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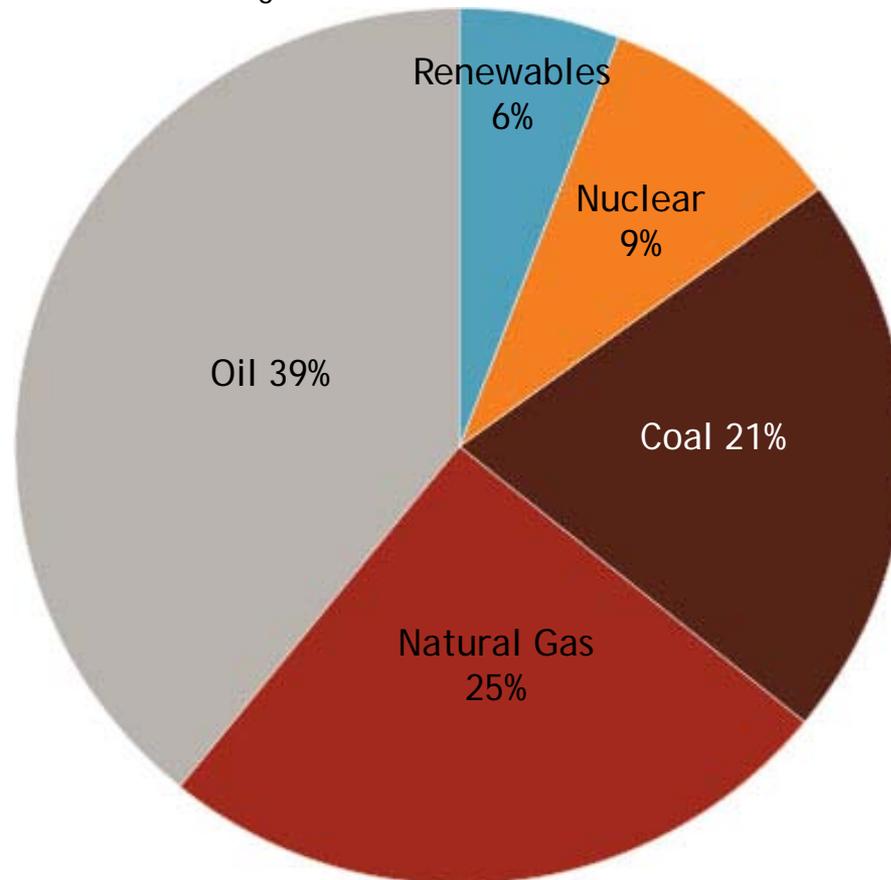
# Natural Gas Reform Campaign



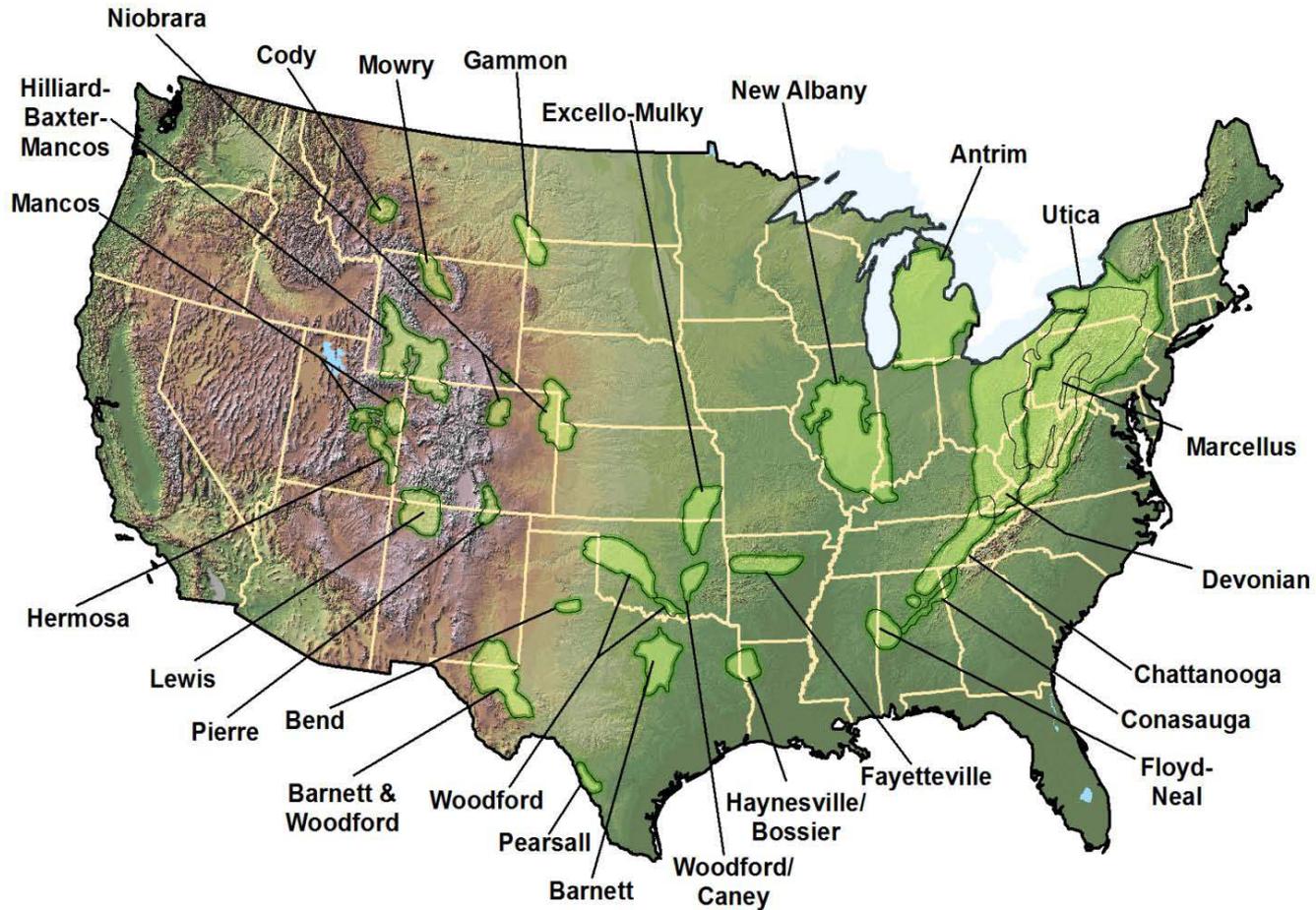
# The Big Picture: Here's where we are today.

