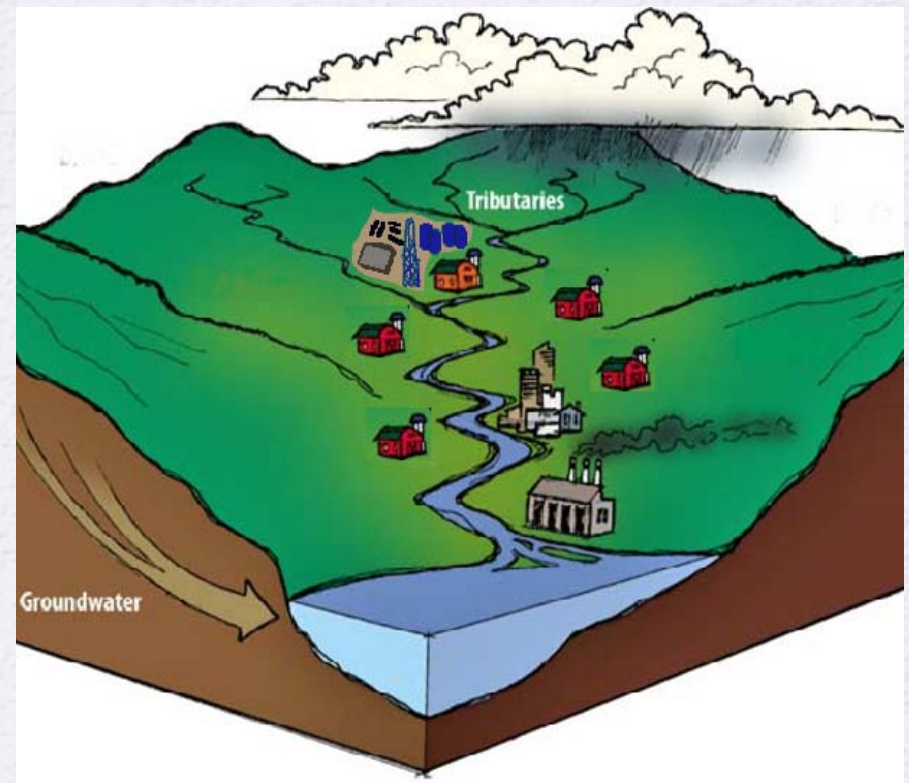
Conrad, DrPH, MPH Volz, “Water and Air Impacts, Marcellus Shale Gas Extraction,” December 10, 2010, http://www.chec.pitt.edu/documents/Marcellus%20Shale/Volz_12-10-10_CUPconference.pdf.

Let's summarize the impacts:



In Your Home

- Lights & noise
- Fumes from flaring, evaporation of open wastewater pits, condensate tanks.
- Well water contamination
- An industrial park on your land. Roads, trucks, condensate tanks, drill rigs.
- ...And you don't even get free gas. Marcellus gas burns at too high temperature & pressure for safe residential use.



