

TESTIMONY OF
LORI WROTENBERY
DIRECTOR, OIL AND GAS CONSERVATION DIVISION
OKLAHOMA CORPORATION COMMISSION
BEFORE THE
SUBCOMMITTEE ON TECHNOLOGY, INFORMATION POLICY,
INTERGOVERNMENTAL RELATIONS AND PROCUREMENT REFORM OF THE
HOUSE COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM

Hearing Entitled, "Rhetoric vs. Reality, Part II: Assessing the Impact of New Federal Red Tape on Hydraulic Fracturing and American Energy Independence"

Thursday, May 31, 2012

Thank you for the opportunity to testify today. I very much appreciate your interest in hearing the perspective of a state regulator on how states are working with oil and gas operators, local communities, environmental organizations, and other stakeholders to realize the economic potential of our oil and gas resources while ensuring public safety and protecting the environment.

Recent technological developments have given us access to oil and gas resources held tightly in shale and other deep geologic formations. We welcome this new opportunity. We also recognize the challenges it presents, particularly to those of us who work on a daily basis to manage and protect our precious water resources. To address these challenges, states across the nation are actively reviewing and updating their regulatory standards and procedures to ensure that oil and gas drilling and production operations are conducted safely. States are also continually testing, evaluating, and strengthening the mechanisms they have in place to develop, implement, and enforce sound regulations.

To give you a sense of the breadth and vitality of these state efforts, I would like to briefly summarize activities in three areas: (1) recent regulatory developments in the State of Oklahoma, which are in many ways specific to the particular circumstances there, but also have much in common with efforts underway in other oil and gas producing states; (2) the work being done through the stakeholder process called "STRONGER" to assist the states in benchmarking and improving their environmental regulations for oil and gas drilling and production operations; and (3) the development by the Ground Water Protection Council (GWPC) and the Interstate Oil and Gas Compact Commission (IOGCC) of the website called FracFocus and the chemical registry and other information available to the public on that website.

Regulatory responses by the State of Oklahoma to developments in horizontal drilling and hydraulic fracturing technology

Oklahoma has a long history of oil and gas exploration and production. The first commercial oil well was completed in 1897. Subsequently over half of a million oil and gas wells are estimated to have been drilled in the state.

I have attached a fact sheet to this testimony to give you an idea of the nature and extent of oil and gas operations in the State of Oklahoma. We presently have about 190,500 active wells in Oklahoma—roughly 115,000 oil wells, 65,000 gas wells, and 10,500 injection wells. They are widely distributed throughout most of the 77 counties in the state. In recent years, assisted by advances in horizontal drilling and hydraulic fracturing technology, oil and gas operators in Oklahoma have been actively developing sources of natural gas like the Woodford Shale as well as sources of crude oil like the Mississippi Lime.

The Oklahoma Corporation Commission (OCC) was established at statehood in 1907 and was first given responsibility for regulating oil and gas production in Oklahoma in 1914. OCC regulates public utilities, trucking, pipelines, petroleum storage tanks, and various other activities as well as oil and gas drilling and production.

The OCC is headed by three statewide-elected officials who serve staggered six-year terms. The Commission sets policy by adopting rules. The Commission also meets in public on a daily basis to issue orders based on the record created through formal, evidentiary hearings in various permitting, ratemaking, and enforcement proceedings.

My division, the Oil and Gas Conservation Division, is responsible for implementing and enforcing the rules and orders of the Commission for oil and gas exploration and production operations. Regulating the drilling, completion, and production of the multitude of oil and gas wells in the state requires a full complement of specialists: engineers, geologists, hydrologists, attorneys, technicians, and inspectors. These are the professionals I work with every day to ensure oil and gas operations in Oklahoma are conducted in compliance with the Commission's rules and orders.

All of these individuals, from the Commissioners on down, play key roles in our organization, and I don't wish to slight any of them, but I wish to emphasize the importance of our field staff. Our most fundamental regulatory operations occur in the field, not in an office. I believe our field inspectors are the single greatest strength of our regulatory program.

Our 58 field inspector positions cover the state. Field inspectors are required by statute to live within 37.5 miles of their territories. They work out of trucks that are fully equipped as mobile offices with computers, GPS units, field sampling kits and other equipment they require on a daily basis. They are the first point of contact for most of the people we serve—oil and gas operators, landowners, local government officials, and others. Our field inspectors are truly members of the communities they serve—indeed

many of them grew up in the same or nearby communities. They are required to have prior experience working in the oil and gas field, so they understand the operations they are inspecting. And they spend most of their working hours traveling the area lease roads, so they know their territories like few others. In case of an emergency, they can be on location within an hour in all but the most remote parts of the state.

Our field inspectors must meet high standards of conduct and performance—they are expected to inspect the operations and enforce the rules fairly, consistently, and appropriately. And they strive to meet these standards. They have earned our trust and respect, and the trust and respect of their communities, time and again. They don't always get the recognition and respect they deserve, so I'm pleased to have the opportunity to highlight their contribution here today.

Our field inspectors are our greatest strength, but they are not our only strength. Other strengths I would like to emphasize today relate to: (1) the complementary nature of our regulatory functions; (2) the way we have adjusted rapidly to new technologies and other emerging issues; and (3) our ability to tailor our rules to address unique areas and special circumstances.

