Evaluating and Enhancing the Capacity of the States to Govern Unconventional Oil and Gas Development Risks

Hannah Wiseman
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Four necessary steps for evaluating risk governance and the capacity to govern

1. **Identify the risks.**
   Explore known violations of rules; produce more, and more uniform, data on risks.

2. **Identify who currently governs (institutions).**
   Identify and analyze agencies and interactions among agencies, public-private initiatives.

3. **Identify substantive controls/incentives and gaps.**
   Explore variation and reasons behind it; address other regulatory deficiencies.

4. **Identify the capacity of institutions to inform industry entrants of rules, detect and enforce violations.**
   Analyze agency communication, staffing numbers, inspection frequency, enforcement policies.
Which risks and governance strategies to address?

This presentation focuses on upstream activities, but increasingly, certain entities are attempting to tie together upstream, midstream, downstream.

temporary rig
more permanent well head
depending on type of oil or gas, heater treaters and other processing equipment
gathering lines
“sweetening” and other processing facilities; compressor stations
pipelines
power plants cities industrial users LNG export
Sierra Club et al. April 2013 DOE Petition for Rulemaking Regarding Natural Gas Export Policy: “Because roughly two-thirds . . . of gas for export would come from new unconventional gas production, export is . . . linked to intensifying environmental and public health impacts from the domestic gas boom.”
This presentation: “lifecycle” upstream perspective and governance of associated risks

- building well pads and roads
- drilling and casing wells
- fracturing wells – withdrawing water, mixing with chemicals, injecting at high pressure
- handling, storing, and disposing of flowback, produced water, other wastes
- separating and initially treating oil and gas on site
1a. Identifying the risks: known rule violations

• Many risks are familiar and have long occurred at conventional sites, but now at a larger scale.
  
  • **Colorado** tight gas: “Erosion channels are present around the edge of the pad . . . . No storm water BMP’s are present at the pad site.” API 05-081-07359.

  • **New Mexico** tight sands: “A fuel pump split, allowing 1,000 gallons of diesel to be released. 100 gallons recovered.” API 30-039-30557.

  • **Pennsylvania** Marcellus: “Methane migrated to surface through cement in 9 5/8” annulus.” Permit 033-26848.
Louisiana Haynesville: Frac tanks used for temporary storage of **produced saltwater**. Gauging error caused overflow, and **water flowed into ditch and swampy area**. Permit 238585.

Texas Barnett shale: **Driveway, pasture, pond polluted with low chloride drilling fluids diluted with rain water**. Permit 630921.

Colorado tight sands: “**Excessive oil accumulation at tank battery. Berm not sufficient at tank battery. Excessive oil on ground at wellhead, oil is migrating down grade (from wellhead) toward upper pit. Wildlife accessing both pits.**” API 05-103 -08459.
• Other risks arise from hydraulic fracturing and associated activities, including storage of flowback.
  
  • **Pennsylvania Marcellus**: “Flowback fluids overtopping tanks spilling out of open manholes onto ground surface beyond secondary containment.” Permit 115-20341.

  • **New Mexico tight sands**: “During fracking a valve was left open due to human error causing a release of 245 gallons of frac water, all recovered.” API 30-045-34625.
We need more analysis of types of violations and their frequency.

<table>
<thead>
<tr>
<th>Location</th>
<th>Type</th>
<th>Dates</th>
<th>Violations</th>
<th>Percent of Total Violations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Louisiana</td>
<td>Haynesville Shale wells</td>
<td>January 2009–July 2011</td>
<td>210</td>
<td></td>
</tr>
<tr>
<td>Michigan</td>
<td>Antrim Shale wells</td>
<td>January 1999–May 2011</td>
<td>498</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Louisiana</th>
<th>Michigan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction of access road and well pad</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>Erosion and sedimentation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance of site: vegetation, signs, fencing</td>
<td>25.2</td>
<td>32.5</td>
</tr>
<tr>
<td>Fencing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signs and labeling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site maintenance (clearing weeds, for example)</td>
<td>22.4</td>
<td></td>
</tr>
<tr>
<td>Drilling (and potentially fracturing)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air quality</td>
<td></td>
<td>0.2</td>
</tr>
<tr>
<td>Casing and cementing</td>
<td>13.8</td>
<td></td>
</tr>
<tr>
<td>Commingling oil and gas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fracking</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1b. Identifying the risks: we must produce more, and more uniform, data on impacts

