North Carolina Department of Environmental Quality

Pat McCrory
Governor

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Secretary

November 18, 2015

MEMORANDUM

TO: ENVIRONMENTAL REVIEW COMMISSION
The Honorable Mike Hager, Co-Chair
The Honorable Brent Jackson, Co-Chair

JOINT LEGISLATIVE COMMISSION ON ENERGY POLICY
The Honorable Mike Hager, Co-Chair
The Honorable Bob Rucho, Co-Chair

FROM: Matthew Dockham, Director of Legislative Affairs

SUBJECT: Study Report on Compulsory Pooling and Dormant Mineral Rights

DATE: November 18, 2015

Pursuant to 2014-4, section 25.(b), "Based upon the findings of Section 25(a) of this act, the General Assembly directs the Department to do the following:

(1) Examine the Mining and Energy Commission's rules, once adopted, related to oil and gas exploration, including, but not limited to, rules concerning drilling units, spacing requirements, and setbacks, and all rules the Department determines will affect the regulation of compulsory pooling in the State.

(2) Study, in conjunction with the Mining and Energy Commission and the Consumer Protection Division of the North Carolina Department of Justice, the issue of amending current dormant mineral statutes regarding extinguishment and other consumer protection issues related to split estates.

(3) Issue specific recommendations for legislative action related to compulsory pooling and dormant mineral statutes and report the findings of their study, including specific proposals for legislative action, to the Joint Legislative Commission on Energy Policy and the Environmental Review Commission on or before October 1, 2015."

The attached report satisfies this reporting requirement.

If you have any questions or need additional information, please contact me by phone at (919) 707-8618 or via e-mail at matthew.dockham@ncdenr.gov.

cc: John Evans, Chief Deputy Secretary, NCDEQ
Jenny Kelvington, Senior Energy Policy Advisor, NCDEQ
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DEPARTMENT OF ENVIRONMENTAL QUALITY STUDY REPORT ON COMPULSORY POOLING AND DORMANT MINERAL RIGHTS

I. Session Law 2014-4 Section 25(b) required the Department to examine and study:

a. Compulsory Pooling

Examine the Mining and Energy Commission's rules related to oil and gas exploration, including rules concerning drilling units, spacing requirements and setbacks and all rules the Department determines will affect the regulation of compulsory pooling in the State. Issue specific recommendations for legislative action related to compulsory pooling and report the findings of their study including specific proposals for legislative action to the Joint Legislative Commission on Energy Policy and the Environmental Review Commission on or before October 1, 2015.

b. Split Estates/Dormant Mineral Rights

Study in conjunction with the Mining and Energy Commission and the Consumer Protection Division of the North Carolina Department of Justice the issue of amending current dormant mineral statutes regarding extinguishment and other consumer protection issues related to split estates. Issue specific recommendations for legislative action related to dormant mineral rights and report the findings of their study including specific proposals for legislative action to the Joint Legislative Commission on Energy Policy and the Environmental Review Commission on or before October 1, 2015.

c. This Report is the third issued to the legislature on compulsory pooling. The two previous reports, one issued by the Compulsory Pooling Study Group lead by the Mining and Energy Commission in September 2013 and one issued by the Department on October 1, 2013, are attached to this Report as Attachments III and IV, respectively.

II. Compulsory Pooling

a. North Carolina Oil and Gas Rules

i. Drilling Unit Hearing Procedure

Before an oil or gas company can apply for a drilling permit, it must apply for and receive a drilling unit number. This number represents the unit of land designated by the Oil and Gas Commission in which the company may apply to the Department for a permit to drill an oil or gas well. Section .1200 of the 05H rules sets out the procedure that an oil and gas company must go through in order to receive a drilling unit. During the drilling unit hearing procedure, the Oil and Gas Commission will determine whether the applicant has met the requirements of the requisite statutes or rules. The determination will be based on geological factors, the size and accessibility of the resource, and whether the applicant has acquired the required mineral rights deeds or leases and surface use agreements. Among the requirements to conduct this hearing, an applicant must publicly notice the hearing, allowing citizens to voice their concerns about the proposed unit before the Commission.

ii. Commission Discretion

At the drilling unit hearing, the Commission will consider whether the applicant has enough acreage within the proposed drilling unit to pool any other mineral rights owners into the proposed unit who did not originally agree to join the unit. The precise percentage of leased acreage needed to compel the other owners into the unit is not currently stated in statute or rule. Accordingly, the Commission may choose the appropriate percentage on a case-by-case basis.

b. How other states regulate compulsory pooling

The Department studied 25 states' oil and gas rules to determine the extent of compulsory pooling across the country. Much of the research was based off the Interstate Oil and Gas Compact Commission's Legal and Regulatory Affairs Committee's Report entitled "Horizontal Well Development Pooling, Spacing and Unitization: A Regulatory Toolbox for Key Policy, Regulatory, and Statutory Considerations of June 2015" (attached). Of the 25 states, only ten required a specific percentage of voluntarily leased acreage when determining if compulsory pooling would be allowed. When evaluating these ten states' voluntary leased percentages, the median percentage is 60% with a mode of 51% and 75%. A list of these 25 states is also attached to this Report.

c. Recommendation

The Department recommends that the current regulatory framework is sufficient to allow the Oil and Gas Commission to determine what the percentage threshold should be for compulsory pooling landowners on a case-by-case basis, taking into account the number of acres involved, number of mineral rights and/or land owners, geology of the area, and size and accessibility of the resource.

If the Legislature determines a percentage of acreage is required to compulsory pool landowners into the drilling unit, the Department suggests 60%, which is the median percentage from the states with a statutory limit. This percentage would provide North Carolina with a threshold that would protect landowners while allowing oil or gas resources to be efficiently and economically recovered.

III. Split Estates/Dormant Mineral Rights

a. Split Estates

i. Mineral Rights vs. Surface Rights

When the oil, gas, or mineral rights of an estate are severed from the surface estate, two separate estates are created and often called a severed or split estate. Both of the estates, the mineral estate and the surface estate, are distinct estates that are governed by the law of real property. If

they are ever held by the same owner at the same time then the two estates merge back into one until they are expressly severed again. North Carolina has many protections for landowners of split estates concerned about oil and gas development enumerated in statute and rule.

ii. Protections for Surface Owners of Split Estates

A. The rules require the application for a drilling unit to include "copies of surface use agreement(s) or equivalent documentation granting the applicant or permittee the right to use the surface." 15A NCAC 05H .1202(e)(9). The Commission must deny drilling unit applications if it finds "that the proposed or existing drilling unit is in violation of any of the rules contained in this Subchapter or that establishment or modification would result in a violation of this Subchapter or other applicable law or rule." 15A NCAC 05H .1204(a). Further, the Commission shall also deny a request if "the surface use agreement or equivalent documentation fails to meet requirements of the rules of this Subchapter." 15A NCAC .1204(b)(3). The Commission adopted this requirement to address G.S. § 113-423.1(a), which allows the developer or operator and the surface owner to "enter into a mutually acceptable agreement that sets forth the rights and obligations of the parties with respect to the surface activities conducted by the developer or operator."

B. The Department requires proof that a Disturbed Land Bond is provided to each effected surface owner before receiving an oil or gas well permit. G.S. §§ 113-391(a)(5)l, 113-421(a)(13a), and 15A NCAC 05H .1404. The operator "shall provide to each surface owner a disturbed land bond that is sufficient to cover the cost of completing the requirements of the approved Reclamation Plan". The Commission will use a Cost Reclamation Table, which is set out in Rule .1404, to calculate the amount of the Disturbed Land Bond. If the surface owner disagrees with the amount of the

Disturbed Land Bond, the surface owner "may appeal the bond amount pursuant to G.S. 113-421(a3)(1)." 15A NCAC 05H .1404.

C. The applicant for an oil or gas well permit must show to the Department that the well site plans meet all the setbacks required by the rules, including setbacks from occupied dwellings and high occupancy buildings; edge of a public road, highway, utility or railroad track right-of-way, or other right-of-way; a perennial stream, river, watercourse, pond, lake, or other natural and artificial bodies of water, including wetlands and trout streams; intermittent steams; and public or private water wells intended for human consumption or household purpose. 15A NCAC 05H .1601. The Department will also inspect the wellsite after construction, in accordance with 15A NCAC .0203, to make sure the wellsite is in compliance with the setbacks.

D. The General Statutes also provide many protections for surface owners including: requiring notice for activities that do and do not disturb surface property. G.S. § 113-420. If the notice is to inform the surface owner of land disturbing activity, it must include "an offer of the oil and gas developer or operator to consult with the surface owner to review and discuss the location of the proposed alterations." G.S. § 113-420(b)(2).

E. An oil and gas developer is presumed liable for any water contamination and "shall provide a replacement water supply to the surface owner". G.S. § 113-421. The oil or gas developer or operator is also "obligated to pay the surface owner compensation" for any damage to the water supply in use prior to the commencement of the activities, the cost of repair of personal property which is damaged due to the developer or operator's activities, and any damage to livestock, crops, or timber. G.S. § 113-421(a2).

F. Oil or gas developers or operators shall indemnify and hold harmless a surface owner against any claims "related to the developer's or operator's activities including but not limited to (i) claims of injury or death to any person; (ii) damage to impacted infrastructure or water supplies; (iii) damage to a third party's real or personal property; and (vi) violations of any federal, State, or local law, rule, regulation, or ordinance, including those for protection of the environment." G.S. § 113-422.

G. The Statutes set out required lease terms, which state, that if the lessor is not the surface owner of the property, the oil or gas developer or operator shall also provide the surface owner with a copy of Chapter 113, Article 27, Part 3 and a publication produced by the Consumer Protection Division of the North Carolina Department of Justice entitled "Oil & Gas Leases: Landowners' Rights," prior to execution of a lease for oil and gas rights." G.S. § 113-423.

H. All oil or gas leases or other conveyances that separate the "rights to oil or gas from the freehold estate of the surface property with a surface owner shall include a conspicuous boldface disclosure concerning notification to lenders, which shall be initialed by the surface owner". G.S. § 113-423(i).

I. The oil or gas developer or operator must conduct oil and gas operations "in a manner that accommodates the surface owner by minimizing intrusion upon and damage to the surface of the land." G.S. § 113-423.1(b).

b. Extinguishment of Ancient Mineral Claims ("Dormant Mineral Statutes")

i. Starting in 1965, the General Assembly attempted to provide clarity when determining who held the title to mineral rights of severed estates by enacting a series "dormant mineral" statutes enumerated G.S. §§ 1-42.1 through 42.9. The first eight statutes covered only certain designated counties, but G.S. § 1-42.9, enacted in 1983 and revised in 1985, applies to all remaining counties not specified in the first eight statutes. These statutes attempted to extinguish all oil, gas, and mineral interests of severed estates where those interests were either: not being mined, drilled, worked or operated; being adversely possessed; or had not been listed for tax purposes. In order to notice the public of these new laws, the board of county commissioners was to publish notice of the statute in a newspaper published in the county or having general circulation in the county once a week for four consecutive weeks prior to a date specified in each statute. Oil, gas, or mineral interest owners then had two years to register their interests with the county register of deeds in the county where the interests were located. Otherwise, the oil, gas, or mineral interests would merge with the surface estate presuming the surface estate holder is legally allowed to obtain the title and can show an unbroken 30 year chain of title.

ii. Issues with the Dormant Mineral Statutes

One concern raised with the dormant mineral statutes is whether proper notice was given to the citizens of the state whose interests may be affected by these laws. There is no way of knowing whether the board of county commissioners properly noticed the public through a newspaper of general circulation within the time period required by the proper statute.