Complementary regulatory functions

OCC regulates oil and gas exploration and production to conserve oil and gas resources, protect the rights of mineral interest owners, and protect public health and the environment. In the early days, our regulations no doubt focused on protecting the oil and gas resources. In fact, some of the earliest requirements to case wells with steel pipe were designed to keep water from damaging the oil and gas zones rather than to protect the water zones. Regardless, the requirement to separate the water zones from the oil and gas zones served to protect both.

The complementary nature of these requirements has become increasingly apparent over the decades as we have worked to ensure that our precious water resources are protected from oil and gas and associated saline waters. The same casing and cementing requirements that isolate the gas in its formation until it can be produced up through tubing and casing and into pipelines for transportation to market don't just prevent waste of oil and gas and protect mineral rights, they also protect our fresh water resources.

As another example, the spacing requirements that are designed to ensure the orderly development of our oil and gas resources play a role in controlling the surface impacts of oil and gas development. In its 2011 Regular Session, the Oklahoma Legislature established new mechanisms for the creation of special units and the drilling of multiunit wells to allow the drilling of horizontal shale gas wells across section boundaries. These new mechanisms will facilitate the drilling of longer laterals, which will also reduce the surface footprint of shale gas development in the state.

Evolution of regulation

The example of the new legislation for shale gas drilling illustrates how the State of Oklahoma has rapidly adapted to new technologies and addressed emerging issues. In recent years the OCC has engaged in an annual review of its oil and gas regulations and adopted changes to address new technologies, emerging issues, and other developments. Through this process of continuing assessment and adjustment, the OCC ensures that its rules remain current and effective.

For example, perhaps the biggest environmental issue associated with development of the Woodford Shale in Oklahoma has been how to accommodate the recycling of flowback water. We encourage recycling of flowback water as a way to reduce the demand on our freshwater resources. Recycling on a large scale, however, has required the use of pits for temporary storage of flowback water. Oklahoma rules did not allow for storage of produced waters in pits. In 2009 the OCC initiated a rulemaking process to develop standards and procedures for the permitting, construction, operation, and closure of pits for the recycling of flowback waters. The new rules went into effect in July 2010. And we continue to evaluate how they are working. Based on our initial experience with the new rules, the OCC has already made some amendments that went into effect in July 2011.

Special area rules

Most communities in the State of Oklahoma are well acquainted with the nature of oil and gas drilling and production operations. The City of Oklahoma City, where I live, is the location of one of the state's largest oil fields and dealt early on with the challenges of drilling and production in an urban environment. Oklahoma City is also recognized nationally for the quality of its tap water. Oklahoma City draws its drinking water from surface water supplies of exceptionally high quality and works effectively with the OCC and others to ensure that oil and gas operations do not adversely affect those supplies.

The OCC has procedures for special area rules to protect municipal water supplies. Any municipality or other governmental subdivision may apply for a Commission order establishing special area rules to protect and preserve fresh water. The Commission has issued hundreds of these special orders over the years.

For example, the OCC recently reviewed, updated, and strengthened the special area rules for oil and gas operations in the watersheds of Lake Atoka and McGee Creek Reservoirs. These truly pristine lakes in southeast Oklahoma supply water to Oklahoma City about 100 miles away. Special area rules had been initially adopted in 1985, but the recent upswing in drilling activity in the area raised issues that need to be studied and addressed.

As is typical of our rulemaking proceedings, a rather large workgroup of stakeholders, including the City of Oklahoma City, rural water districts, counties, tribes, oil and gas operators, and others, assisted OCC staff in identifying the issues, considering options, and developing recommendations for consideration by the Commission. On the basis of those recommendations, the Commission proposed rule amendments that were ultimately adopted with the support of the stakeholders.

The amended rules, which became effective in July 2009, established new setback requirements from the shores of the lakes, required containment structures around drilling locations, and included other provisions to prevent runoff of soil, salt, and other pollutants into the lakes. They also gave oil and gas operators some additional flexibility in meeting pit liner requirements in those locations far enough from the lakes that the use of pits is allowed. These special area rules illustrate the kinds of accommodations that can be reached when the stakeholders work together to figure out how to develop our oil and gas resources while protecting our water resources.

I have given you examples of the work we are doing in Oklahoma to ensure that development of our oil and gas resources is conducted safely. Similar efforts are well underway in other oil and gas producing states. For seven states already, including Oklahoma, these efforts are reflected in reports issued by the STRONGER stakeholder organization on its review of their hydraulic fracturing regulations.

STRONGER reviews of state oil and gas regulations

STRONGER has completed hydraulic fracturing reviews in six states now: Pennsylvania, Ohio, Oklahoma, Louisiana, Colorado, and Arkansas. I participated as a team member in each of the reviews, except of course in Oklahoma where I sat on the other side of the table. I wish to share with you what I've learned as a participant in the STRONGER hydraulic fracturing reviews, but first, please allow me to give you a little background on STRONGER.

The name, STRONGER, is short for State Review of Oil and Natural Gas Environmental Regulations, Inc. STRONGER is a multi-stakeholder collaborative effort to: benchmark state regulatory programs; develop guidelines for effective state regulatory programs; and conduct reviews of state regulatory programs against those guidelines. Attached to this testimony is a copy of a presentation describing the structure, history, and operations of STRONGER and the state review process, along with the current roster of members of the STRONGER Board.

