Shale Gas: Regulatory Framework

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The development and production of oil and gas in the U.S., including shale gas, are regulated under a complex set of federal, state, and local laws that address every aspect of exploration and operation. All of the laws, regulations, and permits that apply to conventional oil and gas exploration and production activities also apply to shale gas development. The U.S. Environmental Protection Agency (EPA) administers most of the federal laws, although development on federally owned land is managed primarily by the Bureau of Land Management (BLM), which is part of the Department of the Interior, and the U.S. Forest Service, which is part of the Department of Agriculture. In addition, each state in which oil and gas is produced has one or more regulatory agencies that permit wells, including their design, location, spacing, operation, and abandonment, as well as environmental activities and discharges, including water management and disposal, waste management and disposal, air emissions, underground injection, wildlife impacts, surface disturbance, and worker health and safety. Many of the federal laws are implemented by the states under agreements and plans approved by the appropriate federal agencies. The laws and their delegation are discussed below.

Federal Environmental Laws Governing Shale Gas Development

A series of federal laws governs most environmental aspects of shale gas development. For example, the Clean Water Act (CWA) regulates surface discharges of water associated with shale gas drilling and production, as well as storm water runoff from production sites. The Safe Drinking Water Act (SDWA) regulates the underground injection of fluids from shale gas activities. The Clean Air Act (CAA) limits air emissions from engines, gas processing equipment, and other sources associated with drilling and production. The National Environmental Policy Act (NEPA) requires that exploration and production on federal lands be thoroughly analyzed for environmental impacts.

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However, federal agencies do not have the resources to administer all of these environmental programs for all the oil and gas sites around the country. Also, as explained below, one set of nation-wide regulations may not always be the most effective way of assuring the desired level of environmental protection. Therefore, most of these federal laws have provisions for granting "primacy" to the states (i.e., state agencies implement the programs with federal oversight).

By statute, states may adopt their own standards; however, these must be at least as protective as the federal standards they replace. State may even be more protective in order to address local conditions. Once these state programs are approved by the relevant federal agency (usually the EPA), the state then has primacy jurisdiction.

State Regulation

State regulation of the environmental practices related to shale gas development, usually with federal oversight, can more effectively address the regional and state-specific character of the activities, compared to one-size-fits-all regulation at the federal level. Some of these specific factors include: geology, hydrology, climate, topography, industry characteristics, development history, state legal structures, population density, and local economics. The state agencies that permit these practices and monitor and enforce their laws and regulations may be located in the state Department of Natural Resources (such as in Ohio) or in the Department of Environmental Protection (such as in Pennsylvania). The Texas Railroad Commission regulates oil and gas activity in the nation's largest oil and gas producing state, home to the Barnett Shale. The names and organizational structures vary, but the functions are very similar. Often, multiple agencies are involved, having jurisdiction over different activities and aspects of development.
These state agencies do not only implement and enforce federal laws, but also have their own sets of state laws to administer. State laws often add additional levels of environmental protection and requirements. Also, several states have their own versions of the federal NEPA law, requiring environmental assessments and reviews at the state level and extending those reviews beyond federal lands to state and private lands.

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States have many tools at their disposal to assure that shale gas operations do not adversely impact the environment. The regulation of shale gas drilling and production is a cradle-to-grave approach. The states have broad powers to regulate, permit, and enforce all activities, including the drilling and fracture of the well, production operations, management and disposal of wastes, and the abandonment and plugging of the well.

Different states take different approaches to this regulation and enforcement, but state laws generally give the state oil and gas director or agency the discretion to require whatever is necessary to protect human health and the environment. In addition to the general protection regulations, most states have a general prohibition against pollution from oil and gas drilling and production. Most of the state requirements are written into rules or regulations, while some are added to permits on a case-by-case basis as a result of environmental review, on-the-ground inspections, public comments, or commission hearings.

All states require a permit before an operator can drill and operate a gas well. The application for this permit includes all the information about a well's location, construction, operation and reclamation. Agency staff reviews the application for compliance with regulations and to assure adequate environmental safeguards. If necessary, a site inspection will be made before permit approval. Also, most states require operators to post a bond or other financial security when

getting a drilling permit to ensure compliance with state regulations and to make sure that there are funds to properly plug the well once production ceases. Another safeguard is that producers generally must notify the state agencies of any significant new activity through a "sundry notice" or a new permit application so that the agency is aware of that activity and can review it. Pollution of the land and/or of the surface or ground fresh water resulting from exploration or drilling is prohibited." (6 NYCRR Part 554). Another example is the requirement in the rules of the Texas Railroad Commission: "No person conducting activities subject to regulation by the commission may cause or allow pollution of surface or subsurface water in the state." (TAC 16.1.3.8).