- Baseline and post-development testing needed.
- Some states require testing, and federal agencies such as USGS are analyzing existing water quality data and will possibly collect additional data.
- Uniform measurements and results are needed, however, to better inform governance.
Examples of state testing and monitoring requirements

• Michigan requires “hydrogeological investigation” around proposed wells to “establish local background groundwater quality.” Also requires “monitoring systems to detect leakage from hydrocarbon or brine storage secondary containment areas” – either tertiary containment or one downgradient groundwater monitoring well. Mich. Admin. R. 324.1002.
• In Ohio, operators before drilling must sample all water wells within 1,500 feet of proposed horizontal wellheads. Ohio Rev. Code Ann. § 1509.06.

• Colorado requires “initial baseline samples and subsequent monitoring” of a maximum of four water sources within a half mile radius of a proposed well site. Prefers sampling of “maintained domestic water wells.” COGCC Final Rule 609.
An example of differences between testing requirements

- **Ohio**: dissolved barium and iron; total calcium, magnesium, potassium, sodium, alkalinity, and dissolved solids; chloride; pH; conductivity, sulfate (most in micrograms or milligrams per liter), EPA or NELAP certified laboratory.

- **Colorado**: also requires testing for bacteria, dissolved gases, benzene, toluene, ethylbenzene. No laboratory specified, but requires analysis of samples using “standard methods” such as EPA SW-846 or an API method.
Governance to address risks

- **Substantive controls**: industry standards and best management practices, contractual provisions, statutes, regulations

- **Institutions**
  - Environmental Protection Agency, Fish and Wildlife Service, Bureau of Land Management, Army Corps of Engineers, other federal agencies
  - State environmental and natural resources agencies
  - Regional commissions
  - Industry and nonprofit groups
2. Identify who currently governs: agencies and other groups, and interactions among them

- **LOCAL**: States determine nature and extent of local jurisdiction.
- **STATE**: States have independent authority over certain development activities.
- **REGIONAL**: States, with federal approval, participate in compacts.
- **PUBLIC-PRIVATE**: States work with nonprofits and industry groups to write guidelines, review regulations.
- **FEDERAL**: States implement certain federal environmental regulations.
• Within each state, multiple agencies have jurisdiction over risk.

• Texas example:
  
  • **Railroad Commission (RRC)** governs surface oil and gas activities and casing, handling and disposal of naturally occurring radioactive materials from oil and gas.
  
  • RRC grants underground injection control permits.
  
  • **Texas Groundwater Protection Committee** “tracks groundwater pollution.” RRC is a member.
  
  • **Texas Commission on Environmental Quality** monitors air quality; approves surface water withdrawals.
  
  • **Texas Department of Licensing and Regulation** has standards for certain rig supply water wells.
• Does the agency have **full authority over the scope of the risks**? (If risks are regional, does a regional agency govern?)

• Do agency staff **communicate risks** that they notice to the **entities with jurisdiction over those risks**? (Do Railroad Commission inspectors in Texas identify potential air quality concerns, if they happen to notice them when visiting a site, and send them to the Texas Commission on Environmental Quality?)
In exploring who governs, **private and public-private initiatives** are also important.

- **Lenders and lessors** increasingly require environmental protections.

- **American Petroleum Institute** has many standards; we need more information on how many operators follow them, and how consistently.

- **State Review of Oil and Natural Gas Environmental Regulations** suggests state regulatory improvements, but these are not always adopted.

- Industry voluntarily produces chemical data through **FracFocus**; now required in many states.

- Must **differentiate between review/disclosure and substantive controls**. Disclosure might incentivize improved environmental practices but does not mandate them.
3. Identify substantive controls and gaps