The STRONGER Board includes three representatives from each of three stakeholder groups: state regulators, environmental organizations, and oil and gas producers. Likewise, all STRONGER efforts, such as guidelines development workgroups and

state review teams, involve the same balanced representation of the stakeholder groups.

When STRONGER reviews a state's hydraulic fracturing regulations, the STRONGER stakeholder review team takes the time to review the materials provided by the state describing its hydraulic fracturing regulations, listen to a presentation by the state on its standards and procedures, and discuss with the state how the state addresses the key program elements laid out in the STRONGER hydraulic fracturing guidelines. The review team then prepares a report that discusses the state program and makes findings and recommendations based on the STRONGER guidelines. In the report, the review team highlights the program strengths and accomplishments, as well as identifying areas for improvement. All of the STRONGER hydraulic fracturing reports are posted on the STRONGER website (www.strongerinc.org).

The reports prepared by the stakeholder review teams speak for themselves, and the observations I am about to share with you are my own, not those of STRONGER or of any particular review team. Having participated in each of the hydraulic fracturing reviews completed to date, however, I believe the reports document the fundamental strengths of the state programs as well as the decisive actions states are taking to meet the challenges of recent developments in horizontal drilling and hydraulic fracturing technology. The findings of the Oklahoma hydraulic fracturing review and similar stakeholder reviews conducted in other states show that the states are well equipped to regulate hydraulic fracturing. These reports also document that each state has experienced challenges in regulating hydraulic fracturing in today's environment, that the specific nature of the challenges varies from state to state, and that each state has taken actions in a manner appropriate to its particular circumstances to ensure that hydraulic fracturing operations are conducted safely.

Most importantly, the reports contain specific recommendations for improvement. The STRONGER stakeholder organization looks forward to returning to the states to learn how they have responded to the STRONGER recommendations. At this point, I can tell you that Oklahoma has already made several rule amendments recommended by the STRONGER review team and provided funding for additional field and technical staff based in part on another STRONGER recommendation. So, I can attest that the process is working to help the states in their ongoing efforts to maintain strong, effective regulatory programs.

Please note that the hydraulic fracturing reviews have been the principal focus of STRONGER's effort for the last couple of years, but STRONGER has a broader mission. STRONGER's hydraulic fracturing guidelines are but one chapter in its guidelines for state oil and gas environmental regulations. The state review process was originally established by the Interstate Oil and Gas Compact Commission (IOGCC) and the U.S. Environmental Protection Agency to address the management of wastes associated with the exploration and production of oil and gas. Over the years the process has addressed other significant issues, including abandoned sites, naturally occurring radioactive material (NORM), stormwater management, spill risk

management, and program planning and evaluation. And STRONGER continues to review and update the guidelines as needed to address emerging issues. In addition to reviewing the hydraulic fracturing guidelines to make adjustments based on the experience gained through the hydraulic fracturing reviews, STRONGER is now exploring the possibility of developing guidelines or other mechanisms to address air issues that have arisen in oil and gas producing regions.

To date, 22 states have been reviewed under the full set of STRONGER guidelines. The attached map of the United States shows the status of reviews in the various states. The states that have been reviewed account for over 90% of onshore production in the United States.

North Carolina recently became the 22nd state to undergo a full review. North Carolina's request for a STRONGER review is one of several steps the state is taking to prepare for future development of the Marcellus Shale. STRONGER published the report on North Carolina's oil and gas regulations in February of this year. Just last week, Governor Beverly Perdue issued an executive order establishing a regulatory workgroup to recommend a regulatory framework and interagency protocols for oil and gas development in North Carolina. Among the guiding principles to be considered by this workgroup, the executive order provides that the recommendations of the STRONGER review team must be adopted as a baseline in establishing environmental standards for an effective oil and gas regulatory framework.

STRONGER also conducts follow-up reviews to determine how the states have responded to review team recommendations. Ten of the 22 states that have been reviewed have had at least one follow-up review. Through the follow-up reviews, the review teams have found that fully three-quarters of the recommendations from prior reviews have been met. The review teams also found that work on other recommendations was in progress though not yet complete. For an entirely voluntary process, I find that record of accomplishment most impressive.

FracFocus

In addition to working with stakeholders to evaluate and improve their programs, the states are working collectively to provide information to the public on hydraulic fracturing operations. Two state organizations have led this effort: the Ground Water Protection Council (GWPC), an organization of state ground water protection agencies, including oil and gas regulatory agencies like mine; and the Interstate Oil and Gas Compact Commission (IOGCC), a compact of the Governor's of the oil and gas producing states.

In September 2010, the GWPC Board of Directors passed a resolution expressing GWPC's intent to develop, in concert with other state organizations, a web-based system to enhance the public's access to information concerning chemicals used in hydraulic fracturing. The GWPC then partnered with IOGCC to develop the chemical registry and website called FracFocus.

Over the next six months a system was developed that allows oil and gas companies to upload information about the chemicals used in each hydraulic fracturing job. This system was augmented by a website that provides a way for the public to locate and review records of hydraulic fracturing conducted on wells after January 1, 2011. The website also contains information about the process of hydraulic fracturing, groundwater protection, chemical use, state regulations, and relevant publications. It provides links to federal agencies, technical resources, and each participating company.