There is also a constitutional concern associated with statutes such as this. While the United States Supreme Court has held an Indiana extinguishment statute to be constitutional (Texaco Inc. v. Short, 454 U.S. 516(1982)), the Supreme Court of North Carolina has held a railroad extinguishment statute unconstitutional (McDonald's Corp. v. Dwyer, 338 N.C. 445(1994)). However, the Supreme Court of North Carolina did

distinguish its case from that the of Supreme Court of the United States' case by holding that the North Carolina case dealt with the State's action causing the lapse of property rights and not the property rights owner's lack of action which was at issue before the United States Supreme Court. More details associated with these cases can be found in the Mining and Energy Commission's Compulsory Pooling Study Group Report (attached).

c. Recommendations

i. Do not repeal G.S. §§ 1-42.1 through 1-42.9

ii. Consider enacting a new statute resetting the time period for holders of ancient oil, gas, or mineral interest to register those interests with the county register of deeds office in the county where the mineral interests are located. The new statute would set out a new timeline and guidelines for notice to the oil, gas, or mineral interest owners across the State and should be based on the Coastal Area Management Act statue dealing with Public Trust Waters. G.S. § 113-205. This proposed statutory language would not invalidate any mineral rights registered under the old statutes.

iii. Recommended Statutory Language:

(a) Where it appears on the public records that the fee simple title to any oil, gas, or mineral interest in an area of land has been severed or separated from the surface fee simple estate of such land and such interest is not currently being mined, drilled, worked or operated, or in the adverse possession of another, or that the record title holder of any such oil, gas, or mineral interests has not listed the same for ad valorem tax purposes in the county in which the oil, gas, or mineral interest are located for a period of ten (10) years prior to the effective date of this Section, the oil, gas, or mineral interest shall be deemed to have merged with the surface fee simple estate subject to the interests and defects as are inherent in the provisions and limitations contained in the muniments of which the chain

of record is formed, provided the holder on the surface fee simple estate has the legal capacity to own land in this State and has an unbroken chain of title of record to the surface fee simple estate of the area of land for at least 30 years and provided the surface fee simple estate is not in adverse possession of another.

(b) Every person claiming any oil, gas, or mineral interest which are severed from the surface fee simple estate which is not currently being mined, drilled, worked, or operated, or in the adverse possession of another, or has not listed the oil, gas, or mineral interest for ad valorem tax purposes within the last 10 years in the county in which the oil, gas, or mineral interest are located shall register the oil, gas, or mineral rights with the register of deeds office in the county in which the oil, gas, or mineral rights are located. Such registration shall be accompanied by a deed proving ownership of the oil, gas, or mineral rights. Any oil, gas, or mineral rights which are severed from the surface fee simple estate and not registered with the register of deeds office in the county in which the minerals are located by January 1, 2020 shall be null and void and the oil, gas, or mineral rights shall merge with the surface fee simple estate.

(c) The Secretary of State must give notice of this section at least once each calendar year for three years by publication in a newspaper or newspapers of general circulation throughout the State.

(d) Any oil, gas, or mineral interest registered under the provisions of G.S. 1-42.1 through G.S. 1- 42.8 and G.S. 1-42.9 are not affected by this statute.

Attachments and Web Links

I. The Interstate Oil and Gas Conservation Committee's Report "Horizontal Well Development Pooling, Spacing and Unitization: A Regulatory Toolbox for Key Policy, Regulatory, and Statutory Considerations of June 2015"

II. List of States' Required Percentage of Voluntarily Leased Land to allow for Compulsory Pooling

III. Compulsory Pooling Study Group Report, September 2013

IV. DENR Compulsory Pooling Findings and Recommendations Memorandum, October 1, 2013

V. The Oil and Gas Rules can be found here: http://reports.oah.state.nc.us/ncac/title%2015a%20-%20environment%20and%20natural%20resources/chapter%2005%20-%20mining%20-%20mineral%20resources/subchapter%20h/subchapter%20h%20rules.pdf

VI. The Statutes cited in the report can be found here: http://www.ncleg.net/gascripts/statutes/Statutes.asp

Horizontal Well Development Pooling, Spacing, and Unitization: A Regulatory Toolbox for Key Policy, Regulatory, and Statutory Considerations

June 2015

Introduction

The Interstate Oil and Gas Compact Commission Legal and Regulatory Affairs Committee has prepared this "Regulatory Toolbox" as a reference guide for state regulators and other stakeholders to address policy, regulatory, and statutory considerations related to spacing and statutory pooling (also known as integration) for horizontal well development. The Toolbox identifies key issues related to spacing and pooling for horizontal well development, and summarizes the ways in which different states have responded to these issues. Individual states have provided relevant information about state regulations, statutes, and policies through their participation with the IOGCC Legal and Regulatory Affairs Committee.

The Toolbox is organized into a summary text and two appendices. The text contains separate sections on spacing units and statutory pooling; within each section, key "Issues" and "Questions" are identified and one or more "Approaches" used by states in response to the issues are summarized. The state approaches are intended to be examples only; more complete summaries of twenty-one individual states'[1] approaches to the key issues, including citations to relevant regulatory and statutory provisions are contained in Appendix A. These state summaries have been provided by representatives from each participating state. Appendix B contains copies of state statutory provisions related to spacing and pooling. Appendix B was compiled by IOGCC Staff from materials previously provided by the states to the IOGCC.

The Toolbox, of necessity, captures information at a given point in time. State regulations, policies, and statutes, on the other hand, are dynamic. Users of this Toolbox are cautioned to review pertinent regulations, statutes or policies for updates or amendments and are encouraged to confer with individual state regulators for additional information about a state's regulatory regime.

[1] Summaries are provided for: Alabama, Alaska, Arizona, Arkansas, Colorado, Illinois, Indiana, Kansas, Kentucky, Louisiana, Nevada, New Mexico, New York, North Dakota, Ohio, Oklahoma, Texas, Utah, Virginia, West Virginia, and Wyoming.

I. Spacing Units for Horizontal Development of Unconventional Formations

1. Unit Size.

Issue: Horizontal laterals typically extend at least 4,000' and may extend up to 10,000 feet. This length requires a spacing unit of as much as two miles. However, drainage around producing intervals of a horizontal lateral is typically in the range of several hundred feet, meaning a unit could be long and narrow. Nonetheless, spacing units for horizontal development in the range of 640 to 1280 acres seem common, with an expectation that many wells will be located within the unit.

Question: Should state regulators adopt a presumptive or required spacing unit size for horizontal well development?

State approaches:

A. Some states have adopted presumptive or required spacing unit sizes.

- North Dakota: Horizontal wells not deeper than Mission Canyon Formation: 320-acre or 640-acre drilling unit. Horizontal wells deeper than Mission Canyon Formation: 640-acre drilling unit.

B. Other states determine unit size on a case-by-case basis.

- Colorado: No presumptive unit size established; allows a "wellbore spacing unit" for a single horizontal lateral that includes each governmental quarter-quarter through which the wellbore passes, as well as all quarter-quarter sections less than 460 feet from the wellbore.

2. Number of Wells Allowed in a Spacing Unit.

Issue: State statutory spacing provisions may specify that only one well is allowed to be drilled within a spacing unit. Statutory spacing provisions also typically allow infill wells to be drilled within an established unit if production results and geologic and engineering evidence show additional wells will improve resource recovery without damaging correlative rights.

A single horizontal well producing from a shale formation is unlikely to effectively drain a 640 or 1280 acre unit. If there are no statutory or regulatory limitations on the number of wells allowed within a unit, setback and inter-well distances may dictate the maximum number of wells within a unit.

Question: Should statutory or regulatory limitations on the number of wells in a unit be modified to accommodate multiple horizontal wells within a drilling and spacing unit?

State approaches:

A. Many states allow for only one well per unit.

- Alabama, Arizona, and Colorado all provide for infill wells and more for unconventional resources.
- Indiana: One well per unit, but multiple laterals from the same vertical are considered one well and multiple wells allowed in larger, voluntarily pooled units.

B. Arkansas designates an upper limit of wells per unit: No more than 16 wells per unconventional reservoir unless an exception is granted by the Commission.

C. Other states do not limit wells per unit.

- Nevada: Number of wells established through the hearing process.
- Texas: Number of wells unlimited for oil; gas wells are limited to one per regulatory lease.

3. Ownership Requirements to Establish (and Operate) a Spacing Unit.

Issue: Large spacing units (640 acres or more) are more likely to include multiple mineral owners (meaning working interest owners who have a right to drill a well within the spaced lands).

Questions:

A. May a mineral owner establish a large spacing unit for horizontal development regardless of its percentage ownership within the proposed unit?
B. Is the operator who applies for the spacing unit presumptively the (exclusive) operator of the unit, regardless of its percentage ownership?

State approaches:

A. Most states have no minimum ownership requirements to establish and operate a spacing unit.

- Kansas: Any working interest may file an application for unitization.
- Wyoming: Any interest owner may file a drilling permit within a spaced area. For example, Company A applies for the drilling and spacing unit, but Company B may file a drilling permit.

B. A few states require a minimum ownership to pool.

- New York: Applicant for permit to drill must control no less than 60% of the acreage within the proposed spacing unit.
- Virginia: Requires that the operator have the right to conduct operations or the written consent of owners with the right to conduct operations on at least 25% of the acreage included in the unit.

4. Unit Boundary Setbacks and Inter-well Distances.

Issue: Horizontal wells producing from unconventional formations typically have an elliptical drainage pattern that extends only a few hundred feet beyond the producing intervals of the wellbore. Multiple

horizontal laterals running parallel to one another within a spacing unit may be necessary to efficiently recover the resource.

Question: Are reduced setback distances from unit boundaries and reduced inter-well distances compared to conventional formation spacing units appropriate for spacing units in unconventional formations?

State approaches:

A. Some states provide specific rules for horizontal development.

- Utah: In the absence of special orders, no portion of the horizontal interval shall be closer than 660 feet to a unit boundary, and any horizontal interval shall not be closer than 1,320 feet to any vertical well producing from the same formation. Horizontal wells within federally supervised units are exempt from these rules and exceptions in other locations may be approved upon application.
- Indiana: No portion of horizontal drainhole shall be closer than 330 feet from the unit boundary.