In Your Home



Aerial view of well pad

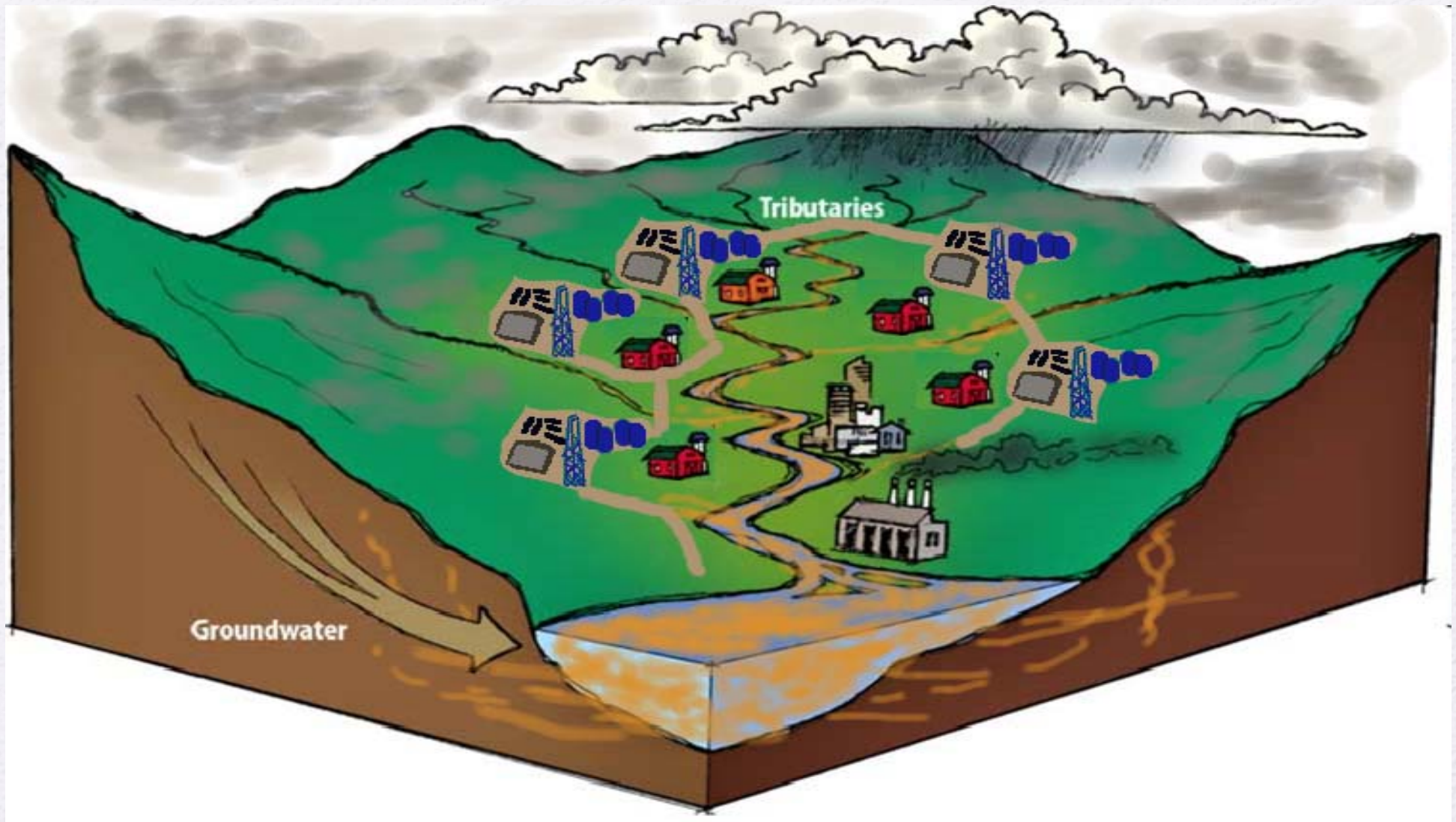


Well pad with storage tankers and flares burning

Fracking apparatus and frackwater pond



In Your Watershed



In Your Watershed

Dunkard Creek Fish Kill



Dead mussel in Dunkard creek

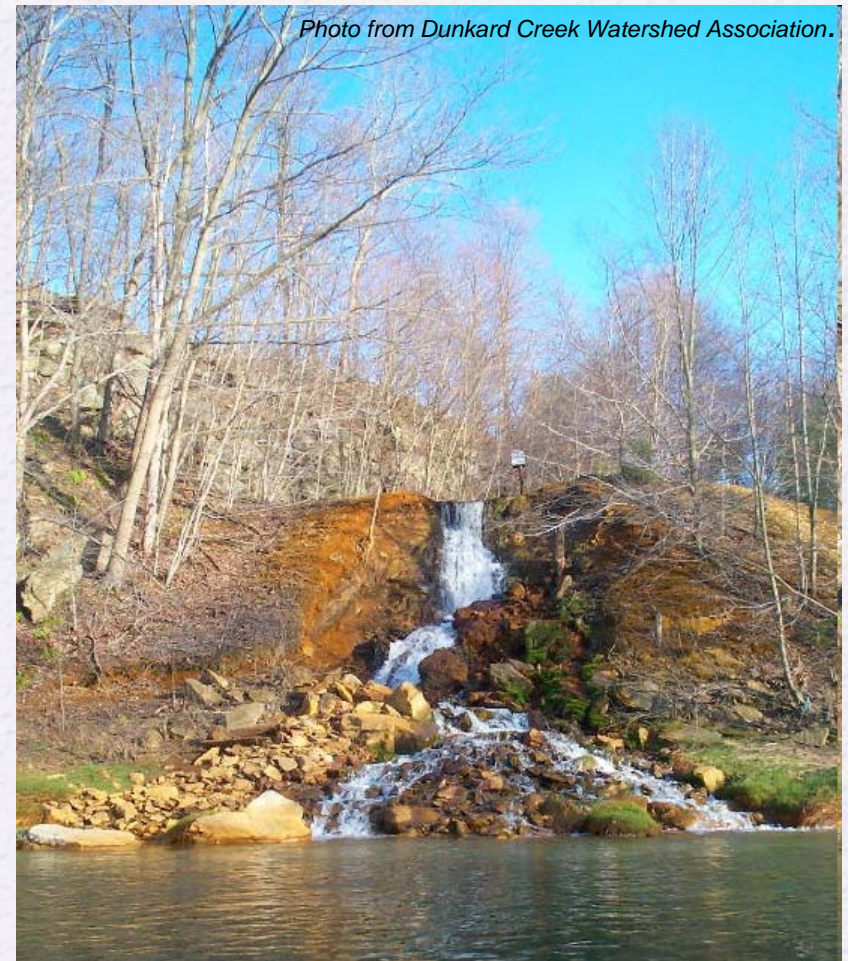


Photo from Dunkard Creek Watershed Association.

A mine discharge along Dunkard Creek along the West Virginia-Pennsylvania border. EPA permitted disposal of gas drilling wastewater into an old mine borehole, and it migrated underground into the creek, making it saltier than the ocean. Saltwater golden algae then flourished to cause the fishkill.

In Our Region

- Cumulative air quality loss (isn't it bad enough already?)
- Cumulative water pollution – the rivers end up with all the pollution from everywhere upstream, and that's where Pittsburgh gets its drinking water.
- Loss of the Pennsylvania Wilds. One of the things that makes PA unique is the large intact forested regions. These will be fragmented by wells and roads. Some species depend on large forested regions; they have very few places left to call home, and PA is one of them.

Loss of the Pennsylvania Wilds

Ovenbird



Photo © AJ Hand

This species will inhabit forests ranging in size from small woodlots to large forest expanses, but only breeds successfully in interior forest conditions.

Northern goshawk



Marten



Fisher



Black and White Warbler



Requires 2,200 acres to sustain a viable population. (Poole & Gill 2002)

Barred owl



Photo © AJ Hand

The barred owl depends upon mature forest for nesting habitat (large trees, dead snags). It prefers a high degree of canopy cover, and declines in fragmented forests. Individual pairs may have a home range of 250-1200 acres (NatureServe 2004). A viable population requires 17,000 acres (Anderson & Vickeray 2004).

Aerial photo (1:25,000') of intensive conventional well drilling in Allegheny National Forest (Forest County, PA)

This is what we get if everything goes right

What about the possibility of catastrophic accidents?

The record isn't so great so far.

- Clearfield County blowout
- West Virginia explosion
- *What if either of these had happened in a more populated area?*

Are local emergency crews trained to handle these incidents?



But the
authorities
will save us,
right?

the regulators, the politicians, and the political
influence of the gas industry

The Feds

- The Federal Environmental Protection Agency is responsible for regulating major industries whose operations impact air and water quality.
- Mandated by major federal law such as the Clean Water Act, the Clean Air Act and the National Environmental Policy Act

The Feds



The Halliburton Loophole

The oil and gas industry enjoys numerous exemptions from federal environmental law, known as the Halliburton Loophole

Laws to which industry is fully or partially exempt [1]:

- Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)
 - Clean Air Act
 - Clean Water Act
 - Emergency Planning and Community Right to Know Act
 - National Environmental Policy Act
 - Safe Drinking Water Act

The Feds

The Fracking Responsibility and Awareness of Chemicals Act (FRAC Act):

- would close the Halliburton Loophole, subject fracking to the Safe Drinking Water Act and force industry to reveal the chemicals used in the fracking process.
- Introduced in Senate by Casey (D-PA) and Schumer (D-NY) and in House by Hinchey (D-NY) and Polis (D-CO)

The Feds

EPA Studies

- In 2004: EPA concluded that fracking in coalbed methane (CBM) reservoirs posed no threat to drinking water [1]



Whistleblower Weston Wilson

splitestate.com

disputed by officials within the agency

used to support creation of Halliburton Loophole
2005 Energy Policy Act

- Current study, to be completed in 2012, will revisit issue

If fracking could contaminate drinking water why allow it to continue while the study is ongoing?

[1] Sourcewatch. *Marcellus Shale*. http://www.sourcewatch.org/index.php?title=Marcellus_Shale

State Regulation

- Regulation of the industry falls on state-level agencies; DEP is the primary regulatory body in PA
- Mandated by the following state laws:
 - Oil and Gas Act
 - Oil and Gas Conservation Law
 - Clean Streams Act

State Regulation

New regs have not kept pace

- *Oil and Gas Act of 1984* (Mar. 2010) amendment requires more reporting on production, wellsite status, etc. [2]
- *Pa Code, Ch. 95* (Aug. 2010) new limits on discharges of materials in flowback water (TDS, Strontium, Barium) – **do not effect existing permits** [3]

Even outgoing secretary Hanger admitted recently that current regulations were not enough...

State Regulation

Inadequate Penalties

- \$25,000 bond for unlimited number of wells

What if a company walks away? How much will clean up and restoration cost?

- 1435 violations between Jan '08 and July '10

Are the fines just a cost of doing business?

State Regulation

Limited Capacity

- Under-resourced: 33% budget cut for FY 2009-10 and 2010-11
- Understaffed: hundreds of DEP positions being cut over next year [1]
- Incompetent and unresponsive

ex: Wastewater[2], Dimock[3]

“That’s what’s sad. you have a government agency it’s called the Department of Environmental Protection. Where are they at? They’re not doing nothing” - Ken Gamon, Greene County

[1] Bolstein, Joel. Pa budget results in more cuts for PADEP. <http://pabrownfieldsenvironmentallaw.foxrothschild.com>

[2] Caruso, David. Pa allows dumping of dainted waters from gas boom. *AP*. January 3, 2010

[3] Fetrow, Rachel. *Pennsylvania from Below*. Passing the buck on water contamination. No. 1, May 2010

State Regulation

What's Next?