The FracFocus website, www.fracfocus.org, was launched on April 11, 2011. Since then, 277 companies have agreed to participate in the effort, more than 18,000 wells have been loaded into the system by 149 of these companies, and the website has been visited more than 250,000 times by more than 179,000 unique visitors. To give you an idea of the kind of information being reported to FracFocus, attached is an example of a report on the hydraulic fracturing fluid composition for a well in Oklahoma.

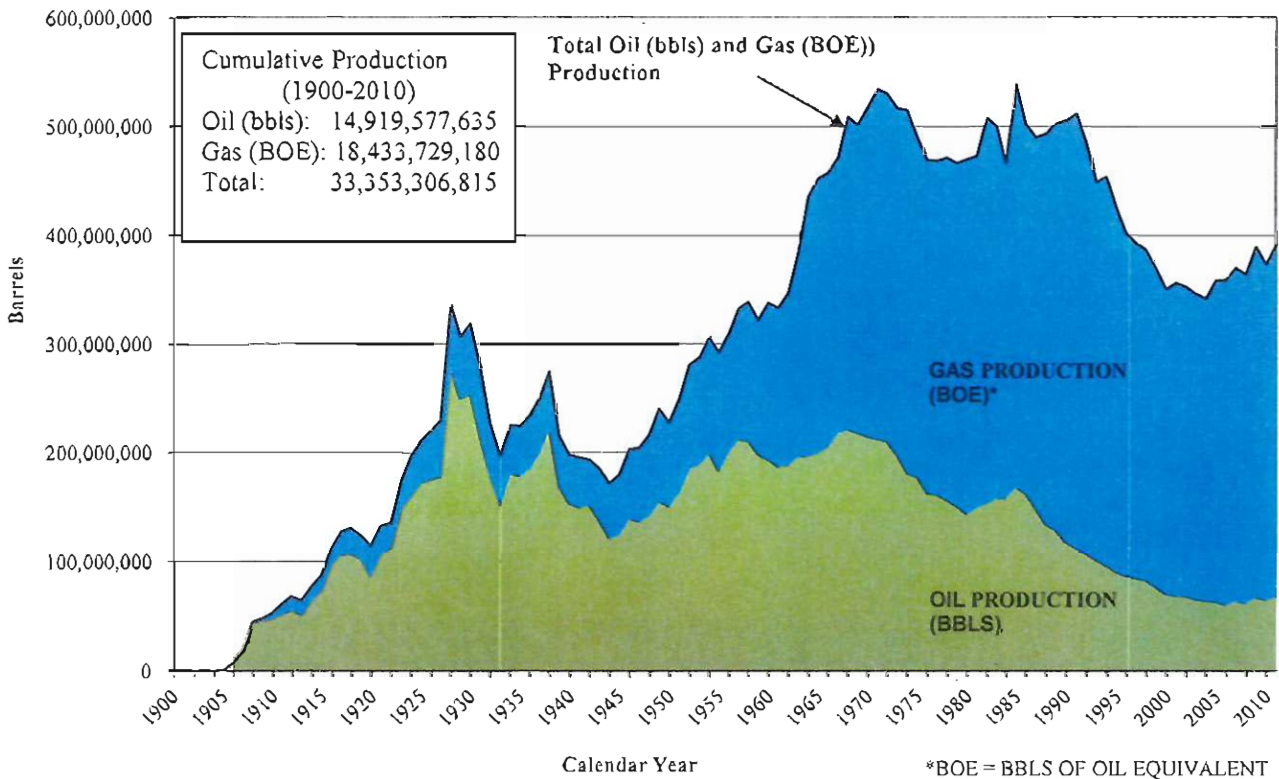
The states are informing their oil and gas producers about the FracFocus chemical registry and encouraging them to use it. In addition, a number of states have now adopted or are considering chemical reporting requirements that incorporate the FracFocus chemical registry. A copy of the chemical disclosure rule recently adopted by the Oklahoma Corporation Commission is attached to this testimony. This rule provides for the publication on the FracFocus website of the chemical constituents of fluids used in the hydraulic fracturing of oil and gas wells in Oklahoma.

As useful and informative as the FracFocus website already is, GWPC, IOGCC, and their member states are committed to making it even better. A recent enhancement to the site is a Geographic Information System interface that assists the public in locating well records. Future enhancements to the site will include expanded search capabilities and links to more publications, state agencies, and other resources.

Oklahoma Oil and Gas Activity

- Active wells (2011):
 - 65,000 Natural gas
 - 115,000 Oil
 - 10,500 Injection/disposal
 - 190,500 Total active wells
- 94,000+ hydraulically fractured oil and gas wells.
- 3,732 intents to drill approved in 2011.
- 3,032 active operators of oil and gas wells.
- 199 average rig count for April 2012.

Oklahoma Oil and Gas Production (1900-2010)



THE STATE REVIEW PROCESS

- *Meeting the Challenges of U.S. Oil & Gas Development*
- *Collaboration to Improve the Regulatory Environment*



STRONGER, Inc.