## U.S. Energy Consumption (by fuel)

2009 - EIA Figures



# US Shale Gas Regions



Source: US Dept of Energy

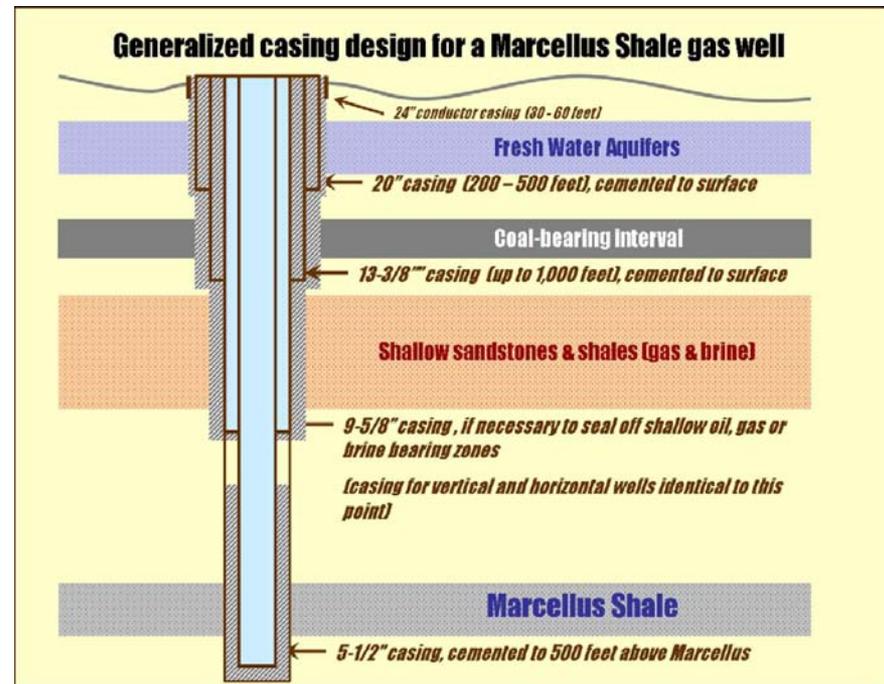
# Conventional vs. Unconventional Gas

- **Conventional Formations-**

- Shallow Wells
- Vertical Wells
- Close Spacing
- Low Yields

- **Unconventional Shale**

- Deep Wells (4000 -8000 feet)
- Vertical and Horizontal Wells
- Fracturing of Shale with High Volume of Sand and Water
- High Volume Production (4 million cubic feet/day/well)



Why are these people protesting?  
What are they upset about?



# Federal Exemptions

- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
- Resource Conservation and Recovery Act (RCRA)
- Safe Drinking Water Act
- Clean Water Act
- Clean Air Act
- National Environmental Policy Act (NEPA)
- Toxic Release Inventory under the Emergency Planning and Community Right-to-Know Act

# Water Withdrawals

## Problems / Impacts

- 2-12 million gallons consumed each well frac
- Hydrologic regime may be disrupted
- Best protective low flow for aquatic species and habitat?
- Inconsistent water withdrawal regulations
- No assessment prior to withdrawal
- Inconsistent tracking and enforcement
- Usually not accounted for in state water plans