<table>
<thead>
<tr>
<th></th>
<th>Federal</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groundwater contamination,</td>
<td>Federal Safe Drinking Water Act standards</td>
<td>Often state-administered</td>
</tr>
<tr>
<td>induced seismicity (waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>disposal)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groundwater contamination</td>
<td>Fracturing, with exception of diesel, not federally regulated</td>
<td>State casing standards</td>
</tr>
<tr>
<td>(from drilling, surface pits)</td>
<td></td>
<td>State regulation of pit construction and use</td>
</tr>
<tr>
<td>Surface water contamination</td>
<td>Clean Water Act for direct discharge (uncommon)</td>
<td>State regulation of pit construction and use; water quality acts</td>
</tr>
<tr>
<td></td>
<td>Agency threats RE: inadequate wastewater treatment</td>
<td></td>
</tr>
<tr>
<td>Soil contamination, spills</td>
<td>Oil and gas exploration &amp; production wastes exempt from RCRA Subtitle C</td>
<td>States standards for handling of chemicals, wastes</td>
</tr>
<tr>
<td>Air quality</td>
<td>Some new federal standards</td>
<td>Some state regulation; few regs. for many emissions</td>
</tr>
<tr>
<td>Habitat fragmentation</td>
<td>Few regulations at federal or state level, although Endangered Species Act sometimes relevant</td>
<td></td>
</tr>
</tbody>
</table>
• Need comparisons of state regulations for various stages of unconventional well development.

• See, e.g., Richardson et al., Resources for the Future, *The State of State Shale Gas Regulation*.

• Identified elements regulated “quantitatively” by states, and evaluated stringency of regulations, heterogeneity, dynamism.

• Also noted non-quantitative regulation, and areas in which states have not regulated.
that use case-by-case permitting, for example, are excluded. This further limits its scope.

Figure 6. Number of Elements Regulated Quantitatively

Also, states often use command and control as their primary regulatory tool, setting a uniform statewide minimum standard, but allow operators to apply for exceptions. This is effectively a hybrid command-and-control/case-by-case permitting approach. In these cases, the stringency of the
Map 3. Setback Restrictions from Water Sources

- **Blue**: Water supply setback restriction (ft.) (12 states)
- **Purple**: Discretionary standard (1 state)
- **Orange**: No evidence of regulation found (18 states)
- **Gray**: Not in study

Legend:
- **Yellow**: Top 5 states by number of natural gas wells (2011)
- **Red**: States with no natural gas wells (2011)

Source: US Energy Information Administration, Number of Producing Gas Wells. [http://www.eia.gov/dnav/pet/pet_rod_scsp_sd_wel_e.htm](http://www.eia.gov/dnav/pet/pet_rod_scsp_sd_wel_e.htm)
Federal regulation does not always fix variability, particularly if not updated

- **Class II Underground Injection Control wells**—regulated by federal Safe Drinking Water Act, often implemented by states.
- Ohio has updated regulations to address induced seismicity concerns, and Arkansas does not allow these wells in certain areas, but few other states have addressed the problem.

**Minimizing and Managing Potential Impacts of Induced-Seismicity from Class II Disposal Wells:** Practical Approaches
Why the variability?

Comprehensive analysis of states is needed.

• In some cases, geology, climate, and other factors may justify differences.

• Quantitative, uniform standards not always better. Case-by-case permitting sometimes addresses variable risks.

• In other cases, there may be one, accepted practice for adequately protecting against risk, yet this...
Scale-based considerations in regulation

• Regulations that ignore scale: limiting individual water withdrawals to a certain volume per day or month.

• Cumulatively, operators all withdrawing water—within permitted limits—from one stream, simultaneously, could cause substantial harm.

• Do regulations have “total harm thresholds”—meaning do they address cumulative and interactive risks?
Example of a regulation with a total harm threshold

Susquehanna River Basin Commission, July 16, 2012, 64 Water Withdrawals for Natural Gas Drilling and Other Uses Suspended to Protect Streams

“Under SRBC’s passby flow restrictions, when streams drop to predetermined protected low flow levels, operators who are required to meet the agency’s passby requirement must stop taking water.”

Considering market-based regulation through insurance

• Ohio Substitute Senate Bill No. 315 requires liability insurance “of not less than five million dollars bodily injury coverage and property damage coverage,” and a “reasonable level of coverage available for an environmental endorsement.” Codified at Ohio Rev. Code § 1509.07.

• Few states require environmental liability insurance. *But see* Maryland S.B. 854 (approved May 16, 2013).
4. Identify the capacity of agencies (and other institutions) to inform industry entrants of rules, detect and enforce violations.