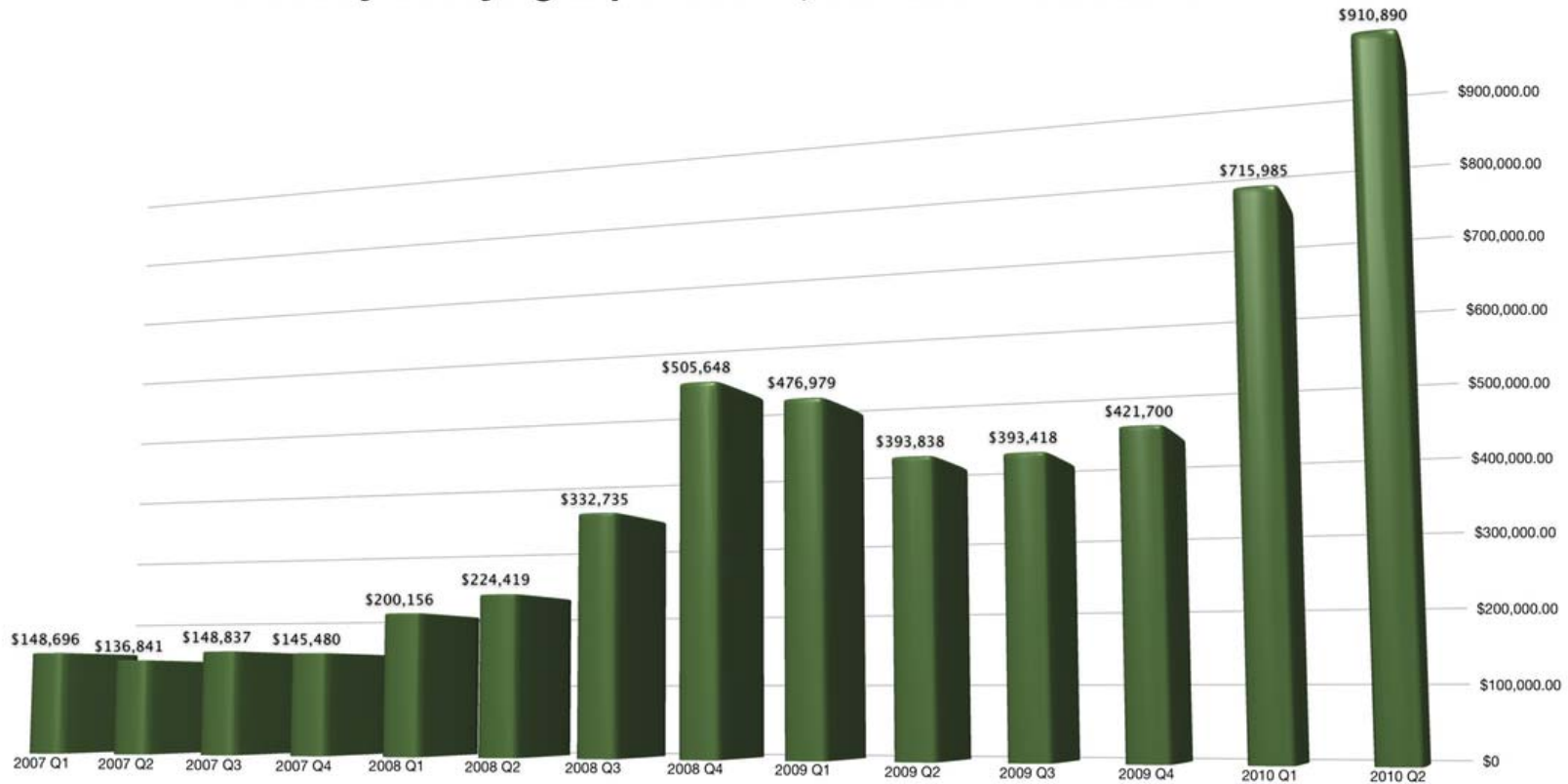
"I will direct the Department of Environmental Protection to ... return to its core mission of protecting the environment based on sound science." - Tom Corbett

Money Well Spent

"Oil and gas companies are always among the industries to spend the most on lobbying, pouring \$132.2 million into these efforts in 2008 alone. Individuals and political action oil and gas companies have committees affiliated with donated \$238.7 million to candidates and parties since the 1990 election cycle."

State Contributions

Industry Lobbying Expenditures, Jan. 2007 – Jun. 2010



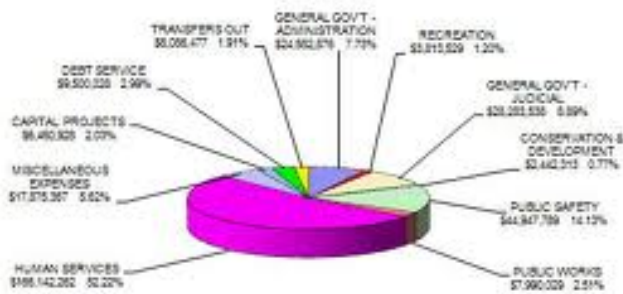
Who's Paying?

<u>SW Jack Drilling</u>	\$1,029,210.00
<u>East Resources</u>	\$525,973.00
<u>CNX (Consol)</u>	\$340,435.00
<u>Dominion</u>	\$339,694.00
<u>EQT</u>	\$244,380.00
<u>Seneca Resources</u>	\$214,876.00
<u>Snyder Bros.</u>	\$144,101.00
<u>Chesapeake</u>	\$89,390.00
<u>Range Resources</u>	\$84,816.60
<u>Indep. Oil & Gas Assn. of PA</u>	\$81,710.00
<u>Chief Oil & Gas</u>	\$66,850.00
<u>Bradford Exploration</u>	\$45,500.00
<u>Pennsylvania General Energy</u>	\$44,350.00

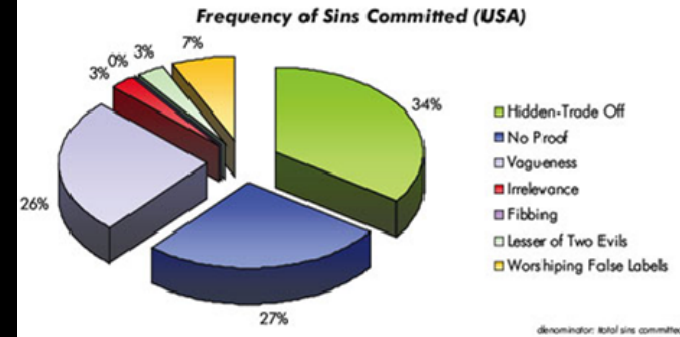
Who's Getting Paid?

Candidate	Current Office	Title/District	Running for	Contributions
Corbett, Tom (R)	Executive Office	Attorney General	Executive Office	\$835,720.00
Scarnati, Joseph (R)	State Senate	25	Reelection in 2012	\$117,575.00
Onorato, Dan (D)	Executive Office	Allegheny County	Executive Office	\$112,800.00
Rendell, Edward (D)	Executive Office	Governor	Retiring	\$84,100.00
Reed, Dave (R)	State House	62	State House	\$57,042.30
White, Don (R)	State Senate	41	Reelection in 2012	\$47,975.00
Corman, Jake (R)	State Senate	34	State Senate	\$33,840.00
DeWeese, Bill (D)	State House	50	State House	\$29,400.00
Turzai, Mike (R)	State House	28	State House	\$25,900.00

WESTMORELAND COUNTY
2011 ADOPTED BUDGET
\$318,125,136
(WHERE THE MONEY GOES)