# Wastewater

- **Frac Water (flowback)**
  - **Contains chemicals such as:** demulsifiers, corrosion inhibitors, friction reducers, clay stabilizers, scale inhibitors, biocides, breaker aids, mutual solvents, alcohols, surfactants, anti-foam agents, defoamers, viscosity stabilizers, iron control agents, diverters, emulsifiers, foamers, oxygen scavengers, pH control agents, and buffers.
- **Produced water or brine from shale**
  - **Contains high total dissolved solids, chlorides, sulfates, heavy metals, and some radioactive material**

# Wastewater Treatment/Disposal

- ❑ **Currently, no easy technological method to treat volume of wastewater from fracked wells**
- ❑ **Pennsylvania allows municipal sewage treatment plants to accept wastewater untreated**
- ❑ **In some areas diluted wastewater is sprayed on forests, etc. for disposal**
- ❑ **In Texas water is disposed of in injection wells**
- ❑ **Some companies state they can recycle almost all frac water, but it is rarely practiced**

# Water Quality

**PROBLEM:** The gas industry is severely degrading water quality.

## **SOLUTION:**

- ❑ Require mandatory best management practices
- ❑ Quantify cumulative impact of multiple well sites and associated infrastructure within the same watershed and create mandatory mitigation plans for operators within those watersheds
- ❑ Zone of presumption and mandatory water testing within 2,500 feet of a natural gas well
- ❑ Conduct a risk assessment of the likely pathways pollutants from the fracture gas industry could enter public and private water sources
- ❑ Pit regulations to disallow clay-lined pits, limit the period of time fluids can be stored, and improve fencing and signage that warns the public and wildlife of the dangers
- ❑ Casing standards that incorporate standard ASTM and API cementing and casing standards and require intermediate casing in areas where wells pass through fresh water.

# What does state reform look like?

- ❑ Landowner Rights
- ❑ Disclosure of Chemicals
- ❑ Noise
- ❑ Air Quality
- ❑ Water Quality
- ❑ Enforcement and Inspection
- ❑ Adequate Bonding

# Landowner Rights

**PROBLEM:** Landowners are not informed of their rights and options when dealing with gas companies, and many gas company employees abuse their privileges with landowners.

## **SOLUTION:**

- ▣ Minimum setbacks
- ▣ Landowner Right to Know (BMP's, disclosure, regulatory contact information)
- ▣ Landowner received copy of all permits before commencing drilling, 30 day advanced notice
- ▣ Notification of spills or violations
- ▣ Completion reports
- ▣ Surface owner compensation
- ▣ No hidden clauses in leases (like giving away water rights)

# Disclosure

**PROBLEM:** It's impossible for the public and responsible agencies to know what chemicals the industry is using and whether they are handled safely, what is happening with waste by-products, and how much water is being consumed by the industry.

## **SOLUTION:**

- ❑ what volume of water was used in the operation and where it came from,
- ❑ what chemicals and volumes of them were used in the operation,
- ❑ content of drilling mud,
- ❑ what percentage of the fluid used in the operation stayed in the well,
- ❑ what percentage of the fluid returned to the surface,
- ❑ how all fluid and solid waste from the operation were disposed of,
- ❑ location of all surface and underground water sources within 1 mile of drill site and plans to mitigate damage to said sources, and
- ❑ number, size, and location of impoundments used to collect water for drilling processes.

# Inspection and Enforcement

**PROBLEM:** The gas industry is not adequately monitored, and when problems are found there are no corrective actions or enforcement actions being required.

## **SOLUTION:**

- Regulatory agency shall inspect each producing and idle well annually, and shall also inspect:
  - each NEW well site while drill pad construction is under way,
  - each well while fracking is occurring,
  - each well when cementing casing is occurring,
  - and of each well upon final reclamation.
- Regulatory Agency shall determine the staffing and technical capacity needed to perform the inspection program described and charge gas developers an inspection or mitigation fee sufficient to pay for the increased inspection regime.
- Regulatory Agency shall create an annual report of the number of oil and gas inspections completed that year, the number of inspections that found violations, the recommendations of the enforcement division for each violation and the final action taken to resolve the case.

# Sierra Club Natural Gas Fracturing Policy

**All natural gas production, including deep shale gas should be governed by a robust and effective regulatory framework that limits environmental damage.**

- **The Sierra Club opposes fracking projects if the identity and volume of fracking fluids are not fully disclosed to the public.**
- **The Club opposes any projects using fracking fluids that pose unacceptable toxic risks.**
- **The Club opposes any projects that do not properly treat, manage, and account for fracking fluids, drilling muds, and produced water.**
- **The Club opposes fracking projects that would endanger water supplies or critical watersheds, that would seriously damage important wild land resources, and that would imperil human health.**
- **The Club opposes any fracking projects that would cause violations of air quality standards.**
- **Best management practices should be swiftly incorporated into regulatory requirements as they are developed.**

# Sierra Club Natural Gas Reform Campaign



The Sierra Club won't stand for reckless drilling

- Federal reform and closure of exemptions
  - Protection of sensitive areas
- Local and state regulatory reform