4a. Informing entrants of rules

• Highly-publicized early enforcements
• Training sessions
• Operators’ manuals
Example of publicized early enforcements

Thomas Beauduy, Susquehanna River Basin Commission, remarks at Villanova University School of Law, Jan. 30, 2010:

“The Commission initiated an approval-by-rule process as soon as the industry came to town. It took nearly $2 million of fines paid by the industry to get its attention. The Commission and the industry then began working progressively, positively, and constructively ever since.”
Example of industry training

Bureau of Oil and Gas Management
2010 Industry Training Workshop
Agenda

Morning

8:00 – 8:20 AM – Registration

8:20 – 8:25 AM – Welcome and Comments – Jim Kline

8:25 – 8:35 AM – PIOGA- Lou D’Amico

8:35 – 9:30 AM – Chapter 105 Permits, Joint Permits and Distance Waiver (OG57) - Jim Kline

9:30 – 9:45 AM – Break

9:45- 10:30 AM – Water Management Plans- Sue Weaver, Dave Jostenski or Tom Denslinger

10:30- 11:00 AM - Wastewater Transportation and Delivery –Jim Fuller

11:00 –12:00 PM – Model Erosion and Sedimentation Plan BMPs –Darl Rosenquest

12:00 – 1:00 PM - Lunch
### 4b. Detecting violations – inspector numbers

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of field inspectors</td>
<td>36</td>
<td>27</td>
<td>12</td>
<td>40</td>
<td>76</td>
<td>153</td>
</tr>
<tr>
<td>Approximate number of active oil and gas wells (conventional and unconventional)</td>
<td>49,062</td>
<td>15,742</td>
<td>56,366</td>
<td>55,083</td>
<td>92,326</td>
<td>279,856</td>
</tr>
</tbody>
</table>


Earthworks also has documents that describe the number of inspectors, staff inspections, alleged violations, enforcements resulting from violations, and inconsistent reporting of violations and enforcements.
West Virginia: State agency must “[d]etermine the number of supervising oil and gas inspectors,” inspectors, hearing officers, and stenographers needed to carry out new regulatory requirements.

W. Va. Code 22-6-2
Detecting violations: random inspections

Susquehanna River Basin Commission (SRBC) “inspections occur during regular business hours, as well as non-standard work hours including evenings, weekends and holidays. Inspections are conducted at random of both drilling pads and water withdrawal points. Field inspectors also respond to complaints received from the public.”

http://www.srbc.net/programs/natural_gas_development_faq.htm

Pennsylvania: “DEP inspectors conduct routine and unannounced inspections of drilling sites and wells statewide.”
Frequency of inspections – required and actual

• 25 Pa. Code § 78.903: DEP agents must inspect well at least “once prior to the issuance of a permit” if the operator requests a waiver or exemption.

• “At least once during each of the phases of siting, drilling, casing, cementing, completing, altering and stimulating a well.”

• “At least once during, or within 3 months after, the time period in which the owner or operator is required to restore the site, after drilling the well” (and more – plugging, abandonment).
# Actual inspections and enforcement

<table>
<thead>
<tr>
<th>State and year</th>
<th>Approximate number of active oil and gas wells</th>
<th>Number of inspectors</th>
<th>Inspections conducted</th>
<th>Violations noted</th>
<th>Enforcement actions taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pennsylvania 2012</td>
<td>92,326</td>
<td>76</td>
<td>26,913</td>
<td>3,378</td>
<td>949</td>
</tr>
<tr>
<td>Texas 2009</td>
<td>280,000</td>
<td>87</td>
<td>128,000</td>
<td>80,000</td>
<td>550</td>
</tr>
</tbody>
</table>

Detecting violations: ensuring that inspectors notice and consistently document certain problems and conditions.

**Inspection Report**

**Additional Remarks**

At the time of inspection I found that gas was leaking between the 9 5/8 inch casing and 7 inch casing.

10/10/2006

Please respond within 2 weeks with a written response as to how and when this violation will be corrected.

**NOTICE OF VIOLATION(S)**

<table>
<thead>
<tr>
<th>Law</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 78</td>
<td>78.86</td>
</tr>
</tbody>
</table>

Description/Recommended Action/Correction Taken:

Inspection revealed that the well is in violation of...
Michigan: “Compliance case #2063 No activity at site, well remains in non-compliance. **Took digital photos** of site for informal compliance hearing 4/22/03.”