B. Other states utilize the same setbacks as for all wells.

- Kansas: Completion intervals for horizontal wells are subject to the same setback requirements as directional and vertical wells (330 feet from lease or unit boundaries, or 165 feet in certain counties in eastern Kansas).
- Kentucky: Establishes property line and interwell setbacks based on the depth of wells.

5. Cross unit development.

Issue: Depending on how drilling and spacing units have been established (and particularly if units are pre-existing for prior vertical or directional development), mineral ownership and other considerations may justify a horizontal wellbore that crosses from one unit into another.

Questions:

A. How should unit boundaries be determined for cross-unit development? For example, should "overlapping" units be allowed depending on proximity of the producing intervals of a horizontal lateral to a unit boundary?

B. How should costs and proceeds be allocated for cross unit wells?

State approaches:

- Colorado: Within the Greater Wattenberg Area, Colorado allows creation of "wellbore spacing units" for individual horizontal wells. A wellbore unit consists of each governmental quarter-quarter section through which a producing interval of the horizontal lateral passes directly *and* the quarter quarter sections within 460 feet of

the wellbore. Individual wellbore units may overlap and a mineral owner may participate in more than one unit, even if a wellbore does not penetrate his minerals.

- Arkansas: Establishes "cross-unit" wells that extend across or encroach upon adjoining drilling units, and are shared based upon a formula between all affected drilling units. The formula is determined by creating a 560' radius around the entire length of the wellbore. Arkansas' rules also contain protections to keep operators from holding or land grabbing acreage with cross-unit wells.

- Utah: The Board has allowed "boundary line" or "section line" wells that share based on the per acres share of the adjoining drilling units.

6. Unit Operator and development requirements.

Issue: Effective development of a large unconventional formation spacing unit may take a long time and require substantial capital investment. Assuming a single horizontal well does not effectively drain a large unit, allowing that unit to be held by production by a single well has the potential to harm correlative rights and perhaps create waste.

Questions:

A. Should development requirements, such as a requirement to drill a well within a time certain following approval of the unit, or to drill a minimum number of wells within the unit within a defined time, be imposed?

B. What are the consequences for failing to meet any such requirements?

C. What criteria determine who will operate a unit if there is more than one significant working interest owner within a proposed unit?

State approaches:

A. Some states do not outline unit operator and development requirements, but review the development of large unconventional units, or set limits on an order-by-order basis.

- Utah: Some requests to establish units are identified as prototype developments, and the Board may require a report after a period of development, usually one year.
- Colorado: Commission periodically reviews large unconventional resource units, APDs expire after 2 years.
- Ohio: Drilling to commence within one year of unitization order, all proposed wells must be producing within a certain number of years according to the order.

B. Most states rely on the expiration of APDs to limit timeframes for development.

- Illinois: One year expiration unless drilling is commenced.
- *See also*: Arizona (180 days to complete proposed well), Indiana (drill within one year of permit issuance), Kansas (one year expiration), Kentucky (one year expiration), Nevada (two year expiration), New Mexico (two year expiration), New York (commence operations within 180 days of permit), North Dakota (one year expiration), Oklahoma (6 month expiration with opportunity for extension), Texas (two year expiration), Virginia (two year expiration without construction), West Virginia (two year expiration).

II. Statutory Pooling of Mineral Interests Within a Large HZ Spacing Units

Statutory or "forced" pooling of mineral interests within a large spacing unit raises issues related to providing all mineral owners a just and fair opportunity to recover their minerals. Permitting multiple wells within a drilling and spacing unit can complicate these issues.

1. If multiple wells are initially permitted in a unit and statutory pooling is sought, when must a mineral owner elect whether to participate in each well?

Issues: Requiring a mineral owner to make an election to participate in multiple wells before the first well is drilled carries risks related to changing economic conditions over the time the wells will be drilled (which could be years). Participating in multiple horizontal wells may be prohibitively expensive for some owners. Depending on the statutory "risk penalty" imposed, a well may never reach payout for non-participating owners.

Conversely, allowing an owner to evaluate the performance of early wells and then participate in later wells without any risk penalty may be inequitable to participating owners who bore the capital risks on the early wells.

Questions:

A. Should numeric or temporal limits on the wells for which non-participating owners must pay a risk penalty be imposed? For example, should a non-participating owner be given a second chance to participate after the first "X" number of wells has been completed in the unit? Or, a non-participating owner would be subject to risk penalties on all wells drilled within "X" months of entry of a pooling order, but would be given another opportunity to participate in all later-drilled wells.

B. Should non-participating owners be allowed to make a separate election on every well drilled? If so, should substantial risk penalties be imposed for non-participation, so that a non-consenting owner would never back into a working ownership interest, but would not be precluding from participating in one or more later-drilled wells?

State approaches:

- Ohio: The applicant receives 200% reasonable interest charge on the initial well and 150% on each subsequent well.

- Utah: An opportunity to join in the well prior to entry of an order allowing for cost recovery is required; consent is per well rather than per drilling unit. However, a current case is forcing the review of this policy and it has recently been argued that the offer must be prior to the drilling of the well.

- Colorado: Colorado has imposed either temporal or numeric limits on the wells for which an owner will be subject to risk penalties as a result of electing not to

participate when multiple horizontal wells are permitted with a spacing unit. A non-consenting owner must be allowed another opportunity to participate in any additional wells drilled after the initial number of wells or time limit (typically two years) is reached.

- Oklahoma: Owners electing to participate pursuant to a forced pooling order make such an election on a unit basis. Statutory amendments are pending which would alter the unit pooling concept as it would apply to proposals for subsequent horizontal wells pursuant to forced pooling orders.

- North Dakota: Election to participate is only binding if the well is spud on or before 90 days of election.

- New Mexico: A pooled working interest owner has 30 days from the date of a proposal to pay their share of costs for infill wells.

2. Minimum ownership percentage required to pool by statute.

Issue: If any mineral owner within a spacing unit may statutorily pool interests, an owner with a small percentage interest in a unit potentially could permit a well and compel majority owners to participate in that well or pay risk penalties that would exceed the minority owner's total costs.

Questions:

A. Should an owner with a minority interest in a unit be allowed to pull a drilling permit and seek to statutorily pool owners with larger interests in the unit?

B. Should it matter if the minority interest owner is prepared to begin development and the majority owners are not prepared to commence development?

State approaches:

A. Many states do not require a minimum percentage ownership to pool.

- North Dakota: Any "interested person" can file an application pooling all interests in a spacing unit.
- New Mexico: Operator must own in an interest in some portion of the project area, but no minimum percentage is required.

- Arkansas: No minimum required for an interested owner to pool an established drilling unit, but 50% interest in the right to drill and produce required to pool an exploratory drilling unit.

B. Some states require a minimum percentage ownership to pool.

- Virginia: Any owner who is authorized to drill and operate a well may pool, however except in the case of coalbed methane wells, operators must have the right to conduct operations on at least 25% of the acreage included in the unit.
- Nevada: Plan of unitization to pool requires minimum of 62.5% vote by owners of record.
- *See also*: Ohio (65%), New York (60%), Kansas (63% working interest owner approval and 75% royalty interest approval), Alabama (majority if risk compensation fee, no minimum if no fee).

3. What information must be provided to mineral owners prior to statutory pooling?

Issue: Prior to statutory pooling, an operator typically must provide other working interest owners and unleased mineral owners within a spacing unit information about drilling costs to allow them to make informed decisions about participating in proposed wells. Development in a large unit may span many months or years, during which drilling costs or commodity prices may change.

Questions:

A. For how long should an AFE be "valid" or "current"?
B. Must an AFE consider cost of building infrastructure to move product to market?
C. Should an operator be required to disclose its expected development plan, including timing of drilling proposed wells?
D. Should an operator be required to disclose its own economic analysis for a well?

State approaches:

A. Many states require (at least in practice) a current AFE prior to statutory pooling.

- Utah: No statute, but case law requires "a knowing determination whether to participate" and in practice this has resulted in the use of a current AFE.
- Virginia: Requires information including an estimate of production over the life of the well or wells, and, if different, an estimate of the recoverable reserves of the unit.

4. What is the appropriate risk penalty for non-consenting owners in large spacing units permitted for multiple wells?

Issue: Statutory pooling provisions typically impose a "risk penalty" on non-consenting owners, who do not bear up-front capital risk of drilling a well. Risk penalties may be a fixed percentage or may be a range within which the regulatory agency can set the penalty in each case. The capital risk borne by participating owners for a given well arguably varies depending on the location, anticipated costs, development history, and other factors.

Questions: Should risk penalties for horizontal wells for unconventional development differ from conventional wells?

State approaches:

A. In some states, the risk penalty is fixed by statute.

- Colorado: Statutory risk penalty is 200% for all circumstances, with no discretion afforded the Commission.

B. In some states, the risk penalty is determined within an established range.

- Utah: The Board has discretion to set the penalty within a given range under the law: 150% to 400%. The upper limit was recently increased from 300%.

C. In some states, the risk penalty differs based on the status of the interest owner.

- North Dakota: A 50% risk penalty is assessed on unleased mineral interest owners, while a 200% risk penalty is assessed on unleased working interest owners.

5. Timing of completion of proposed wells.

Issue: Correlative rights of mineral owners within a large unit in which mineral interests have been pooled may be harmed if the operator fails to timely and prudently develop the unit.

Questions:

A. Should there be a regulatory requirement to drill an initial well or to continue development of the unit?
B. Should an operator of a large, multi-well unit be required to submit a detailed development plan? If so, what should be included in the development plan (e.g., the number and size of surface locations; reclamation requirements)?
C. What are the regulatory consequences of failing to abide by a required development plan?
D. If the operator who spaced and pooled the unit is not proceeding with development, may another owner within the unit commence operation?
E. If an operator does not proceed with development on a reasonable time-frame, should the unit be dissolved?
F. If one or more producing wells have been completed in the unit, should proceeds from those wells be re-allocated if the unit is dissolved or modified?

State approaches: (See I.6 above for expirations related to APDs)

A. Many states set time limits on pooling orders linked to either commencement of work, drilling, or completion.

- New Mexico: Compulsory pooling orders require that the well be drilled within one year from the date the pooling order was issued, unless an extension is approved

(usually 90 days). Pooling orders also require that the well be drilled and completed within 120 days of commencement thereof. Extensions are granted for good cause.

- *See also*: Alabama (forced pooling orders expire if a well is not spud within six months), Arkansas (one year to complete or forced pooling expires), North Dakota (election to participate only binding if well is spud on or before 90 days of election).

B. Other states have case by case time limits or no requirement to drill or complete a well in a certain time frame under state law.

- Oklahoma: Authority to commence a well pursuant to a forced pooling order, and thus causing an effect under the order on the interests of the owners impacted by it, is limited by the time period provided by the order. If operations are not commenced in the designated timeframe, the order shall terminate except as to the payment of cash bonuses.
- Wyoming: No requirement to drill or complete a well in a certain time frame.

6. Joint Operating Agreements

Issue: To the extent a state regulatory agency establishes a default spacing unit size and determines which owner (among many) will conduct operations in the unit, it may be inequitable to subject other working interest owners to statutory risk penalties for electing to go non-consent.