STRONGER

2

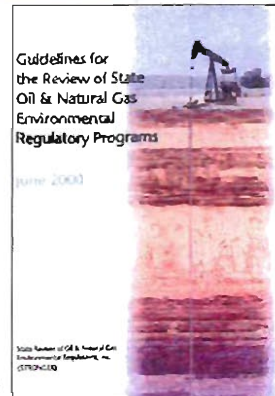
- State Review of Oil and Natural Gas Environmental Regulations, Inc.
- A multi-stakeholder collaborative effort to
 - Benchmark state regulatory programs
 - Develop recommended state program guidelines
 - Establish a review process to evaluate state regulatory programs against those guidelines



STRONGER

3

- Stakeholders
 - ▣ States
 - ▣ Industry
 - ▣ Environmental Organizations
- Supporters
 - ▣ IOGCC
 - ▣ GWPC
 - ▣ Federal agencies (EPA, DOE)



Background

4

- RCRA definition of solid waste
- Hazardous waste regulated under Subtitle C
- Exemption until EPA study
- Report to Congress – December 1987
- EPA regulatory determination – July 1988
- 3-prong approach



EPA's Three-Pronged Approach

5

- Improve existing programs under RCRA, SDWA, and CWA
- Work with states to improve their programs
- Work with Congress on any needed additional legislation

State Review Process

6

- Established by IOGCC with support from EPA
- Stakeholder involvement
- Guidelines developed
- State reviews against Guidelines
- Guidelines updates and revisions
- Follow-up reviews



STRONGER

7

- Formed June 1999
- Functions:
 - ▣ Manage state review process
 - ▣ Sponsor new/revised guidelines
 - ▣ Develop procedures for reviews, training
 - ▣ Assemble review teams
 - ▣ Contract administrative/clerical support
 - ▣ Settle disputes



State Reviews

8

- State volunteers, completes questionnaire
- Review team assembled and trained
- In-state interview
- Team drafts report with findings and recommendations
- Draft distributed for comments
- Final approved by Board and published



Reports

9

- Executive summary
 - ▣ Highlights program strengths
 - ▣ Summarizes key recommendations for improvement
- Discussion of program elements
- Findings and recommendations
- Appendix
 - ▣ Response to questionnaire (state's description of its program)



Results

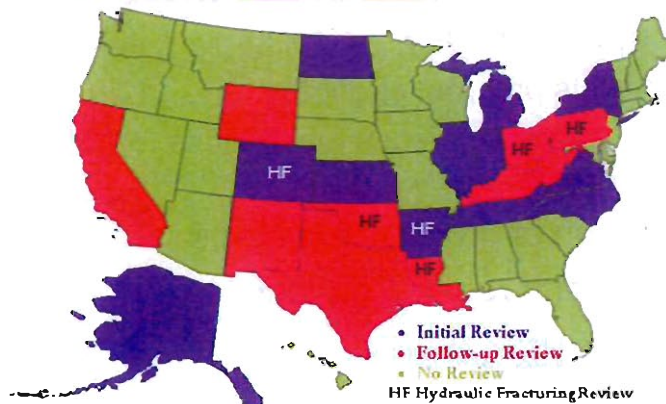
10

- 22 states reviewed – 94% onshore production
- 10 states with follow-up reviews – 76% of recommendations satisfied
- 2009 survey – all states implemented some recommendations
 - ▣ 33% fully implemented
 - ▣ 27% partially implemented
 - ▣ 26% outstanding
 - ▣ 14% unknown



State Reviews

11



Hydraulic Fracturing Guidelines

12

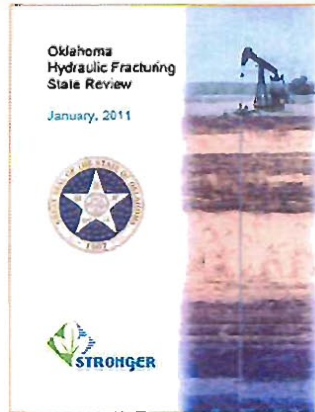
- Key elements of effective state regulatory programs for hydraulic fracturing
- Developed by stakeholder workgroup (state, industry, and environmental representatives) convened in August 2009
- Guidelines submitted to STRONGER in January 2010 and used in ensuing reviews
- Workgroup has been reconvened to consider revisions based on experience during reviews and other developments



Hydraulic Fracturing Reviews

13

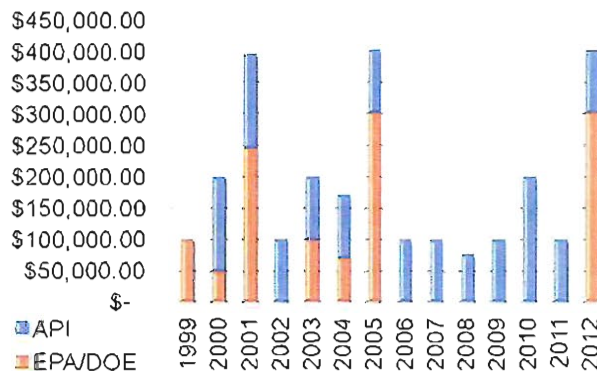
- Conducted by stakeholder teams using the guidelines
- Reviews completed:
 - Pennsylvania
 - Ohio
 - Oklahoma
 - Louisiana
 - Colorado
 - Arkansas