Ohio: “Notified by [individual] of an oil line burst underground leading from well to tank battery. Approximately 1-2 barrels of oil escaped. Line was purged of oil and uncovered and plastic pipe was replaced. Soil was removed and replaced in crop field. **No water way affected. Cloudy, 32 degrees.**”
PA: “ER-company report of mineral oil spill on well pad access road, 1,000 ft long, 10 ft wide at greatest area, leak from skid tank hauled on flatbed truck, SWMA 301, 78.56(a)(1) & CSL 401, mineral oil contained to road surface, company response initiated to scrape road surface and contain material.”
Colorado: “Remediate oily soil per rules 909 and 910. Install measures to assure that the tank will not overflow again; 907.a(1) and 324A.a. Spacing of tank should comply with rule 604.a(5). Labeling of tanks should comply with rule 604.a(12). Remove equipment not necessary for production, including but not limited to; workover rig parked on location, old drums/barrels, oily rags, old garage door, etc, per rule 603.j.”
Ensuring that staff are qualified; avoiding frequent staff turnover

• West Virginia: “Every supervising oil and gas inspector shall be paid not less than $40,000 per year. Every oil and gas inspector shall be paid not less than $35,000 per year.”

• Oil and gas inspectors must have “at least two years actual relevant experience in the oil and gas industry.”

W. Va. Code § 22-6-2a, § 22-6-2
Implementing continuous monitoring and reporting so that physical inspections are not always required

“For approved projects, SRBC requires metering to document daily quantities withdrawn or used, monitoring of approval conditions such as protective passby flows, and reporting (commonly quarterly) of monitoring data. The monitoring data are screened for compliance with docket conditions upon receipt.”

http://www.srbc.net/programs/natural_gas_development_faq.htm
4c. Enforcement: purposes

- Ensure remediation of environmental and other damage, if any, caused by violation.
- Make victims whole (sometimes)
- Deter future violations by operator who committed the violation, as well as other operators (signaling)
- “Punish” operators?
Concerns associated with enforcement

• Unfair or seemingly uneven enforcement could break relationship of trust with industry.
  • Allowing industry to immediately correct violations and to avoid formal enforcement action in certain cases seems reasonable, as does settlement in certain cases—need to verify, however, that operator actually corrected violation.

• Underenforcement could encourage culture of noncompliance and leave problems unaddressed.

• Need to provide consistent policy for enforcement priorities and methodologies. Penalties must be sufficiently high to deter future noncompliance, and remediation orders or payments in lieu of remediation must ensure adequate clean-up and restoration.

1. Taking into account both aggravating and mitigating factors, the OCD hereby assesses a civil penalty totaling five thousand dollars ($5,000) against XTO.

2. The civil penalty shall be paid at the time XTO executes this order. Payment shall be made by certified or cashier’s check made payable to the “New Mexico Oil Conservation Division,” and mailed or hand-delivered to the New Mexico Oil Conservation Division, Attention: Director, 1220 South Saint Francis Drive, Santa Fe, New Mexico, 87505.

3. XTO is directed to keep a livestock-proof fence in place around the pit until the pit is closed under an OCD approved plan for this location.
Clarity of state enforcement policy

• Colorado Executive Order D 2013-004: Colorado Oil and Gas Conservation Commission must review its “rules regarding the notice of violations and **procedures for issuing notices of violations**, the penalty schedule and its policies, calculating or adjusting penalties, and imposing and collective fines.”
STATE OF COLORADO

OFFICE OF THE GOVERNOR
136 State Capitol Building
Denver, Colorado 80203
Phone (303) 866-2471
Fax (303) 866-2003

D 2013-004

EXECUTIVE ORDER

Directing the Colorado Oil and Gas Conservation Commission to Review, Propose Regulations, and Adopt Guidance Regarding Its Enforcement and Penalty-Assessment Procedures

Pursuant to Article IV, Section 2 of the Colorado Constitution and the authority vested in the Office of the Governor, I, John W. Hickenlooper, Governor of the State of Colorado, hereby issue this Executive Order directing the Colorado Oil and Gas Conservation Commission to undertake a review of its enforcement program, penalty structure, and imposition of fines.

John W. Hickenlooper
Governor
Colorado’s Executive Order also directs that:

- Minimum violations should be established for “especially egregious violations.”
- **Administrative Orders by Consent should not be allowed** for certain types of violations.
- All violations and the basis for penalty assessment shall be publicly posted.