Question: If all working interest owners within a unit do not voluntarily pool their interests, should the state participate in establishing terms under which development will proceed, by way of a default joint operating agreement?

State approaches:

- Arkansas has adopted a uniform operating agreement. http://www.aogc.state.ar.us/JOA_Archive.htm.

7. Payout to non-consenting working interest owners.

Issue: Unleased mineral owners who are pooled by statute are compensated in different ways under different states' statutes. In some states, those unleased mineral owners will back into a full working ownership once their share of costs plus risk penalties has been paid to the consenting owners. Being a full working interest owner may expose these owners to liability associated with operations at the well. Additionally, once pooled, arguably a surface location could be placed on their land without their consent.

Questions:

1. Should unleased mineral owners who "back into" a working owner interest be treated the same as other working interest owners?
2. Should unleased mineral owners who are pooled by statute be exempt from allowing surface locations on their property without their consent?

State approaches:

- Utah: Provides for paying the average of the private lands owners royalty to non-consenting working interest owners. This payout calculation excludes federal and Indian lands.

- Colorado: A non-consenting unleased mineral owner receives a 1/8 royalty on production and the risk penalty is paid out of the value of production of its remaining 7/8 interest. Upon payout, the unleased owner backs into a full working interest ownership. Colorado currently has no provisions limiting such an owner's liabilities once it backs into a full working owner interest. Whether a surface location could be placed on the unleased mineral owner's property as a result of a statutory pooling is an unsettled question.

- Ohio: Non-participating working interest owners receive compensation in accordance with the applicant's JOA. Unleased mineral owners receive a 1/8 landowner royalty on gross proceeds and a 7/8 share of net proceeds from production after the applicant receives 200% reasonable interest charge on the initial well and 150% on each subsequent well.

8. Unwinding a unit that has not been fully developed.

Issue: Waste and harm to correlative rights may result if a large, multi-well unit is not timely developed. At the same time, if one or more producing well was developed and proceeds distributed, dissolving the unit can be extremely complicated.

Questions:

A. Should a spacing or pooling order for large unconventional units contain specific provisions for shrinking or unwinding the unit if development stalls?
B. Can another working interest owner take over operation of the unit if the operator who spaced and pooled the lands fails to timely develop the unit?
C. If development stalls but some proceeds have been paid on a unit basis, how should owners whose minerals were produced be compensated if the unit is either reduced or eliminated?

State approaches:

A. Several states would require a Commission or Board order to unwind a drilling and spacing unit and pooling orders.

- Utah: A unit could be unwound by a Board order based on evidence regarding the resource and drainage area. This would be difficult if sharing has been previously established on a certain size. Instead of unwinding, drilling units usually continue with modifications to allow infill drilling.

- *See also*: Illinois (all interests pooled until the well is plugged), Oklahoma (Commission pooling order remain in effect as long as subsequent wells are proposed and commenced pursuant to the terms of the order).

Appendix A:

Interstate Oil and Gas Compact Commission
Legal and Regulatory Affairs Committee
Pooling and Spacing in Horizontal Well Development

Alabama Rules and Regulation

Identification of potential issues, statutory conflicts

- Number of wells allowed within unit - Section 9-17-12(b), Code of Alabama (1975) ("Code")
    - Only one well per drilling (i.e., wildcat) unit. See also State Oil and Gas Board Administrative Code ("Rules") 400-1-2-.02
    - After drainage or production units are established for a field (which is done when special field rules are adopted for the field), the Board may, by amendment to the special field rules, allow more than one well on a drainage or production unit for a shale gas reservoir and up to two wells on an 80 acre drainage or production unit for a coalbed methane reservoir. Otherwise, only one well is allowed per drainage or production unit. Drainage or production units (sometimes referred to as "production units") are the spacing units established by the Board for wells in a field as to which the Board has adopted special field rules. No well may produce, except on a test basis, until special field rules have been adopted for the reservoir into which the well is completed

- Unit size – Code 9-17-12(b)
    - Drilling Units (for Wildcat Wells) Rule 400-1-2-.02.
        - Vertical or directional oil well
            - Not less than 40-acres (or a quarter quarter section) nor more than 160 acres (or a quarter section)
        - Vertical, directional or horizontal gas well
            - Not less than 40 acres (or a quarter quarter section) nor more than 640 acres (or one section). Within these limits, the size of the drainage units can vary depending on the county in which the well is located.
        - Horizontal oil well
            - not to exceed 640 acres (or two half sections)
    - Drainage or Production Units (for wells in an Established Field)
        - Board sets spacing units (referred to as "drainage or production units") when adopting special field rules for a reservoir subject to the maximum size limits below:
            - Vertical or directional well in an oil field – maximum of 160 acres or one quarter section but can go up to 240 acres in certain limited circumstances

- Horizontal wells in an oil field – maximum of 640 acres or two half sections
- Vertical, directional or horizontal wells in a gas field - maximum of 640 acres or one section but can go up to 960 acres in limited circumstances

- Minimum percentage ownership required to force-pool
  - Code 9-17-13.
    - A majority, if a risk compensation fee (which is an additional 150% of certain costs) is sought
    - No minimum if a risk compensation fee is not requested

- Timing of WIO and unleased owner's decisions to participate or be pooled when risk compensation fee is sought
  - Force-pooled owner can avoid risk compensation fee by agreeing in writing to pay its share of costs before the well is spudded or by actually paying its share of costs prior 30 days after well is spudded or prior to the well reaching total depth, whichever is first
    - Prior to obtaining a forced-pooling order, the operator must have made a good faith effort to negotiate to reach a voluntary agreement with each force-pooled party for drilling the well and must have met certain other statutory requirements

- Timing of completion of proposed wells
  - A forced-pooling order will expire if a well is not spudded within 6 months.
  - There is no time limit for completion of the well

- What is pooled and when
  - All interests are pooled for the development and operation of the drilling (wildcat) or production (established field) unit
  - Effective from the date of the pooling order

Interstate Oil and Gas Compact Commission
Legal and Regulatory Affairs Committee
Pooling and Spacing in Horizontal Well Development

Alaska Rules and Regulation

Identification of potential issues, statutory conflicts

- Number of wells allowed within drilling unit
    - Alaska Administrative Code (AAC) Section 20 AAC 25.055. Drilling units and well spacing
        - Allows only one well per drilling unit
    - Alternate well spacing requirements may be specified by the commission after public notice and opportunity for public hearing on spacing units

- Well setback, drilling unit size and inter-well distances
    - AAC 20 AAC 25.055. Drilling units and well spacing
        - For a well drilling for oil, a wellbore may be open to test or regular production within 500 feet of a property line only if the owner is the same and the landowner is the same on both sides of the line.
        - For a well drilling for gas, a wellbore may be open to test or regular production within 1,500 feet of a property line only if the owner is the same and the landowner is the same on both sides of the line.
        - If oil has been discovered, the drilling unit for the pool is a governmental quarter section
            - A well may not be drilled or completed closer than 1,000 feet to any well drilling to or capable of producing from the same pool
            - Alternate well spacing requirements may be specified by the commission after public notice and opportunity for public hearing
        - If gas has been discovered, the drilling unit for the pool is a governmental section.

- A well not be drilled or completed closer than 3,000 feet to any well drilling to or capable of producing from the same pool
- Alternate well spacing restrictions requirements may be specified by the commission after public notice and opportunity for public hearing

- Minimum percentage ownership required to pool
  - 20 AAC 25.055. Drilling units and well spacing
    - [No minimum ownership percentage needed to pool]
      - A well may not begin regular production of oil from a property that is smaller than the governmental quarter section upon which the well is located or begin regular production of gas from a property that is smaller than the governmental section upon which the well is located, unless the interests of the persons owning the drilling rights in and the right to share in the production from the quarter section or section, respectively, have been pooled under Alaska Statute (AS) 31.05.100
  - Alaska Statute (AS) 31.05.100. Establishment of drilling units for pools
    - For the prevention of waste, to protect and enforce the correlative rights of lessees in a pool, and to avoid the augmenting and accumulation of risks arising from the drilling of an excessive number of wells, or the reduced recovery which might result from too small a number of wells, the commission shall, after a hearing, establish a drilling unit or units for each pool

- Timing of completion of proposed wells
  - Permits issued
    - If drilling operations are not commenced within 24 months after the commission approves an application for a Permit to Drill, the Permit to Drill expires
- What is pooled and when
  - AS 31.05.100. Establishment of drilling units for pools
    - When two or more separately owned tracts of land are embraced within an established drilling unit, persons owning the drilling rights in it and the right to share in the production from it may agree to pool their interests and develop their lands as a drilling unit
    - If the persons do not agree to pool their interests, the commission may enter an order pooling and integrating their interests for the development of their lands as a drilling unit for the prevention of waste, for the protection of correlative rights, or to avoid the drilling of unnecessary wells.
    - If pooling is effectuated, the cost of development and operation of the pooled unit chargeable by the operator to the other interested lessee is limited to the actual and reasonable expenditures for this purposes, including a reasonable charge for supervision
  - Appropriate risk penalty for non-consenting owners
    - As to lessees who refuse to agree upon pooling, the order shall provide for reimbursement for costs chargeable to each lessee out of, and only out of, production from the unit belonging to such lessee.

- Cross unit development-Unitization and unitized operation of pools and integration of interests by agreement
    - AS 31.05.110. Unitization and unitized operation of pools and integration of interests by agreement
        - Owners may integrate their interest to provide for the unitized management, development and operations of such tracts of land as a unit
        - Where owners have not agreed to integrate their interests, the commission, upon proper petition, after notice and hearing, has jurisdiction, power and authority, and it is its duty to make and enforce orders and do the things necessary or proper to carry out the purposes of the section.
    - 20 AAC 25.520. Field and pool regulation and classification
        - The commission has used these regulations to integrate a pool across large unit boundaries, (e.g. Kuparuk River Field-Kuparuk River Oil Pool, Milne Point Field-Kuparuk River Oil Pool, Southern Miluveach Field-Kuparuk River Oil Pool), to define the pool, to establish drilling unit size, and to establish intra-pool well spacing requirements. Note: Injection orders remain on an operator by operator basis and are not integrated
        - Wellbore setbacks are retained to protect correlative rights in that a wellbore will be more than 500 feet and 1,500 feet from an external property line where ownership or landownership changes, for oil and gas wells, respectively
            - Following public notice and opportunity for public hearing, the commission has allowed a horizontal injection wellbore for an oil pool to be closer than 500 feet from an external property line where ownership or landownership changes

- Unit development requirements and timing
    - For voluntary units, the Alaska Department of Natural Resources holds this responsibility
    - For compelled units, development would be done in accordance with an order issued by the commission that contains a plan of unit development in accordance with AS 31.05.110(c)

- Drilling units and well spacing for unconventional oil-shale or gas-shale
    - Statewide drilling unit and spacing requirements specified in AAC 25.055 currently apply to all wells within Alaska, including unconventional oil-shale, gas-shale, coal gasification, and geothermal