STRONGER Funding Summary

14

1999 to 2012

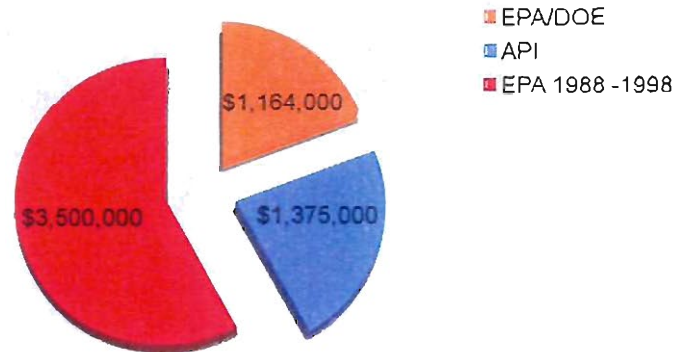


Notes:
 • Prior to 1999 and STRONGER, EPA contributed \$3.5 million to IOGCC to manage the state review process.
 • This summary does not reflect in-kind contributions from states and other stakeholders.
 • 2012 DOE and API contribution, pending final paperwork.



STRONGER Funding Summary

15



Strengths of Review Process

16

- All work performed by stakeholder teams
- Guidelines recognize regional differences
- Reviews document program strengths and opportunities for improvement
- Follow-up reviews are conducted
- The process is transparent and timely



Benefits of Review Process

17

- State control of E&P waste programs
- Improved state oil and gas environmental regulatory programs
- Process for continuing program improvement
- Opportunity to share and promote new or unique concepts and ideas
- Flexible reviews to meet state needs
- Great educational process for all participants



SEAB Interim Report

18

- Improve communication among state and federal regulators: Provide continuing annual support to STRONGER (the State Review of Oil and Natural Gas Environmental Regulation) and to the Ground Water Protection Council for expansion of the Risk Based Data Management System and similar projects that can be extended to all phases of shale gas development.

August 2011 Secretary of Energy's Advisory Board (SEAB) Interim Report on Shale Gas Production recommendations



NPC Report

19

- “STRONGER should be bolstered and increase the scope of its activities. All states with natural gas and oil production should actively participate in STRONGER and use its recommendations to continuously improve regulation. It should be adequately funded, including from the federal government.”

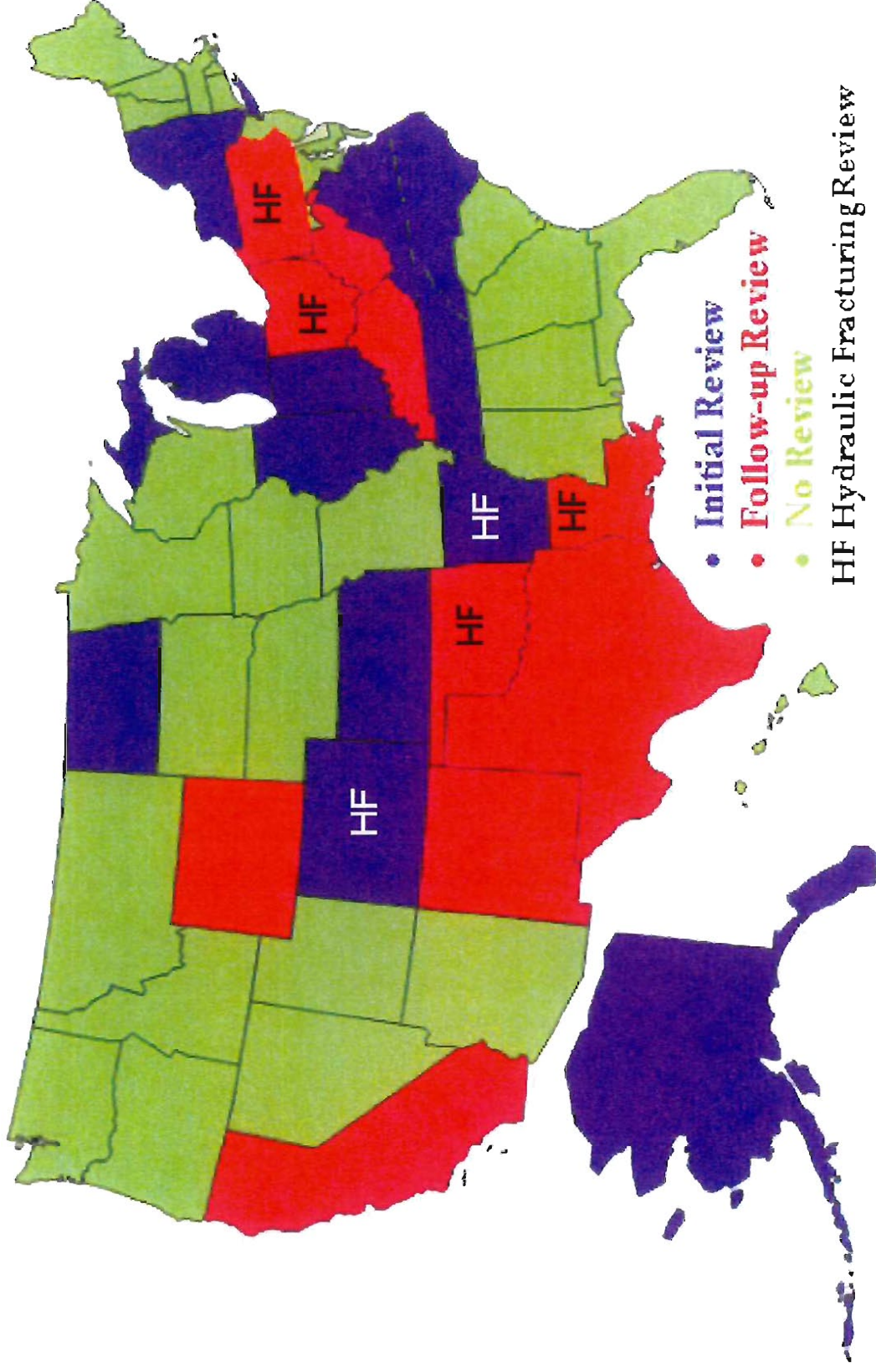
- September 2011 National Petroleum Council (NPC) report “Prudent Development: Realizing the Potential of Abundant North American Natural Gas and Oil Resources”