See also Pennsylvania: “An *enforcement action is to be taken for each identified violation*. No violation is to be ignored.” Penn. Dept. of Envtl. Protection, Bureau of Oil & Gas Mgmt., Doc. No. 550-4000-001, at 1 (2005), http://www.elibrary.dep.state.pa.us/dsweb/Get/Version-48291/01%20550-4000-
Enforcements vary among states

<table>
<thead>
<tr>
<th>Type of violation</th>
<th>Louisiana</th>
<th>New Mexico</th>
<th>Texas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure to obtain permit before drilling or completing well or producing, transporting gas</td>
<td>Administrative order, $1,000</td>
<td>Agreed order, $23,500</td>
<td>Administrative order, $14,500</td>
</tr>
<tr>
<td>Pit/tank construction and maintenance</td>
<td>Order to take appropriate remedial action; $500</td>
<td>Agreed order, $5,000</td>
<td>Administrative order, $1,000</td>
</tr>
</tbody>
</table>

Some differences likely due to aggravating factors, fine and penalty schedules.
Setting enforcement priorities

Pennsylvania: The highest priority violations are those that “result in an actual release of gas or pollutants that endanger human life or public health or safety.”

Paying for inspection and enforcement

- General funds
- Permitting fees
- Surcharges and taxes
- Fines and penalties (in some states)

How much money? In Texas, $15,871,941 spent on monitoring and inspections in 2009 (87 oil and gas field inspectors, 128,000 inspections).

Need to adjust funding sources to cover expanding inspection and enforcement needs. In Texas, most fees have not been raised in nine or more years.
# Major Fees for the Oil and Gas Program

<table>
<thead>
<tr>
<th>Fee Type</th>
<th>FY 2011 Estimated Revenues</th>
<th>Fee Design for Major Fees*</th>
<th>Flexibility</th>
<th>Last Changed in Statute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil &amp; Gas Well Drilling Permits</td>
<td>$9,500,000</td>
<td>Fixed Statutory Amounts</td>
<td>No</td>
<td>2001</td>
</tr>
<tr>
<td>Oil Field Cleanup Regulatory Fee on Gas</td>
<td>$4,552,000</td>
<td>Fixed Statutory Rate</td>
<td>No</td>
<td>2001</td>
</tr>
<tr>
<td>Organization Report Fees</td>
<td>$3,500,000</td>
<td>Depends on activity. Varies between fixed statutory amount and statutory range.</td>
<td>Minimal</td>
<td>2003</td>
</tr>
<tr>
<td>Oil Field Cleanup Regulatory Fee on Oil</td>
<td>$1,985,000</td>
<td>Fixed Statutory Rate</td>
<td>No</td>
<td>2001</td>
</tr>
<tr>
<td>Oil &amp; Gas Compliance Certificate Reissue Fee</td>
<td>$1,020,000</td>
<td>Fixed Statutory Amount</td>
<td>No</td>
<td>2003</td>
</tr>
<tr>
<td>Rule Exception Fee</td>
<td>$380,000</td>
<td>Fixed Statutory Amount</td>
<td>No</td>
<td>2001</td>
</tr>
<tr>
<td>Waste Disposal Facility, Generator, and Transporter Fees</td>
<td>$170,000</td>
<td>Fixed Statutory Amount for non-hazardous oil and gas waste; set by Commission for hazardous oil and gas waste</td>
<td>Moderate</td>
<td>1991</td>
</tr>
</tbody>
</table>

* Excludes late fees.

Unlike TARC or TDL, the Commission has no statutory authority...
Some states have updated fees

- West Virginia: ~$10,000 permit fee for initial horizontal well, $5,000 for each additional well. W. Va. Code 22-6A-7.
Some states have increased fines – can cover inspection costs and deter future noncompliance

<table>
<thead>
<tr>
<th>RULE NUMBER</th>
<th>BASE FINE</th>
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<tbody>
<tr>
<td>205</td>
<td>$500,000</td>
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<tr>
<td>206</td>
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<td>207</td>
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<tr>
<td>208</td>
<td>$500,000</td>
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<tr>
<td>209</td>
<td>$1,000</td>
</tr>
<tr>
<td>210</td>
<td>$250,500</td>
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<table>
<thead>
<tr>
<th>RULE NUMBER</th>
<th>BASE FINE</th>
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<tbody>
<tr>
<td>301</td>
<td>$1,000</td>
</tr>
<tr>
<td>302</td>
<td>$500,000</td>
</tr>
<tr>
<td>303</td>
<td>$1,000</td>
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<tr>
<td>305</td>
<td>$1,000</td>
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<tr>
<td>306</td>
<td>$1,000</td>
</tr>
<tr>
<td>307</td>
<td>$250,500</td>
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Some total funds are capped. In Texas, for example, the **Oil and Gas Regulation and Cleanup Fund** is balance capped at $20 million, and the Railroad Commission suggests removing this cap.