- Timing of working interest owners' and unleased mineral right owners' decisions to participate or be pooled

Interstate Oil and Gas Compact Commission
Legal and Regulatory Affairs Committee
Pooling and Spacing in Horizontal Well Development

Arizona Rules and Regulations

Identification of potential issues, statutory conflicts

- Number of wells allowed within unit
  - One: A.A.C. R12-7-104

- Unit size
  - 80 acres oil: A.A.C. R12-7-107
  - 160 acres oil: A.A.C. R12-7-107

- Minimum percentage ownership required to pool
  - None: A.R.S. 27-505

- Timing of WIO and unleased owner's decisions to participate or be pooled
  - --

- Timing of completion of proposed wells
  - 180 days: A.A.C. R12-7-104

- What is pooled and when
  - Drilling rights and share in production: A.R.S. 27-505
  - After notice and hearing

Interstate Oil and Gas Compact Commission
Legal and Regulatory Affairs Committee
Pooling and Spacing in Horizontal Well Development

Arkansas Rules and Regulation

Identification of potential issues, statutory conflicts

- Number of wells allowed within unit
  - No more than 16 wells per unconventional reservoir in a unit unless an exception is granted by the Commission. General Rule B-43 (i). (Ark Code Ann. § 15-72-302 authorizes Commission to designate number of wells and regulate spacing within a drilling unit)

- Unit size
  - Governmental sections (640 acres) are designated as drilling units. General Rule B-43 (f). (Ark Code Ann. § 15-72-302 states that drilling units are comprised of governmental sections unless a larger or smaller unit is requested by an owner and approved by the Commission)
  - Commission has authority to omit lands from a drilling unit owned by governmental entities. Commission also has authority to combine two or more drilling units, although this has not been necessary as this type of action was addressed by "cross-unit" wells. "Cross-unit" wells are wells that extend across or encroach upon adjoining drilling units, and are shared based upon a formula between all affected drilling units. SEE BELOW for further illustration

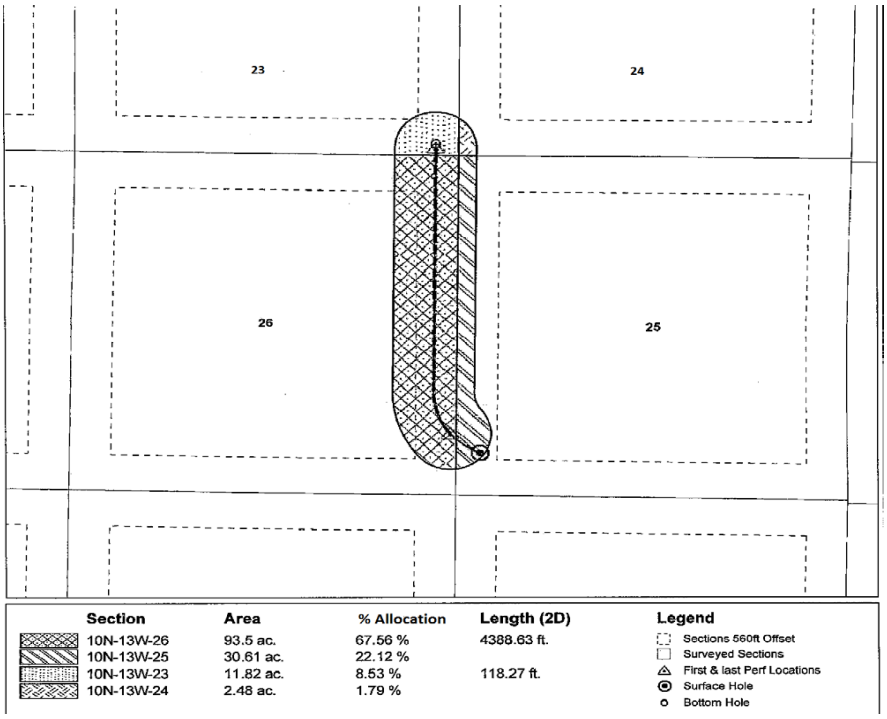
- Minimum percentage ownership required to pool
  - "Exploratory Drilling Unit" - at least an undivided fifty percent (50%) interest in the right to drill and produce. Exploratory Drilling Unit is any drilling unit that is not an established drilling unit
  - "Established Drilling Unit" – no minimum acreage requirement, provided that one or more persons owning an interest in the right to drill and produce oil or gas requests. Established Drilling Unit is one that contains a well that has a well (conventional or unconventional) that has been drilled and completed and for which the Commission has issued a certificate of compliance. Once the certificate of compliance is issued, the exploratory drilling unit where the well is located AND all contiguous governmental sections become exploratory drilling units

- Timing of WIO and unleased owner's decisions to participate or be pooled
  - Typically 15 days after date of integration (forced pooling) order

- Timing of completion of proposed wells:
  - Arkansas has adopted a uniform Operating Agreement. http://www.aogc.state.ar.us/JOA_Archive.htm

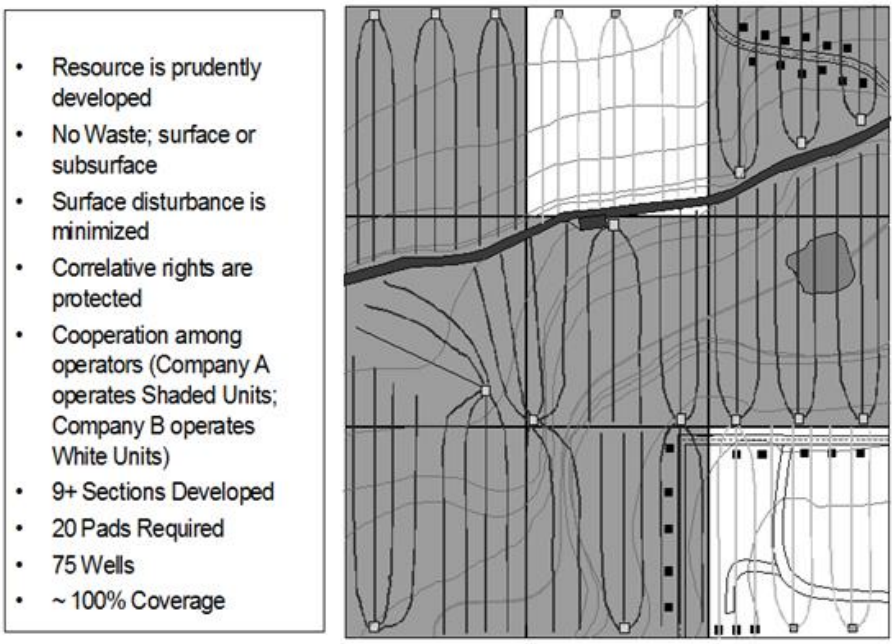
- What is pooled and when

- Working interests and mineral interests are pooled when the Commission enters an integration order. If unit is 100% voluntarily leased, a Declaration of Pooling is filed by the Operator in the county land records



Paradigm Shift. Regulating and protecting correlative rights rather than focusing on shale reservoir itself. Above diagram represent a well that is shared between four (4) different drilling units. Formula is determined by creating a 560' radius around the entire length of the perforated wellbore. Also, General Rule B-43 contains protections to keep operators from simply "holding" or "land-grabbing" acreage by "cross-unit" wells.

Below diagram is an example of use of "cross-unit" wells for full development, even with different operators of units.



Interstate Oil and Gas Compact Commission
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Pooling and Spacing in Horizontal Well Development

Colorado Rules and Regulations

Identification of potential issues, statutory conflicts

- Number of wells allowed within unit
  - Colorado Revised Statutes (CRS) Section 34-60-116
    - Allows Commission to establish drilling units. C.R.S. § 34-60-116(1), (2)
    - Only one well shall be drilled and produced from the drilling unit. C.R.S. § 34-60-116(3)
    - The drilling unit may be increased or decreased in size, or additional wells bay be permitted within the unit after notice and hearing. C.R.S. § 34-60-116(4)
    - Exploratory drilling units may be established for various sizes and shapes based on other units established by the Commission for the same formation in other areas of the basin
    - C.R.S. § 34-60-116(2)
    - o Special Rules for Greater Wattenberg Area (GWA), located within the Denver Julesberg Basin
    - Rule 318 a.(4) allows creation of a "wellbore spacing unit" comprised of each

quarter-quarter section through which producing portions of a proposed wellbore passes and all quarter-quarter sections within 460 feet of the producing portions of the wellbore

- Rule 318A.e. allows wellbore spacing units to be approved administratively, provided an operator provides notice to all other working interest owners within the proposed unit and there are no objections
- Wellbore spacing units are for a single well (by definition) and can be "cross border" wells

- COGCC is approving drilling units for development of unconventional resources in which more than one well is approved at the time the unit is established
- COGCC has approved a small number of large (2560+ acres) "Unconventional Resource Units" (URUS) in unproven unconventional development areas, in which an unspecified number of wells have been approved at the time the unit is established. Operators of URUs are required to update the Commission annually on development progress
- Operators may drill on a lease basis, provided lease is "not smaller than the maximum area that can be efficiently and economically drained by one well." C.R.S. § 34-60-116(2); Rules 318.a,b

- <u>Unit size</u>
  - Variable, determined by the Commission based upon the prevention of waste, protection of correlative rights, and efficient and economic development of each unit. C.R.S. § 34-60-116
    - Within the GWA, most operators have opted for wellbore spacing units, ranging between 160 and 640 acres
    - 640-acre up to 1280-acre drilling units are common outside of the GWA
    - COGCC has approved drilling units up to 3200-acres in URUs outside of GWA

- <u>Minimum percentage ownership required to space/pool</u>
  - No minimum percentage ownership is required to establish a drilling unit or to pool interests within a unit
  - Two or more separately owned tracts, not voluntarily pooled, may be pooled by Commission Order. !ny "interested person" can file an application to establish a unit and to pool all interests in a spacing unit. C.R.S. § 34-60-116(6)

- <u>Timing of WIO and unleased owner's decisions to participate or be pooled</u>
  - Absent an agreement to lease, an unleased owner is deemed to be nonconsenting 35 days after a "reasonable offer to lease." Rule 530
  - Abasent consent, a WIO is deemed to be nonconsenting 35 days after an offer to participate. Rule 530
  - Statutory risk penalty:
    - 100% of intangible costs (separators, treaters, piping, cost of operation of the well after first production until cost recovery) are assessed on a nonconsenting owner. C.R.S. § 3460-116(7)(b)(I)
    - 200% risk penalty for tangible costs (drilling, reworking, completing) are

assessed on a nonconsenting owner. C.R.S. § 34-60-116(7)(b)(II)

- Timing of completion of proposed wells
  - No deadline for well to be spud after pooling, except for expiration of APD
  - Commission may determine reasonableness of costs during cost recovery period. 34-60-116(7)(d), CRS