Don't we

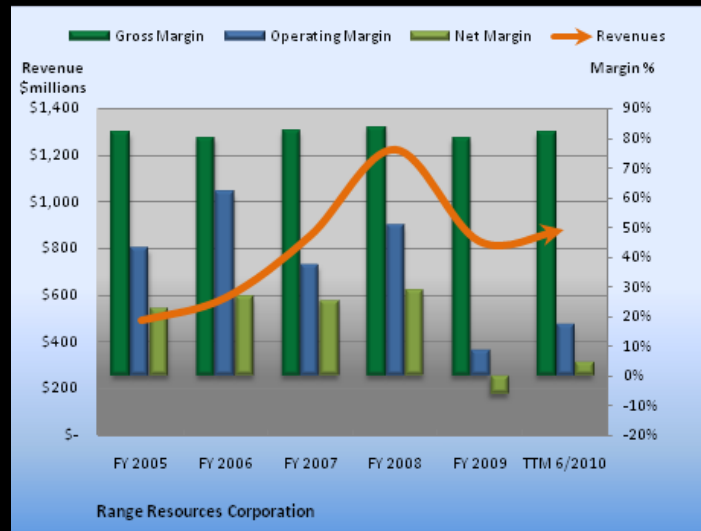
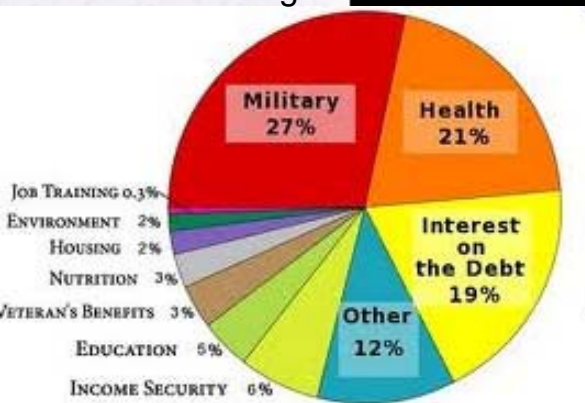


U.S. Products Advertised as "Green"

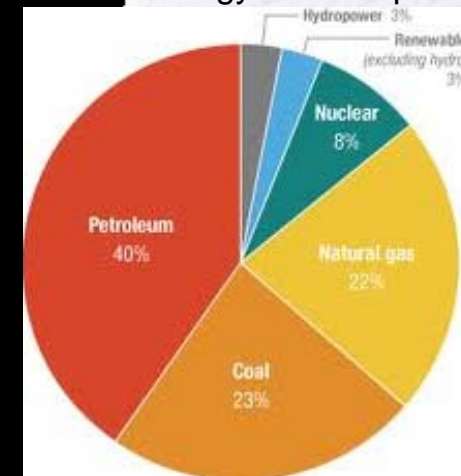
get a piece of the pie?

Economics of Shale-gas Drilling

U.S. Federal Budget



United States Energy Consumption



Individual Economics

- What's your health worth... and what will it cost if you lose it?
- Declines in property value
 - Banks won't lend for mortgages on properties with drilling
 - Loss of water devastates property values
 - Landowners left holding the bill for damage to infrastructure such as driveways and water supplies.
 - Loss of scenic character to landscape diminishes value
- Impact to livelihood
 - Contamination can render land useless for farming
 - Recreational tourism declines with industrial development & loss of scenic value.

Community Economic Impacts

- Health costs
 - Social services
 - Lost tax revenue from people unable to work
 - Water treatment plants
 - Infrastructure damage – roads, bridges
 - Damage to parks & public spaces – often leased for municipal revenue.
 - Property values = tax revenue, especially for schools.
 - Boom town impacts on housing availability & local cost of living.
 - Social divisions in the community – who is leasing, who is not, sowing fear & distrust.

A comparative perspective...

Economy of tea & chocolate:



- Farmers in Africa grow cacao & tea.
- International corporations buy the raw products cheaply
- Ship them away, process into high value products
- Sold in Europe, America for a much higher price per pound.



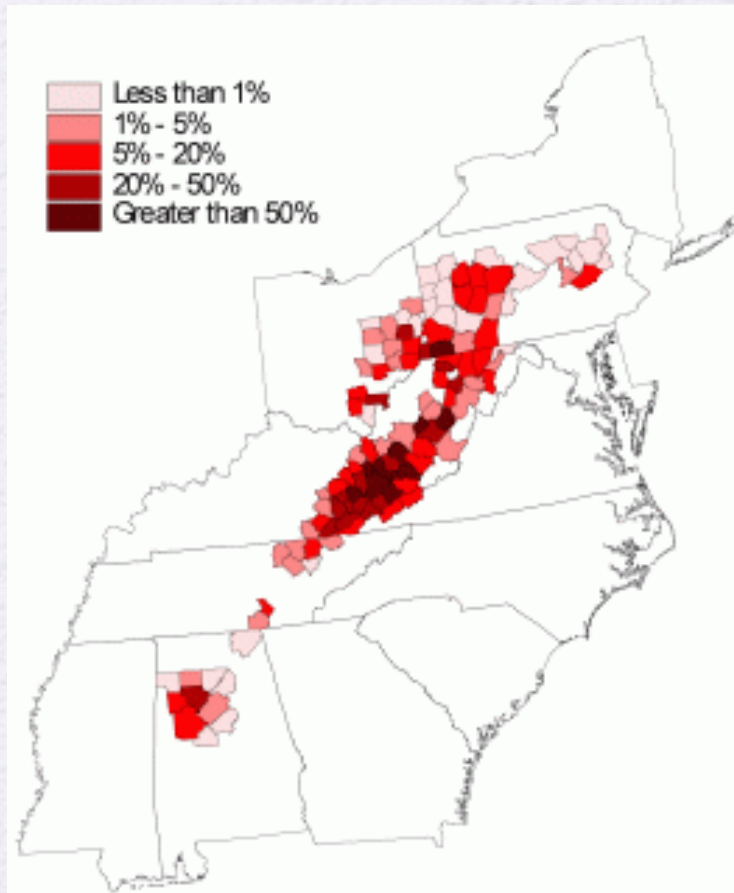
Photo & diagram from 'A Bitter Cup': July 2010, Anna Morser.
Published by War on Want. www.waronwant.org

A comparative perspective...

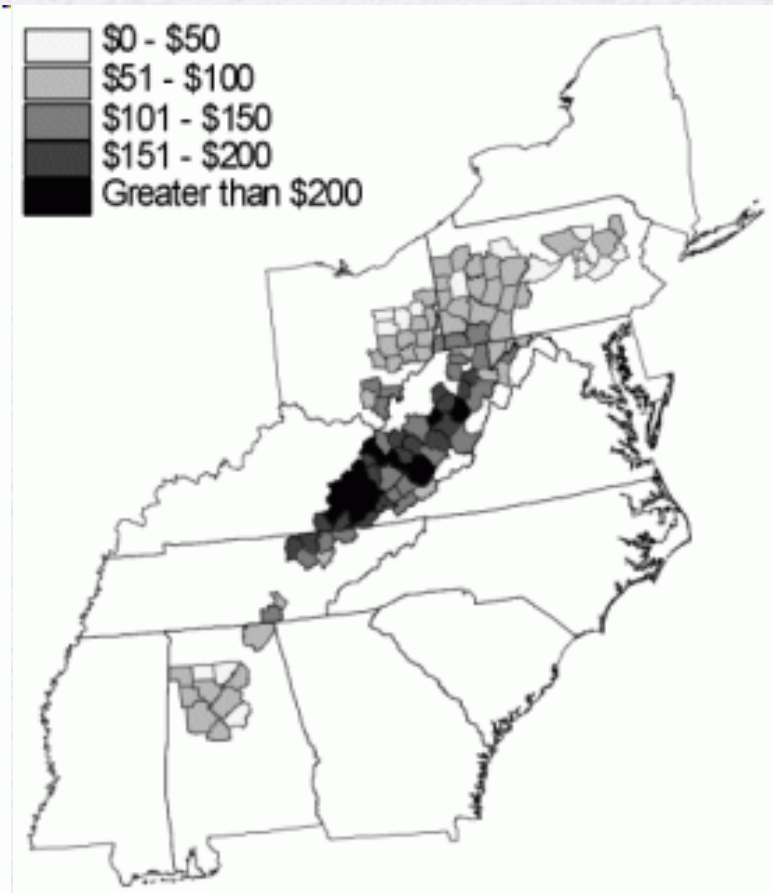
Economy of coal:

- Mineral extracted, shipped away, sold elsewhere for more \$\$.
- Highest coal producing states in the east are WVA, Kentucky.
- Coal producing counties, especially where coal is high % of total jobs...
- ... Also have highest % of population receiving welfare and food stamps.