- Colorado: Must ensure that two-year average unobligated portion of Oil and Gas Conservation and Environmental Response Fund maintained at approximately $4 million (previously $1 million emergency reserve) and that there are sufficient funds to “address environmental response needs.”

2 Colo. Code Regs. 404-1:710
Disclosing inspection and enforcement

- **Risk-Based Data Management System (RBDMS)** developed and tailored to individual states by the Ground Water Protection Council.
- Pennsylvania: Excel spreadsheets, sortable by inspections, inspections that resulted in enforcement, date of inspection, unconventional and conventional wells, county, municipality, operator.
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<tr>
<td>059-25679</td>
<td>Y</td>
<td>Primary Facility</td>
<td>Greene</td>
<td>Jackson Twp</td>
<td>Violation(s) Noted</td>
<td>Mud off pad, road and into creek.</td>
<td>628295</td>
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<td>027-21653</td>
<td>Y</td>
<td>Primary Facility</td>
<td>Centre</td>
<td>Snow Shoe Twp</td>
<td>Violation(s) Noted &amp; Immediately Corrected</td>
<td>608770</td>
<td>03/01/2011</td>
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<td>035-21162</td>
<td>Y</td>
<td>Primary Facility</td>
<td>Clinton</td>
<td>Beech Creek Twp</td>
<td>Violation(s) Noted</td>
<td>No well Tag</td>
<td>602604</td>
</tr>
<tr>
<td>035-21174</td>
<td>Y</td>
<td>Primary Facility</td>
<td>Clinton</td>
<td>Beech Creek Twp</td>
<td>Violation(s) Noted</td>
<td>No well tag, pit fence fallen</td>
<td>602605</td>
</tr>
</tbody>
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Summary

• We need **more information**, and, even more importantly, information that is **organized in a useful manner**:
  • Institutions
  • Scientific data
  • Substantive directives (best management practices, regulations) compared across states.

• We should use this information to **improve institutions**, **fill substantive regulatory gaps**, and consider whether a **shifting of institutional authority** is needed in certain areas.

• The effort to gather and synthesize more and better information should not delay needed regulatory changes.
Substantive priorities

• **Fill substantive gaps** (centralized impoundments for flowback water reuse, pit construction and management, induced seismicity from disposal wells, others), and address scale-based harms.

• **Update state permitting fees** to cover the costs of inspection and enforcement and **fines** to ensure adequate deterrence.

• **Hire more inspectors**, ensure that inspectors are **adequately trained and paid**, and implement **clear inspection and enforcement policies**.

• Inspection and enforcement policies should, among other factors:
  • Include a provision for **random inspections** (many already do).
  • Indicate **which environmental problems are to be prioritized** in both inspections and enforcement.
  • Clearly **indicate all problems that field inspectors should look for** at sites and include in their reports. Inspection reports need to be more consistent.
  • Consider requiring more **photo documentation** at sites. Provide inspectors with equipment that allows for testing, not just visual inspection.
Information-based priorities

Comprehensive *comparisons* of:

- State regulations for each stage of well development.
- State monetary penalties for violations, by type, such as failure to properly case wells or maintain pits.
- State enforcement policies and priorities (types of incidents most likely to result in formal enforcement).

National database into which states or operators would input *water testing and air quality monitoring results*, pre- and post-development, and state policies that would require the production of uniform data.

National database summarizing and providing links to *studies addressing unconventional oil and gas risks*.

**Searchable state databases showing all violations and enforcements**, with uniform information on environmental impacts (substance spilled or pollutant emitted, quantity emitted, and resource affected, for example), site conditions, and remediation required.
Thank you. I welcome questions and comments: hwiseman@law.fsu.edu.