- What is pooled and when
  - "All interests in the drilling unit" are pooled upon order of the Commission. C.R.S. § 34-60-116(6)
  - Pooling is effective from the date costs are first incurred for the drilling of the well

Illinois Rules and Regulation

Identification of potential issues, statutory conflicts

- Number of wells allowed within unit
  - Illinois Administrative Code 62 (ILAC) Section 240.410
  - Allows only one well per drilling unit
  - (EOR) Activity removes internal spacing units

- Unit size
  - 62 ILAC Section 240.410
  - Oil
    - Vertical or directional oil well in a limestone/dolomite formation not deeper than 4000 Ft. - 20 acre drilling unit
    - Vertical or directional oil well in a formation other than limestone/dolomite not deeper than 4000 Ft. - 10-acre drilling unit
    - Vertical or directional oil well in any formation, the top of which lies below 4000 Ft. - 40 acre drilling unit
  - Gas
    - Vertical or directional gas well in a limestone/dolomite formation not deeper than 2000 Ft. – 20 acre drilling unit
    - Vertical or directional gas well in a formation other than limestone/dolomite not deeper than 2000 Ft. – 10 acre drilling unit
    - Vertical or directional gas well in any formation, the top of which lies below 2000 Ft but above 5000 Ft. or top of the Trenton Formation. - 40 acre drilling unit
    - Vertical or directional gas well in any formation, the top of which lies below 5000 Ft. or top of the Trenton Formation.-160-acre drilling unit for the exploratory well then Spacing for any additional wells in the reservoir set by hearing
  - Horizontal Drilling 62 ILAC 240.455
    - Primary Recovery

      A Horizontal unit may be designated consisting of two or more drilling units of the same size, shape and location as that required for a well of the same depth in accordance with Section 240.410 set out in a north-south or east-west pattern. The north-south or east-west pattern of a horizontal drilling unit may cross section lines

    - Post –Primary Recovery

      A horizontal drilling unit may be designated consisting of two or more drilling units of the same size, shape and location as that required for a well of the same

depth in accordance with Section 240.410 and located in the same reservoir. At least one-half of the drilling units used to make up the horizontal drilling unit are required to contain at least one plugged or non-producing well

- The Department shall set spacing units

  (225 ILCS 725/21.1) Oil and Gas Act
  (a) The Department is authorized to issue permits for the drilling of wells and to regulate the spacing of wells for oil and gas purposes. For the prevention of waste, to protect and enforce the correlative rights of owners in the pool, and to prevent the drilling of unnecessary wells

- Minimum percentage ownership required to Integrate
  - (225 ILCS 725/22.2)
  - Any "interested person" can file a petition to integrate all interests in a spacing unit
  - No minimum percentage needed to integrate
  - Two or more separately owned tracts, not voluntarily pooled, must be integrated

- Timing of WIO and unleased owner's decisions to participate or be Integrated
  - (62 ILAC 240.132)
  - Must make "good-faith" offer to lease
  - Department determines if the owner surrenders the leasehold interest or becomes a Carried Working Interest Owner through an Integration Hearing
  - 100 to 300% penalty for a Carried Working Interest Owner

- Timing of completion of proposed wells
  - One year expiration unless drilling is commenced

- What is pooled and when
  - (62 ILAC 240.132)
  - Effective within the spacing unit from the issue date of the Administrative Order
  - All interests are pooled for the development and operation of the spacing unit until the well is plugged

Interstate Oil and Gas Compact Commission
Legal and Regulatory Affairs Committee
Pooling and Spacing in Horizontal Well Development

Indiana Rules and Regulations

Identification of potential issues, statutory conflicts

- Number of wells allowed within unit
    - Only one (1) well is allowed within a drilling unit. The boundary of the drilling unit currently is required to conform to the boundary of a ¼, ¼ Section, or a uniform fraction thereof, depending on the type, depth, and configuration of the well. Multiple laterals from the same vertical would be considered one (1) well
    - Multiple wells are allowed on larger, voluntarily pooled spacing units

- Unit size
    - Horizontal drilling units currently vary from between 40 to 320 acres depending on depth and well configuration. Larger unit sizes are permissible for extended reach horizontal wells. No portion of horizontal drainhole shall be closer than 330 feet from unit boundary

- Minimum percentage ownership required to pool
    - Indiana law does not specify a minimum percentage ownership required to pool

- Timing of WIO and unleased owner's decisions to participate or be pooled
    - The applicant must make a good faith effort to lease all interest owners. Thereafter, the applicant may submit a petition for involuntary integration at any time. Where owners of two or more tracts are unable to reach agreement, the interests shall be integrated under IC 14-37-9-1 in order to prevent waste or the drilling of unnecessary wells

- Timing of completion of proposed wells
    - Drilling must commence within 1 year of permit issuance

- What is pooled and when
    - All interests are pooled for the drilling and operation of the wells within the involuntary pooled unit effective from the date of first operations from the pooled unit

Interstate Oil and Gas Compact Commission
Legal and Regulatory Affairs Committee
Pooling and Spacing in Horizontal Well Development

Kansas Rules and Regulations

Identification of potential issues, statutory conflicts

- Number of wells allowed within unit
    - The Kansas Administrative Regulations (K.A.R.) and Kansas Statutes Annotated (K.S.A.) do not differentiate between vertical and horizontal well drilling units.
    - K.A.R. 82-3-207 establishes a standard* 10-acre drilling unit for oil wells. And K.A.R. 82-3-312 establishes a 10-acre drilling unit for gas wells.
        - Pursuant to K.A.R. 82-3-108 there are 28 counties in Eastern Kansas which allow for 2.5 acre drilling units for shallow oil wells.

- Unit size
    - K.A.R. 82-3-207 establishes a standard* 10-acre drilling unit for oil wells with a minimum 330 foot setback from lease or unit boundaries.
        - Pursuant to K.A.R. 82-3-108 there are 28 counties in Eastern Kansas which allow for 2.5-acre drilling units for shallow oil wells with a minimum 165 foot setback from lease or unit boundaries.
    - K.A.R. 82-3-312 establishes a standard 10-acre drilling unit for gas wells with a minimum 330 foot setback from lease or unit boundaries.
    - K.A.R. 82-3-1401 states the completion intervals for horizontal wells are subject to the same setback requirements outlined in K.A.R. 82-3-108, 82-3-207, and 82-3-312.
    - K.A.R. 82-3-109 allows any interested party to file an application for special spacing units and requires a Commission hearing on the application.

- Minimum percentage ownership required to pool
    - Kansas does not have forced pooling; however, K.S.A. § 55-1300 *et seq.* allow for the Commission to unitize acreage to prevent waste and protect correlative rights within a pool or part of a pool after application, notice, and hearing.
        - Any working interest owner may file an application for unitization pursuant to K.S.A. § 55-1303.
        - K.S.A. § 55-1304(a)(2) requires the Commission to find in part "the unitized management, operation and further development of the pool or the part thereof sought to be unitized is economically feasible and reasonably necessary to prevent waste within the reservoir and thereby increase substantially the ultimate recovery of oil or gas."
    - For a Commission ordered unitization to be effective, K.S.A. § 55-1305(l) requires 63% of working interest owner approval and 75% royalty (excluding overriding royalty ownership) interest approval within six months of the Commission order authorizing the unit.
    - If 100% of the royalty interest owners and at least 90% of the working interest owners agree to unit operations, no application and hearing is necessary per K.S.A. § 55-1317.
        - A copy of the proposed contract must still be provided to the Commission and all working interest owners who then still have the right to initiate proceedings before the Commission within 30 days.

- Timing of WIO and unleased owner's decisions to participate or be pooled
    - K.A.R. 82-3-103a requires an application, notice, and potential hearing for all non-Mississippian formation horizontal wells.
    - Participation in the hearing on the application for unitization is governed by the Kansas Administrative Procedures Act, K.S.A. § 77-501 *et seq.*
    - When practicable, a hearing on the application shall be heard within 90 days of filing per K.S.A. § 77-511.
        - K.S.A. § 55-1310 requires notice of the application with the time and date of the hearing must be provided to all interested parties at least 10 days prior to the hearing. Notice of the date and time of the hearing must also be published in all county newspapers of record where lands affected by the unitization application are located at least 10 days prior to the hearing.

- Timing of completion of proposed wells
    - Drilling permits expire within one year of issuance per K.A.R. 82-3-103 and completion reports must be filed within 120 days of the spud date per K.A.R. 82-3-130.

- What is pooled and when
    - All interests contemplated by the unit application and unit operating agreement as approved by Commission Order per K.S.A. § 55-1305.
    - The unitization order is effective upon issuance and subject to appeal for 30 days plug 3 for mailing per K.S.A. § 77-530. After the order is effective, the timing of operations is controlled by the unit operating agreement.

- Additional regulations pertaining specifically to horizontal wells in Kansas can be found in K.A.R. 82-3-1400 *et seq.*

Interstate Oil and Gas Compact Commission
Legal and Regulatory Affairs Committee
Pooling and Spacing in Horizontal Well Development

Kentucky Rules and Regulation

Identification of potential issues, statutory conflicts

- Number of wells allowed within unit
    - Shallow wells: Kentucky Revised Statutes (KRS)353.590
        - Allows only one well per drilling unit

  - Deep wells: 805 Kentucky Administrative Regulations (KAR) 1:100
    - Allows for more than one on a single well pad

- Unit size
  - Shallow wells: KRS 353.610
    - Measured from any point along the productive leg of the well
    - Gas wells: 500' from property line, 1000' between other gas wells
    - Oil wells: 200' from property line, 400' from other oil wells (down to 2000' TVD)
    - Oil wells: 330' from property line, 660' from other oil wells (from 2000'-6000' TVD)
    - Oil wells: 330' from property line, 660' from other oil wells (in coal areas)
  - Deep wells: 805 KAR 1:100
    - Unit size shall be set by the Oil and Gas Conservation Commission after a hearing

- Minimum percentage ownership required to pool
  - Shallow wells: KRS 353.630
    - At least 51% of mineral owners
  - Deep wells: KRS 353.652
    - At least 75% of the minerals owners

- Timing of WIO and unleased owner's decisions to participate or be pooled
  - After hearing and recommended order, parties have 15 days until final order is signed
  - KRS 35.640: 200% penalty clause for nonparticipating working interest owner

- Timing of completion of proposed wells
  - KRS 353.590
    - All drilling permits expire after one year, unless an extension is requested

- What is pooled and when
  - KRS 353.640 and KRS 353.645
    - All interest are pooled for the development and operation of the unit

Louisiana Rules and Regulation

Identification of potential issues, statutory conflicts

- Number of wells allowed within unit
    - Normally one (1) for a drilling and production unit (R.S. 30:9) but others (alternates & substitutes) can be added by hearing. With reservoir wide units (R.S. 30:5(C)) there is no limit

- Unit size
    - Varies depending on the bases for the creation the unit. A reservoir wide unit (R.S. 30:5(C)) is normally based on geology, the size is dependent on what that geology shows. Drilling and Production Units (R.S. 30:9) could be geographic or geological and could depend on 3-D, existing patterns of units in the same field, horizontal or vertical well plan, or depth