States have implemented voluntary review processes to help ensure that the state programs are as effective as possible. The Ground Water Protection Council (GWPC) has a program to review state implementation of the Underground Injection Control (UIC) program. In addition to the GWPC UIC review, state oil and gas environmental programs other than UIC programs can also be periodically reviewed against a set of guidelines developed by an independent body of state, industry, and environmental stakeholders, known as STRONGER (State Review of Oil and Natural Gas Environmental Regulation, Inc.). Periodic evaluations of state exploration and production waste management programs have proven useful in improving the effectiveness of those programs and increasing cooperation between federal and state regulatory agencies. To date, 18 states have been reviewed under the state review guidelines, and several have been reviewed more than once. The STRONGER program has documented the effectiveness of and improvements in these state oil and gas environmental programs. The Interstate Oil and Gas Compact Commission (IOGCC) also completed state reviews using earlier versions of the guidelines prior to the formation of STRONGER.

The organization of regulatory agencies within the various oil and gas producing states varies considerably. Some states have several agencies that may oversee some facet of oil and gas operations, especially environmental requirements. These agencies may be in various departments or divisions within the states' organizations. These various approaches have developed over time within each state, and each state tries to create a structure that best serves its citizenry and all of the industries that it must oversee. The one constant is that each oil and gas producing state has one agency with primary responsibility for permitting wells and overseeing general operations. While this agency may work with other agencies in the regulatory process, they can serve as a good source of information about the various agencies that may have jurisdiction over oil and gas activities. Exhibit 1 provides a list of the agencies with primary responsibility for oil and gas regulation in each of the states that have or are likely to have shale gas production.

Local Regulation

In addition to state and federal requirements, additional requirements regarding oil and gas operations may be imposed by other levels of government in specific locations. Entities such as cities, counties, tribes, and regional water authorities may each set operational requirements that

affect the location and operation of wells or require permits and approvals in addition to those at the federal or state level.

When operations occur in or near populated areas, local governments may establish ordinances to protect the environment and the general welfare of its citizens. These local ordinances frequently require additional permits for issues such as well placement in flood zones, noise level, set backs from residences or other protected sites, site house-keeping, and traffic. For example, ordinances may set limits on noise levels that may be generated during both daytime and nighttime operations.

In some cases, regional water-permitting authorities that have jurisdiction in multiple states have also been established. These federally established authorities have been created to protect the water quality of the entire river basin and to govern uses of the water. Additional approvals and permits may be required for operations in these river basins. For example, the Delaware River Basin Commission (DRBC) covers parts of New York, Pennsylvania, New Jersey and Delaware. Natural gas operators wishing to withdraw water for consumptive use in this basin must first receive a permit from the DRBC, which has the legal authority to fine violators of their rules and regulations.

The variety of laws governing shale gas exploration and production, and the multitude of federal and state agencies that implement them, can sometimes be confusing. Therefore, the following discussion has been organized according to the various environmental media that are affected by these activities; i.e., water, air, and land. The major laws and programs affecting each of these are discussed below. Additional considerations on federal land and unique state requirements are also covered, along with some of the programs that cut across these environmental media.

State	Agency	Web Address
Alabama	Geological Survey of Alabama, State Oil and Gas Board	http://www.ogb.state.al.us/ogb/ogb.html
Arkansas	Arkansas Oil and Gas Commission	http://www.aogc.state.ar.us/
Colorado	Colorado Department of Natural Resources, Oil and Gas Conservation Commission	http://cogcc.state.co.us/
Illinois	Illinois Department of Natural Resources, Division of Oil and Gas	http://dnr.state.il.us/mines/dog/index.htm
Indiana	Indiana Department of Natural Resources, Division of Oil and Gas	http://www.in.gov/dnr/dnroil/
Kentucky	Kentucky Department for Energy Development and Independence, Division of Oil and Gas Conservation	http://www.[illegible].gov/
Louisiana	Louisiana Depart... Off...	...ov/cons/conserv.ssi
Michigan	Mic... Qua...	...gov/deq/0,1607,7-135-
Mississippi	Miss...	...s.us/
Montana	Mont... and C...	...default.asp
New Mexico	New M... Resou... Divisic...	...m.us/OCD/
New York	New Yo... Conserv...	...rgy/205.html
North Dakota	North D... Departm... Division...	...as/
Ohio	Ohio Dep... Division ...	...eral/default/tabid
Oklahoma	Oklahoma... Gas Conse...	http://www.occ.state.ok.us/Divisions/OG/newweb/og.htm
Pennsylvania	Pennsylvania Department of Environmental Protection, Bureau of Oil and Gas Management	http://www.dep.state.pa.us/dep/DEPUTATE/MINRES/OILGAS/oilgas.htm
Tennessee	Tennessee Department of Environment and Conservation, State Oil and Gas Board	http://www.tennessee.gov/environment/boards/oilandgas.shtml
Texas	The Railroad Commission of Texas	http://www.rrc.state.tx.us/index.html
West Virginia	West Virginia Department of Environmental Protection, Office of Oil and Gas	http://www.wvdep.org/item.cfm?ssid=23

EXHIBIT 1: OIL AND GAS REGULATORY AGENCIES IN SHALE GAS STATES