STRONGER Website

20

- www.strongerinc.org
 - Guidelines
 - Reports on reviews
 - History and accomplishments



● Initial Review

● Follow-up Review

● No Review

HF Hydraulic Fracturing Review

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	11/21/2011
State:	OKLAHOMA
County:	ALFALFA
API Number:	3500322112
Operator Name:	CHESAPEAKE
Well Name and Number:	ROUSH 3-25-12 1H
Longitude:	-98.478609
Latitude:	36.667124
Long/Lat Projection:	NAD27
Production Type:	OIL
True Vertical Depth (TVD):	5,962
Total Water Volume (gal):*	1,307,838

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by Mass)**	Maximum Ingredient Concentration in HF Fluid (% by Mass)**	Comments
Fresh Water		Carrier/Base Fluid				86.91296%	
Ottawa Sand		Proppant	Crystalline Silica (Quartz Sand, Silicon Dioxide)	014808-60-7	100.00%	7.76978%	
100 Mesh Sand		Proppant	Crystalline Silica (Quartz Sand, Silicon Dioxide)	014808-60-7	100.00%	1.99787%	
15% HCl Acid	BASIC ENERGY SERVICES	Acid	Water	007732-18-5	85.00%	2.44024%	
			Hydrochloric Acid	007647-01-0	15.00%	0.43063%	
I-6L	BASIC ENERGY SERVICES	Iron Control Agent	Acetic acid	000064-19-7	85.00%	0.01437%	
			Methanol (Methyl Alcohol)	000067-56-1	5.00%	0.00085%	
CIA-LT166	BASIC ENERGY SERVICES	Corrosion Inhibitor	Methanol (Methyl Alcohol)	000067-56-1	50.00%	0.00220%	
			Propargyl Alcohol (2-Propynol)	000107-19-7	4.00%	0.00018%	
XC1427	BAKER HUGHES	Anti-Bacterial Agent	Water	007732-18-5	60.00%	0.00712%	
			Glutaraldehyde (Pentanediol)	000111-30-8	30.00%	0.00356%	
			Didecyl Dimethyl Ammonium Chloride	007173-51-5	10.00%	0.00119%	
			Quaternary Ammonium Compound	068424-85-1	7.00%	0.00083%	
			Ethanol	000064-17-5	5.00%	0.00059%	
WGA-1E SLR	BASIC ENERGY SERVICES	Gelling Agent	Petroleum Distillate Hydrotreated Light	064742-47-8	70.00%	0.10040%	
CC-11 KCI	BASIC ENERGY	Clay Stabilizer	Methanol (Methyl Alcohol)	000067-56-1	100.00%	0.08597%	

SERVICES								
S-10	BASIC ENERGY SERVICES	Surfactant	2-Butoxyethanol (Ethylene Glycol Monobutyl Ether)	000111-76-2	100.00%	0.04461%		
FR-947	BASIC ENERGY SERVICES	Friction Reducer	Methanol (Methyl Alcohol)	000067-56-1	100.00%	0.04461%		
BXL-2L	BASIC ENERGY SERVICES	Cross Linker	Petroleum Distillate Hydrotreated Light	064742-47-8	30.00%	0.02931%		
NE - 140	BASIC ENERGY SERVICES	Non-Emulsifier	Sodium Metaborate Tetrahydrate	035585-58-1	30.00%	0.00949%		
Breaker - 10L	BASIC ENERGY SERVICES	Breaker	Ethylene Glycol	000107-21-1	10.00%	0.00316%		
			Sodium Hydroxide	001310-73-2	10.00%	0.00316%		
			Methanol (Methyl Alcohol)	000067-56-1	30.00%	0.00075%		
			No Hazardous Components	NONE		0.00000%		

* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(i) and Appendix D.

Title 165. Corporation Commission
Chapter 10. Oil and Gas Conservation

165:10-3-10. Well completion operations

(a) Hydraulic fracturing and acidizing. In the completion of an oil, gas, injection, disposal, or service well, where acidizing or fracture processes are used, no oil, gas, or deleterious substances shall be permitted to pollute any surface and/or subsurface fresh water.

(b) Chemical disclosure. Within 60 days after the conclusion of hydraulic fracturing operations on an oil, gas, injection, disposal, or service well that is hydraulically fractured, the operator must submit information on the chemicals used in the hydraulic fracturing operation to the FracFocus Chemical Disclosure Registry or, alternatively, submit the information directly to the Commission. If the chemical disclosure information is submitted directly to the Commission under this subsection, the Commission will post such information on the FracFocus Chemical Disclosure Registry.