- Minimum percentage ownership required to pool
    - These issues are only considered in the forming of a reservoir wide unit (R.S. 30:5(C)). Rules would require 75% of both owners and royalty owners

- Timing of WIO and unleased owner's decisions to participate or be pooled
    - WIO would face a Risk Fee Penalty of 200% (R.S. 30:10). Unleased owners are not subject to the Risk Fee charge. All interests in the drilling unit are pooled upon order of the Commissioner effective the date of the Order

- Timing of completion of proposed wells
    - Drilling permits are issued for 6 months or 1 year. Once drilled there is no time limit for completion of the well but we would expect the filing of a completion report within three (3) days of a successful completion

- What is pooled and when
    - All interests in the drilling unit are pooled upon order of the Commissioner effective the date of the Order

Interstate Oil and Gas Compact Commission
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Pooling and Spacing in Horizontal Well Development

Nevada Rules and Regulations

Identification of potential issues, statutory conflicts

- Number of wells allowed within unit
  - Nevada Revised Statutes (NRS) 522.060: Number of wells allowed within a unit is established through the hearing process

- Unit size
  - Nevada Administrative Code (NAC) 522.235
    - In a proven oil and gas field the spacing of wells is governed by special rules for each particular field to be adopted by the Division after notice and hearing.
    - In the absence of an order by the Division establishing drilling units or authorizing different densities of wells, the following requirements apply:
      Oil < 5000' 40 acres Gas < 5000' 160 acres
      Oil > 5000' 160 acres Gas > 5000' 640 acres

- Minimum percentage ownership required to pool
  - NRS 522.0834.1 a: Plan of unitization to pool requires minimum of 62.5% vote by owners of record.
  - NRS 522.084: Unit area of a unit may be enlarged to include adjoining portions of the same pool

- Timing of WIO and unleased owner's decisions to participate or be pooled
  - NRS 522 and NAC 522 do not address risk penalties for unleased MIO and WIO property. Interested parties can request a hearing pertaining to forced pooling (NRS 522.0828)
  - NRS 522.060.4: A 300% back-in penalty is assessed to those who refuse to agree on pooling
  - NRS 522.060.0: If parties fail to agree on pooling, and without a forced pooling order from the Division, parties can only produce proportional amount on each of their separate tracts as compared to what would be produced if unit was established

- Timing of completion of proposed wells
  - NRS 522 and NAC 522 do not address risk penalties in the 'election to participate' in terms of a time frame where an election to participate is to be made
  - NAC 522.220: Two year expiration unless operations have been commenced prior to expiration date

- What is pooled and when
  - NRS 522.060.1: The Division shall, after a hearing, establish a drilling unit or units for each pool

- Effective date for unit and spacing unit operations begins on date of Division approval, through the hearing process

Interstate Oil and Gas Compact Commission
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Pooling and Spacing in Horizontal Well Development

New Mexico Rules and Regulations

Identification of potential issues, statutory conflicts

- Number of wells allowed within unit

  - There is no limit on the number of horizontal wells that can be drilled within a project area (**19.15.16.15(D) NMAC**)
  - Existing wells in spacing units or project areas that are included in newly designated project areas remain dedicated to their existing spacing units or project areas and are not part of the new project area unless otherwise agreed to by all working interest owners in the existing and newly designated project areas (**19.15.16.15(C)(1) NMAC)**
  - Subsequent wells drilled within a project area may be drilled only with the approval of all working interest owners in the project area, or by order of the Oil Conservation Division ("OCD") after notice and opportunity for hearing (**19.15.16.15 (C)(2) NMAC**)

- Unit size

  - General statewide spacing is established at 40-acres for oil, 320-acres for deep gas and 160-acres for shallow gas (**19.15.15.9 & 19.15.15.10 NMAC**) unless larger spacing has been established for a particular pool by OCD hearing
  - Standard horizontal **project areas** may be formed by combining one or more contiguous standard spacing units in one section or in more than one section, provided that the resulting project area is substantially in the form of a rectangle. Also, all spacing units included in the project area must be "developed" by the horizontal well (**19.15.16.7 NMAC**)
  - To form a non-standard horizontal project area, the operator must apply to the OCD and provide notice to the affected parties in the tracts being excluded, and to the affected parties in offset acreage that adjoins the non-standard horizontal project area (**19.15.16.15 (E)(2)NMAC**)

- Minimum percentage ownership required to pool

- In order to compulsory pool a standard or non-standard horizontal project area, the operator must own in an interest in some portion of the proposed project area, however, the OCD does not have a requirement that specifies minimum percentage of ownership (**19.15.13 NMAC**)

- Timing of WIO and unleased owner's decisions to participate or be pooled

  - Prior to filing for compulsory pooling, the operator must propose the well to the interest owners and make a reasonable attempt to secure voluntary agreement
  - Subsequent to the compulsory pooling hearing and the issuance of a pooling order, the applicant must provide the interest owners an AFE for the proposed well. The interest owner then has 30-days from the date the AFE was sent to elect to participate in the well by paying to the operator its share of well costs
  - Non-consenting working interest owners are assessed a 300% (Its share of well costs + 200%) penalty. (**19.15.13 NMAC**)
  - Infill Wells: After completion of the initial well on a pooled unit, the operator or owner of a pooled working interest may propose the drilling of an infill well. The operator or party proposing the infill well is required to provide notice and an AFE to each pooled working interest owner. The pooled working interest owner then has 30-days from the date the proposal was sent to elect to participate in the well by paying to the operator its share of well costs (**19.15.13.9 & 19.15.13.10 NMAC)**

- Timing of completion of proposed wells

  - Drilling permits expire two years after issuance. A one year extension may be granted
  - Compulsory pooling orders require that the well be drilled within one year from the date that the pooling order was issued, unless an extension is approved by the OCD (usually 90-days)
  - The pooling order also requires that the well be drilled and completed within 120-days of commencement thereof. An extension may be granted for good cause (**19.15.13 NMAC**)

- What is pooled and when

  - All uncommitted mineral interests are pooled for the development and operation of the standard or non-standard horizontal project area
  - Pooling is effective the date of the compulsory pooling order

Interstate Oil and Gas Compact Commission
Legal and Regulatory Affairs Committee
Pooling and Spacing in Horizontal Well Development

New York Rules and Regulations[2]

Identification of potential issues, statutory conflicts

- Number of wells allowed within unit
  - ECL §23-0503(4)
    - Allows infill wells in the spacing unit only after the Department determines that infill wells are necessary to prevent waste, protect correlative rights and achieve greater ultimate recovery – ECL §23-0301 Policy Objectives
  - ECL §23-0501(1)(b)(vi)
    - A commitment to drill infill wells is required to establish a 640-acre unit for a horizontal gas well in shale

- Unit size

[2] Statutory amendments in 2005 and 2008 are in effect although they have not yet been codified in rules and regulations. Hearings are conducted pursuant to DEC Program Policy DMN-1:Public Hearing Processes for Oil and Gas Well Spacing and Compulsory Integration

- ECL §23-0501(1)(b)
  - Vertical or Horizontal – Medina gas pools at any depth
    40-acres +/- 10%
  - Vertical or Horizontal – Onondaga reef or Oriskany gas pools at any depth
    160-acres +/- 10%
  - Vertical or Horizontal – Fault-bounded Trenton and/or Black River hydrothermal dolomite gas pools
    Majority of pool between 4,000 and 8,000 feet deep
    320-acres +/- 10%
  - Vertical or Horizontal – Fault-bounded Trenton and/or Black River hydrothermal dolomite gas pools
    Majority of pool below 8,000 feet
    640-acres +/- 5%
  - Vertical – Shale gas pools at any depth
    40-acres +/- 10%
  - Horizontal – Shale gas pools at any depth (with written agreement from operator to drill infill wells)
    640-acres +/- 10%
  - Horizontal – Shale gas pools at any depth (without written agreement from operator to drill infill wells)
    40-acres + the number of additional acres necessary and sufficient to ensure the wellbore within the target formation maintains required setback from unit boundary +/- 10%
  - Vertical or Horizontal – For all other gas pools
    Majority of pool is above 4,000 feet
    80-acres +/- 10%
  - Vertical or Horizontal – For all other gas pools
    Majority of pool is between 4,000 and 6,000 feet deep
    160-acres +/- 10%
  - Vertical or Horizontal – For all other gas pools
    Majority of pool is between 6,000 and 8,000 feet deep
    320-acres +/- 10%
  - Vertical or Horizontal – For all other gas pools
    Majority of pool below 8,000 feet
    640-acres +/- 5%
  - Vertical or Horizontal – Bass Island, Trenton, Black River, Onondaga reef oil pools or other oil-bearing reefs at any depth
    40-acres +/- 10%
  - Vertical or Horizontal – all other oil pools at any depth
    Unit size not specified; wellbore within target formation must be no less than 165 feet from any lease boundary

- <u>Minimum percentage ownership required to pool</u>
  - ECL §23-0501(2)

        - Applicant for permit to drill must control through fee ownership, voluntary agreement, or integration pursuant to ECL §23-0701 or ECL §23-0901, no less than sixty percent of the acreage within the proposed spacing unit
    - ECL §23-0901(2)
        - In the absence of voluntary integration, the Department must issue, after notice and hearing, an order integrating all tracts (interests) in the spacing unit for development and operation

- <u>Timing of WIO and unleased owner's decisions to participate or be pooled</u>
    - ECL §23-0901(3)(c)(2)
        - Within 21 days of receiving notice of an integration hearing, each uncontrolled owner, i.e. owner who has not reached a voluntary agreement with the well operator, must select one of three integration options: integrated non-participating owner, integrated participating owner or integrated royalty owner

            Participating owners must pay their estimated share of drilling, operating and completion costs attributable to their acreage in the spacing unit to the well operator by the conclusion of the integration hearing

            Non-Participating owners receive the full share of production attributable to their acreage in the spacing unit following the recoupment by the operator of well costs plus a risk penalty of 200%

- <u>Timing of completion of proposed wells</u>
    - 6 NYCRR Part 552.2(c)
        - Permits issued – 180 days expiration unless operations were commenced before expiration of the permit
    - 6NYCRR Part 555.3(a)
        - No time limit for completing wells as long as well owner maintains legal temporary abandonment status on the wells
    - ECL §23-0501(1)(b)(1)(iv)
        - For shale gas pools at any depth for a horizontal well (640 acre +/- 10% spacing unit) – Operator must submit a written commitment to drill all horizontal infill wells within three years of the date of commencement of the first well in the spacing unit

- <u>What is pooled and when</u>

  Spacing units established for gas or oil wells pursuant to ECL §23-0501(1)(b) only apply to the target formation
    - ECL §23-0901(3)
        - All tracts or interests within the spacing unit are integrated upon the date of issuance of the final order of integration
    - ECL §23-0901(3)(d)
        - If substantive and significant and significant issues are raised during the integration hearing the department shall schedule an adjudicatory hearing. Any order would be issued after the conclusion of the adjudicatory process
    - ECL §23-0901(3)(e)