Total Coal Mining Earnings Impact as a Share of Total Earnings in Appalachian Coal-Producing Counties



Food Stamp Payments per Capita by County in the Appalachian Region



Maps from: "The Economic Impact of Coal in Appalachian Kentucky" by Jonathan Roenker. Center for Business and Economic Research, University of Kentucky.

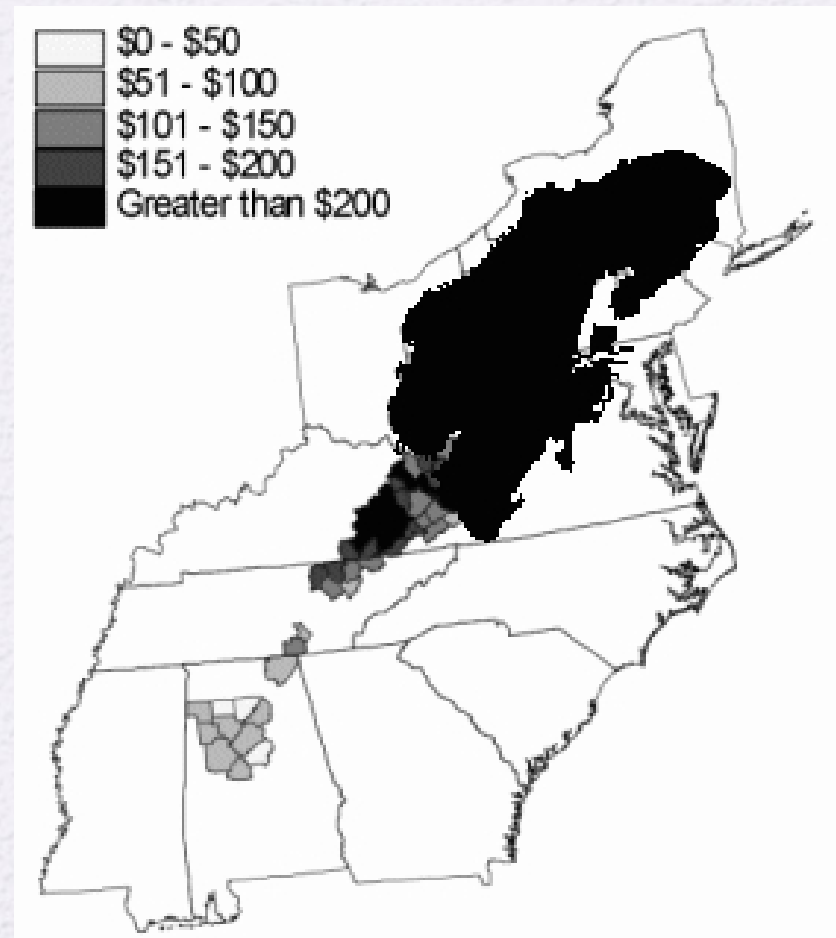
Bringing it home

Gas industry in PA:

- Corporations based elsewhere
- Extract our resource & ship it away
- Pay us (leaseholders, local & state government) only a small fraction of the profits they are making.
- Won't be here living with the consequences.

2020?

Food Stamp Payments per Capita by County
in the Appalachian Region



The Past is Repeating Itself

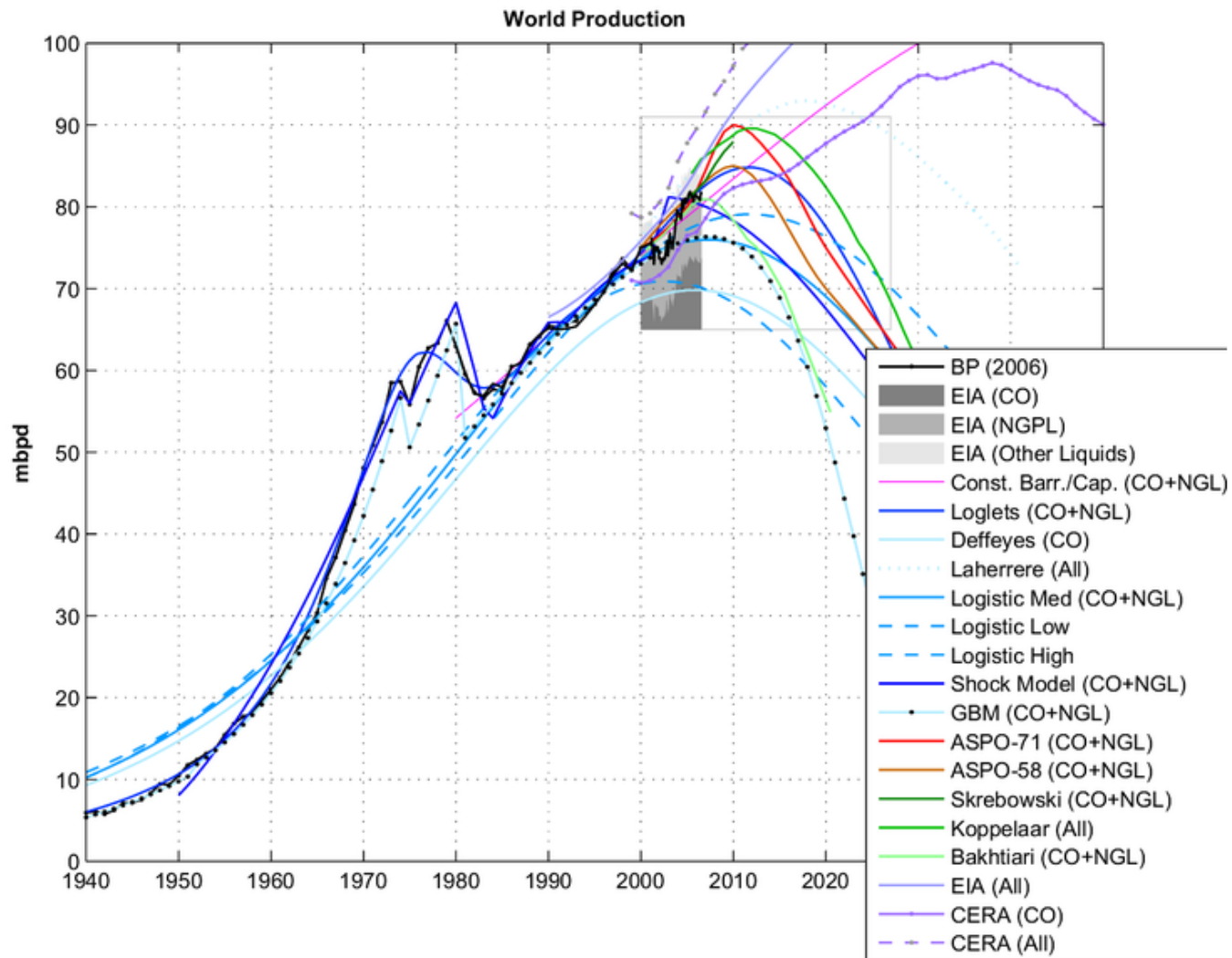
How long will Pennsylvania's land and people continue to be sacrificed for energy extraction?