(1) The submission required by this subsection must include the following information:

(A) the name of the operator;

(B) the API number of the well;

(C) the longitude and latitude of the surface location of the well;

(D) the dates on which the hydraulic fracturing operation began and ended;

(E) the total volume of base fluid used in the hydraulic fracturing operation;

(F) the type of base fluid used;

(G) the trade name, supplier, and general purpose of each chemical additive or other substance intentionally added to the base fluid; and

(H) for each ingredient in any chemical additive or other substance intentionally added to the base fluid, the identity, Chemical Abstract Service (CAS) number, and maximum concentration. The maximum concentration for any ingredient must be presented as the percent by mass in the hydraulic fracturing fluid as a whole, and is not required to be presented as the percent by mass in any particular additive.

(2) For purposes of this subsection, the phrase "chemical additive or other substance intentionally added to the base fluid" refers to a substance knowingly and purposefully added to the base fluid and does not include trace amounts of impurities, incidental products of chemical reactions or processes, or constituents of natural materials.

(3) The operator is not responsible for inaccurate information provided to the operator by a vendor or service provider, but the operator is responsible for ensuring such information is corrected when any inaccuracy is discovered.

(4) If certain chemical information, such as the chemical identity, CAS number, and/or maximum concentration of an ingredient, is claimed in good faith to be entitled to protection as a trade secret under the Uniform Trade Secrets Act, 78 O.S. §§85-94, the submission to the FracFocus Chemical Disclosure Registry may note the proprietary nature of that chemical information instead of disclosing the protected information to the registry. The submission must include the name of the supplier, service company, operator, or other person asserting the claim that the chemical information is entitled to protection as a trade secret and provide the chemical family name or similar descriptor for the chemical if the chemical identity and CAS number are not disclosed. The Commission or the Director of the Oil and Gas Conservation Division may require the claimant to file with the Commission a written explanation in support of the claim.

(5) Nothing in this subsection restricts the Commission's ability to obtain chemical information under the provisions of OAC 165:10-1-6 or other applicable Commission rules.

(6) This subsection applies to:

(A) horizontal wells that are hydraulically fractured on or after January 1, 2013; and

(B) other wells that are hydraulically fractured on or after January 1, 2014.

~~(b)~~ (c) Rule reference guide. References to Commission rules regarding management of hydraulic fracturing operations are as follows:

- (1) Duties and authority of the Conservation Division (OAC 165:10-1-6).
- (2) Required approval of notice of intent to drill, deepen, re-enter or recomplete; Permit to Drill (OAC 165:10-3-1).
- (3) Surface and production casing (OAC 165:10-3-3).
- (4) Casing, cementing, wellhead equipment and cementing reports (OAC 165:10-3-4).
- (5) Swabbing and bailing (OAC 165:10-3-11).
- (6) Leakage prevention in tanks; protection of migratory birds (OAC 165:10-3-13).
- (7) Well site and surface facilities (OAC 165:10-3-17).
- (8) Completion reports (OAC 165:10-3-25).
- (9) Administration and enforcement of rules (OAC 165:10-7-2).
- (10) Cooperation with other agencies (OAC 165:10-7-3).
- (11) Water quality standards (OAC 165:10-7-4).
- (12) Prohibition of pollution (OAC 165:10-7-5).
- (13) Protection of municipal water supplies (OAC 165:10-7-6).
- (14) Informal complaints, citations, red tags and shut down of operations (OAC 165:10-7-7).
- (15) Scheduled monetary fines (OAC 165:10-7-9).
- (16) Use of noncommercial pits (OAC 165:10-7-16).
- (17) Surface discharge of fluids (OAC 165:10-7-17).
- (18) Discharge to surface waters (OAC 165:10-7-18).
- (19) One-time land application of water-based fluids from earthen pits and tanks (OAC 165:10-7-19).
- (20) Noncommercial disposal or enhanced recovery well pits used for temporary storage of saltwater (OAC 165:10-7-20).
- (21) Waste management practices reference chart (OAC 165:10-7-24).
- (22) One-time land application of contaminated soils and petroleum hydrocarbon based drill cuttings (OAC 165:10-7-26).
- (23) Application of fresh water drill cuttings by County Commissioners (OAC 165:10-7-28).
- (24) Application of freshwater drill cuttings by oil and gas operators (OAC 165:10-7-29).
- (25) Application to reclaim and/or recycle produced water for surface activities related to drilling, completion, workover, and production operations from oil and gas wells (OAC 165:10-7-32).
- (26) Use of commercial pits (OAC 165:10-9-1).
- (27) Commercial soil farming (OAC 165:10-9-2).
- (28) Commercial recycling facilities (OAC 165:10-9-4).
- (29) Duty to plug and abandon (OAC 165:10-11-3).
- (30) Notification and witnessing of plugging (OAC 165:10-11-4).
- (31) Plugging and plugging back procedures (OAC 165:10-11-6).
- (32) Plugging record (OAC 165:10-11-7).
- (33) Review of environmental permit applications (OAC 165:5-1-15 through OAC 165:5-1-19)
- (34) Response to citizen environmental complaints (OAC 165:5-1-25 through OAC 165: 5-1-30).
- (35) Contempt (OAC 165:5-19-1 through OAC 165:5-19-2).