

TESTIMONY OF
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OKLAHOMA CORPORATION COMMISSION
BEFORE THE
SUBCOMMITTEE ON WATER AND POWER OF THE
SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES

Hearing to Examine Shale Gas Production and
Water Resources in the Eastern United States

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Thank you for the opportunity to testify today about the actions being taken by states to address the potential impacts on their water resources from the development of their shale gas resources. 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 natural gas resources while ensuring public safety and protecting the environment.

Recent technological developments have given us access to natural gas resources held tightly in shale 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 shale 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 shale gas states, including those in the eastern United 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 to development of the Woodford Shale in Oklahoma

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've 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 the early days most of the wells were drilled for oil. In recent decades, however, natural gas has dominated the exploration and production activity in Oklahoma. While crude oil is still a vital and highly valued component of the state's economy, Oklahoma today is truly a natural gas state. Assisted by advances in horizontal drilling and hydraulic fracturing technology, oil and gas operators in Oklahoma are actively developing the Woodford Shale.

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.

Of particular relevance to our discussion today, 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 shale gas resources does not impair our water resources. Similar efforts are well underway in shale gas states across the country, including the states within the Marcellus and Utica Shale Basins. For five states already, including Pennsylvania and Ohio, 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 five states now: Pennsylvania, Ohio, Oklahoma, Louisiana, and Colorado. A STRONGER team will be meeting in Little Rock early next month to conduct a review of the Arkansas hydraulic fracturing regulations. I have 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.

STRONGER is governed by a board of stakeholders. A copy of the current board roster is attached to this testimony. The 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 shale gas development. 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 one rule amendment recommended by the STRONGER review team and made an additional appropriation for field staff based in part on another STRONGER recommendation. My division has convened a workgroup to address our reporting requirements for hydraulic fracturing operations and will be considering the STRONGER recommendations on those requirements as well as other developments. 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 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 convening a workgroup to consider developing guidelines to address the air issues that have arisen in the shale gas basins.

To date, 21 states have been reviewed under the full set of 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 U.S.

North Carolina has volunteered to be the 22nd state to undergo a full review. The in-state portion of the North Carolina review will occur next week. North Carolina's request for a STRONGER review is one of several steps the state is taking to prepare for the future development of the Marcellus Shale there.

STRONGER also conducts follow-up reviews to determine how the states have responded to review team recommendations. Ten of the 21 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.

And FracFocus will continue to evolve. A recent enhancement to the site is a Geographic Information System interface that will aid 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.

The FracFocus website, www.fracfocus.org, was launched on April 11, 2011. Within its first six months of operation, 66 companies have agreed to participate in the effort, more than 5200 wells have been loaded into the system by 49 of these companies, and the website has been visited more than 65,000 times by people in 125 countries. 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 Pennsylvania.

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 are now adopting or considering chemical reporting requirements that incorporate the FracFocus chemical registry.