“You done caused us all the damage here. It's irreversible... We're gonna be stuck with all of this toxic whatever... I can take you down to brush run here, I can show you where there's been a coal mine leaking out. See at one time here everybody had a coal mine... been leaking there for 60-70 years. They can't solve them damn **problems.**” – Walt Danna, Washington County



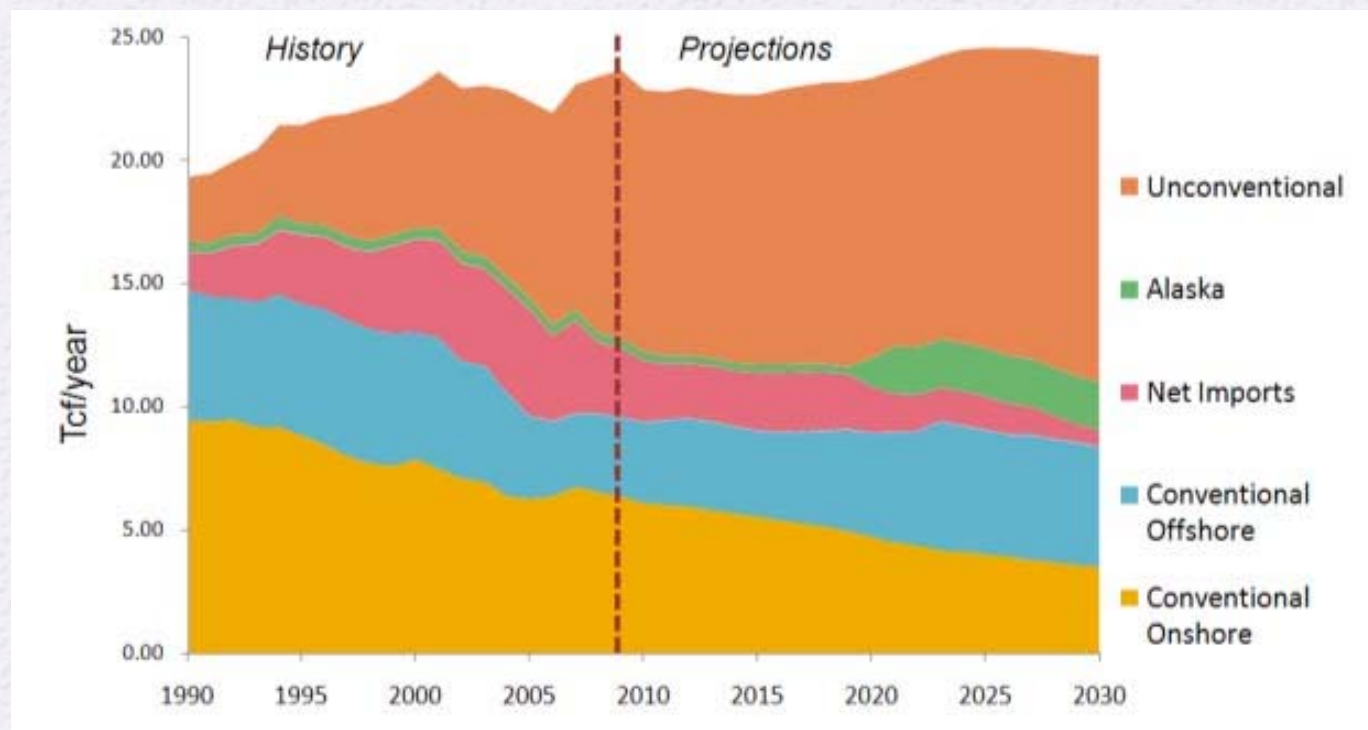
The gas under our feet in the world energy market

- Peak oil... is real.



The gas under our feet in the world energy market

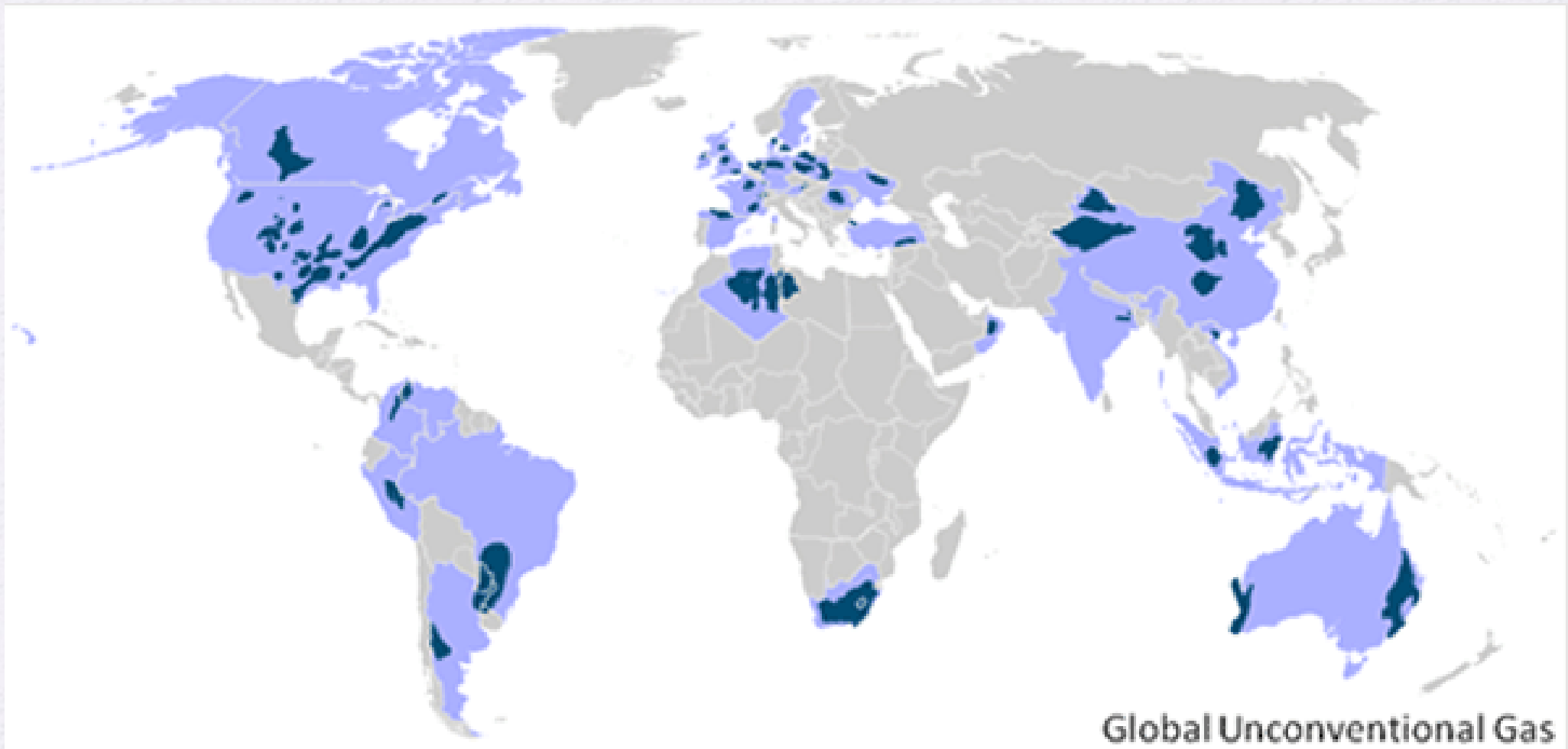
Unconventional gas is already a significant portion of domestic gas supply... DOE projects this will continue



From: John A. Veil, Water Management Technologies Used by Marcellus Shale Gas Producers (Environmental Science Division, Argonne National Laboratory, July 2010).
<http://www.evs.anl.gov/pub/doc/Water%20Mgmt%20in%20Marcellus-final-jul10.pdf>

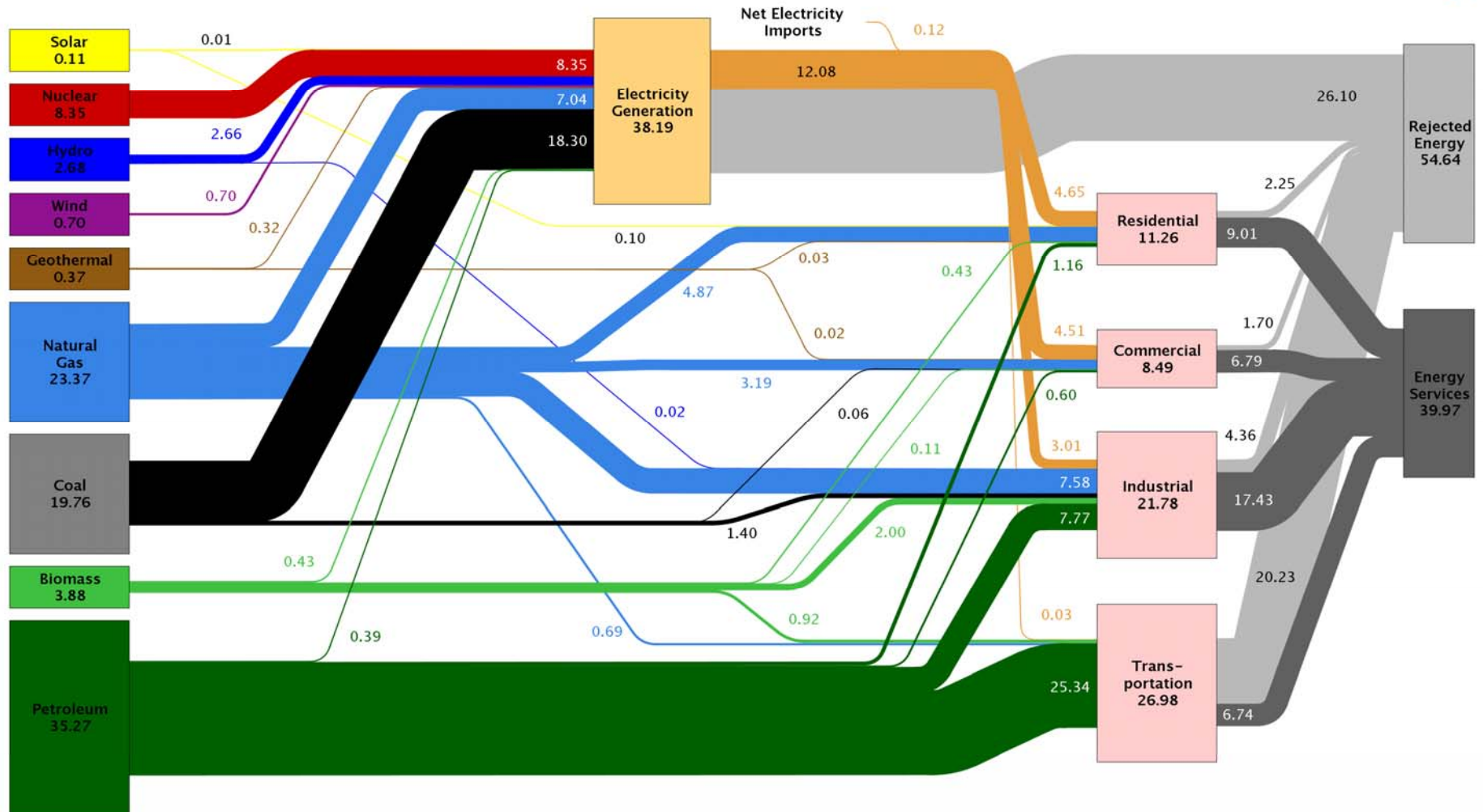
The gas under our feet in the world energy market

Shale gas extraction will likely be a worldwide phenomenon.



The gas under our feet in the world energy market

Estimated U.S. Energy Use in 2009: ~94.6 Quads



Source: LLNL 2010. Data is based on DOE/EIA-0384(2009), August 2010. If this information or a reproduction of it is used, credit must be given to the Lawrence Livermore National Laboratory and the Department of Energy, under whose auspices the work was performed. Distributed electricity represents only retail electricity sales and does not include self-generation. EIA reports flows for non-thermal resources (i.e., hydro, wind and solar) in BTU-equivalent values by assuming a typical fossil fuel plant "heat rate." The efficiency of electricity production is calculated as the total retail electricity delivered divided by the primary energy input into electricity generation. End use efficiency is estimated as 80% for the residential, commercial and industrial sectors, and as 25% for the transportation sector. Totals may not equal sum of components due to independent rounding. LLNL-MI-410527

The gas under our feet in the world energy market

Decisions are being made right now that influence demand for gas



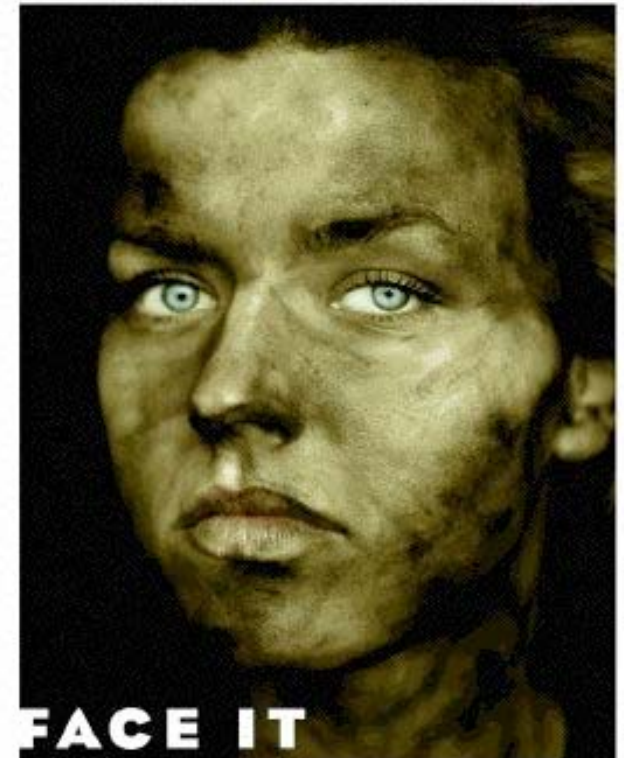
Natural Gas Power Plant in Russia



Photo: Nigel Parry

The gas under our feet in the world energy market

Corporations are pushing to influence these decisions – are we?



**FACE IT
COAL IS FILTHY**

FACT NUMBER 17 National Public Radio, Sept. 26, 2006. <http://www.npr.org/segments/energy/060926/06092617.html>

"If all of the proposed coal-fired electric plants are built in Texas, Texas will produce as much carbon dioxide as California, New York and Florida combined." Texas needs clean skies. Not black skies. Stop the filthy coal plants. Call Governor Perry and your legislators. Tell them we want fresh air.

"STOP THE COAL BURN" RAUCY!
BY COLUMBIA UNIVERSITY CENTER FOR ENVIRONMENTAL AND CLIMATE ACTION

LIVE LONGER. LIVE BETTER.

NO NEW COAL PLANTS

Coal is the dirtiest, most polluting fossil fuel. It's time to stop building new coal plants.

The economics of who gets drilled first

Local costs & ease of access determines where they drill first

“Preliminary estimates suggest that shale gas resources around the world could be equivalent to or even greater than current proven natural gas reserves. Perhaps much greater. But here in the U.S., our independent oil and gas sector, open markets and private ownership of mineral rights facilitated development. Elsewhere development will require negotiations with governments, and potentially complex regulatory processes. Existing long-term contracts, common in much of the natural gas industry outside the U.S., could be another obstacle. Extensive new networks of pipelines and infrastructure will have to be built. And many parts of the world still have ample conventional gas to develop first. “

Daniel Yergin, author of “The Prize: the epic quest for Oil, Money and Power”, and Robert Ineson. ‘**America's Natural Gas Revolution: A 'shale gale' of unconventional and abundant U.S. gas is transforming the energy market.**’ in *The Wall Street Journal*.

PA opened the doors wide

- No barriers to access
- Minimal costs to satisfy health & safety regulations.

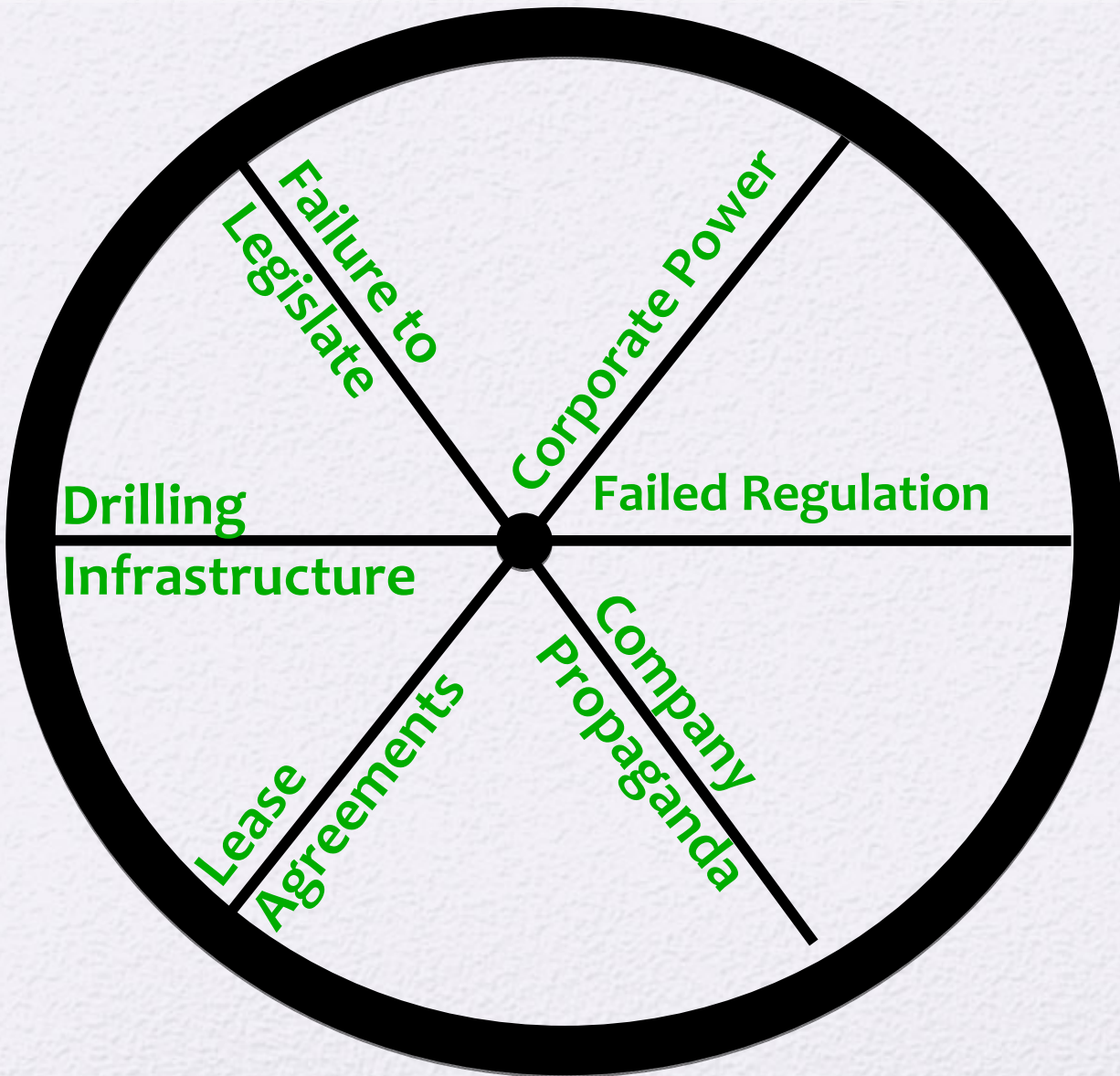
How to protect ourselves but not be NIMBYs

- Pittsburgh fracking ban has inspired others to consider bans
- Don't drop out once your community wins.
- Continue building a larger movement that addresses the root causes
 - Energy consumption
 - Corporations prioritized above people.

stop
frackin'
around!

How people are fighting back

Stop Frackin' Around!



A whole lot of factors need to come together for drilling to happen in our community.

We think of all of these factors like spokes on a bike wheel– As we start to destabilize the spokes, the wheel starts to get wobbly.

If we knock out enough spokes we can derail the whole process.

Strengthen Legislation

- The Fracking Responsibility and Awareness of Chemicals Act (**FRAC Act**) proposes to close the Halliburton Loophole, subject fracking to the Safe Drinking Water Act and force industry to reveal the chemicals used in the fracking process.
- New York's State Environmental Quality Review Act requires companies to do a standard EIS in the state
- Pennsylvania's (lack of a) severance tax

D-PA Senator
Bob Casey

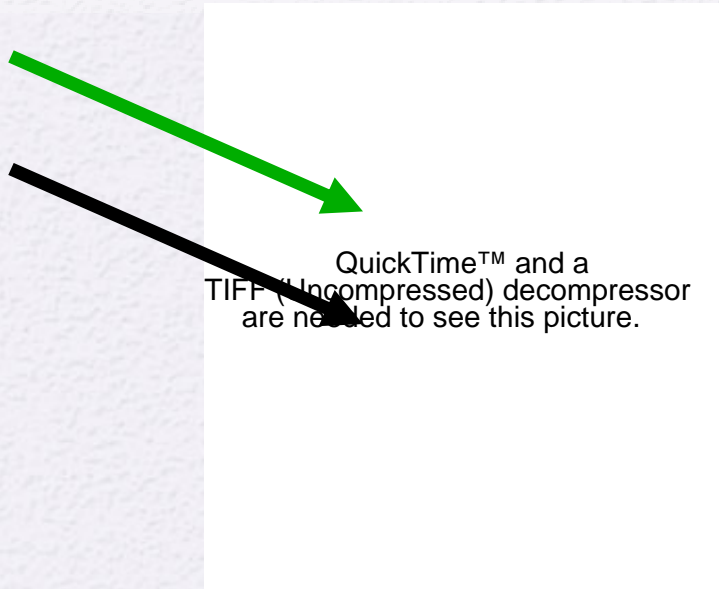
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D-NY Senator
Chuck Schumer

Challenge Corporate Power

- Shareholder actions
- Sever State-Corporate relationships
- Making CEOs uncomfortable...



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are needed to see this picture.

Ohio Student
Environmental Coalition
protests outside the house
of AMP-Ohio Exec

Strengthen and Enforce Regulation

- Hold state and federal regulators accountable to protect people and enforce the laws to the highest degree possible

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are needed to see this picture.

DEP secretary John Hanger

- Create state and local protections
 - New York state laws
 - Municipal zoning in Township, Pittsburgh

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TIFF (Uncompressed) decompressor
are needed to see this picture.

Fight Company Propaganda



- Challenge the Marcellus Shale Coalition
- Public events that counter corporate messages
- Participate in local media dialog
- Create your own media!

Land and Lease Agreements

- Listening Projects
- Leasing education for land owners
- Landowners lawsuits against companies
- Prevent “forced pooling”

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Drilling Infrastructure

- Fight against “features of the drilling site” including on-site refining
- Waste water treatment
- Weight restrictions on trucks
- Water sources
- Interference of construction and implementation
- Worker safety

Climate Ground Zero activists lock down to a highwall miner in Marfork, West Virginia

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are needed to see this picture.

Organize!

Organization Name:

Location:

Projects:

Contact Info:



Heather Mull, Pittsburgh CityPaper