- If no substantive and significant issues are raised at the hearing, the department issues the order at the conclusion of the hearing

- ECL 23-0901(3)(f)
  - Activities including drilling or operation of a well upon any portion of the spacing unit is deemed the conduct of such operation upon each separately owned tract wholly or partially within the spacing unit

Identification of potential issues, statutory conflicts

- Number of wells allowed within unit
  - North Dakota Administrative Code (NDAC) Section 43-02-03-18
    - Allows only one well per drilling unit
  - Unlimited wells allowed after notice and hearing on spacing units
    - Currently some orders allow up to 28 wells / spacing unit

- Unit size
  - NDAC Section 43-02-03-18
    - Vertical or directional not deeper than Mission Canyon Formation
    - 40-acre drilling unit
    - Vertical or directional deeper than Mission Canyon Formation
    - 160-acre drilling unit
    - Horizontal wells not deeper than Mission Canyon Formation
    - 320-acre or 640-acre drilling unit
    - Horizontal wells deeper than Mission Canyon Formation
    - 640-acre drilling unit
  - North Dakota Century Code (NDCC) Section 38-08-07
    - Commission shall set spacing units
    - To prevent waste, avoid drilling unnecessary wells, or to protect correlative rights
    - Size and shape to result in efficient and economical development

- Minimum percentage ownership required to pool
  - NDCC Section 38-08-08
    - Any "interested person" can file an application pooling all interests in a spacing unit
    - No minimum percentage needed to pool
    - Two or more separately owned tract, not voluntarily pooled, must be pooled

- Timing of WIO and unleased owner's decisions to participate or be pooled
  - 50% risk penalty assessed on unleased MIO—NDAC Section 43-02-03-16.3
    - Must make "good-faith" offer to lease
    - Operator must notify the MIO that they intend to assess a risk penalty
    - No hearing necessary to obtain risk penalty if follow rule
  - 200% risk penalty assessed on unleased WIO—NDAC Section 43-02-03-16.3
    - Operator must notify the WIO that they intend to assess a risk penalty
    - No hearing necessary to obtain risk penalty if follow rule

- Timing of completion of proposed wells
  - Risk Penalty—NDAC Section 43-02-03-16.3
    - Election to participate only binding if well is spud on or before 90 days of election
  - Permits issued—NDAC Section 43-02-03-16
    - One year expiration unless drilling below surface casing

- What is pooled and when
  - All interests are pooled for the development and operation of the spacing unit—NDCC

Section 38-08-08

- Effective from the date of first operations within the spacing unit

Interstate Oil and Gas Compact Commission
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Pooling and Spacing in Horizontal Well Development

Ohio Rules and Regulation

Identification of potential issues, statutory conflicts

- Number of wells allowed within unit:
    - Unrestricted, subject to spacing requirements set forth in OAC 1501:9-1-04
- Unit size:
    - Must be greater than 40 acres – no maximum size
- Minimum percentage ownership required to pool:
    - 65%
- Timing of WIO and unleased owner's decisions to participate or be pooled:
    - Any time prior to filing of unitization application. Further, the unitization order allows for unleased mineral interest owners to lease after the order is issued.
- Timing of completion of proposed wells:
    - Drilling to commence within 12 months of unitization order. All proposed wells in the application must be drilled, completed and producing within X years (varies depending on the number of wells proposed within the unit) of completion of the initial well according to the order.
- What is pooled and when:

- Non-participating WIO and unleased mineral owners. Non-participating WIO's receive compensation in accordance with the applicant's JOA. Unleased mineral owners receive a 1/8 landowner royalty on gross proceeds and a 7/8 share of net proceeds from production after the applicant receives 200% reasonable interest charge on the initial well and 150% on each subsequent well.

Interstate Oil and Gas Compact Commission
Legal and Regulatory Affairs Committee
Pooling and Spacing in Horizontal Well Development

Oklahoma Rules and Regulation

Identification of potential issues, statutory conflicts

- Number of wells allowed within unit
  - Oklahoma Statutes, tit. 52, Section 87.1:
    - One well initially permitted in each spacing unit; however, increased density authority is available
    - Numerous additional wells are typically drilled in 640 acre units, which are the most common size units for natural gas wells (horizontal or vertical); horizontal oil wells; and dewatering oil wells
  - Oklahoma Statutes, tit. 52, Section 87.6 through 87.9:
    - One well initially permitted for development of spacing units with horizontal multiunit wells testing shales and associated common sources of supply (as defined by the Corporation Commission)
    - Typically multiunit horizontal wells are drilled in two adjoining 640 acre oil and/or natural gas spacing units; although, increased density drilling of multiunit wells is very common

- Unit size
  - Oklahoma Administrative Code (OAC) 165:10-1-21 and 10-1-22, Oil and Gas Conservation Rules:
    - 10, 20, 40, 160, 640 acre square units; 20, 40, 80, 320 rectangular units
  - Oklahoma Administrative Code (OAC) 165:10-3-28, Oil and Gas Conservation Rules:
    - Horizontal wells are permitted in standard square units –10, 20, 40, 160, or 640 acres
    - Horizontal wells are permitted in standard rectangular units – 20, 40, 80, or 320 acres
    - Horizontal wells are permitted in non-standard spacing units such as "stacked 640 acre units" thus allowing for an extended lateral well (example: 10,000 foot laterals)

- Horizontal wells can be drilled in any drilling and spacing unit; non-standard horizontal spacing units may not exceed 640 acres plus tolerances and variances provided in Okla. Stat., tit. 87.1; horizontal spacing units for common sources of supply previously spaced for non- horizontal development may exist concurrently with one or more non-horizontal spacing units and the units may be developed concurrently

  - Oklahoma Statutes, tit. 52, Section 87.1:
    - The Corporation Commission establishes by order oil and gas well drilling and spacing units according to the requirements of the statute after notice and hearing: "To prevent or to assist in preventing the various types of waste of oil or gas prohibited by statute, or any wastes, or to protect or assist in protecting the correlative rights of interested parties..."

    - The spacing units cannot exceed 640 acres in size except for tolerances and variances provided in the statute. Except for oil dewatering spacing units, oil units cannot exceed 40 acres in size above 4,000 feet; cannot exceed 80 acres in size from 4,000 to 9,990 feet; and can be 160 acres in size below 9,990 feet. Oil dewatering spacing units cannot exceed 640 acres in size at any depth
    - Horizontal oil wells are permitted to be spaced on units up to 640 acres in size plus tolerances and variances provided in the statute

- <u>Minimum percentage ownership required to pool</u>
  - Oklahoma Statutes, tit. 52, Section 87.1:
    - The Corporation Commission by order may pool owners that cannot reach agreement to develop a drilling and spacing unit

    - "When two or more separately owned tracts of land are embraced within an established spacing unit, or where there are undivided interests separately owned, or both such separately owned tracts and undivided interests embraced within such established spacing unit, the owners thereof may validly pool their interests and develop their lands as a unit. Where, however, such owners have not agreed to pool their interests and where one such separate owner has drilled or proposes to drill a well on the unit to the common source of supply, the Commission, to avoid the drilling of unnecessary wells, or to protect correlative rights, shall, upon a proper application therefore and a hearing thereon, require such owners to pool and develop their lands in the spacing unit as a unit."

    - No minimum percentage of ownership is required for the standing of an owner to apply for a forced pooling order

- <u>Timing of WIO and unleased owner's decisions to participate or be pooled</u>
  - Oklahoma Administrative Code (OAC) 165:5-15-3, Rules of Practice:

- The Corporation Commission's forced pooling order shall provide an election pursuant to Rules of Practice, OAC 165:5-15-3(d):
- "A pooling order shall contain language to the effect that the respondents shall have at least twenty (20) days from the date of the order in which to communicate an election to the applicant or other responsible person as to the option selected under the order, unless the Commission directs otherwise."

- Timing of completion of proposed wells
  - Oklahoma statutes and Corporation Commission regulations do not require completion of wells within a specified time after proposal. Authority for certain forms of relief pursuant to statute, obtained through Corporation Commission orders, must be secured by commencement of operations within time periods provided by regulation (Rules of Practice, OAC 165:5-15-5, one year to commence a well pursuant to an increased density order ; OAC 165:5-15-6, one year to commence a well pursuant to a location exception order)
    - Form 1000 Intent to Drill expires pursuant to regulation, Oil and Gas Conservation Rules, OAC 165:10-3-1 (j):
    - "(1) Six-month period. Except as provided in (2) of this subsection for expiration after submission of a completion report, a permit to drill shall expire six months from the date of issuance, unless drilling operations are commenced and thereafter continued with due diligence to completion. (2) Six-month extension. A six month extension may be granted without fee providing the Conservation Division staff determines that no material change of condition has occurred, if written request for such extension is received from the operator prior to the expiration of the original permit. Only one extension may be granted. (3) If Form 1002A is filed. If the operator of the well submits to the Conservation Division a Completion Report (Form 1002A) for the well, the Permit to Drill for the well shall expire on the date the Completion Report is approved by the Conservation Division."
    - Authority to commence a well pursuant to a forced pooling order, and thus causing an effect under the order on the interests of owners impacted by it, is limited by the time period provided by the order. Corporation Commission regulation, Rules of Practice, OAC 165:5-15-3(a) provides:
    - "Termination of order. A pooling order shall contain language to the effect that if operations for the drilling of the well are not commenced within the time designated, the order shall terminate except as to the payment of cash bonuses."

- What is pooled and when
  - Oklahoma Statutes, tit. 52, Section 87.1:
    - Owners of mineral interests not subject to agreement are forced pooled on a spacing unit basis pursuant to Corporation Commission order, which remains in effect as to those interests as long as (1) a well is commenced within the time period of the order; (2) the operations of the initial well are continued with due diligence to

completion; and (3) subsequent wells are proposed and commenced pursuant to the terms of the order. Again, owners electing to participate pursuant to a forced pooling order make such an election on a unit basis. Statutory amendments to Okla. Stat., tit. 52, Section 87.1 are proposed in current bills pending before the Oklahoma Legislature, which would alter the unit pooling concept as it would apply to proposals for subsequent horizontal wells pursuant to forced pooling orders. (See H.B. 2177 [2015 Session])

Interstate Oil and Gas Compact Commission
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Pooling and Spacing in Horizontal Well Development

Texas Rules and Regulations

Identification of potential issues, statutory conflicts

- Number of wells allowed within unit

  - Gas wells: Texas allows one well per regulatory lease
  - Oil wells: Texas allows unlimited wells completed in the same field per regulatory lease. All acreage must be contiguous. Each well must comply with drilling unit requirements by assignment of acreage within the base lease/unit to each well
  - Note: for horizontal wells drilling within a shale formation, parallel bores within a specified horizontal displacement are considered one well for purposes of acreage assignment

- Unit size
  - Variable; General rule is 40 acres per well. Many fields have individualized rules in which the minimum standard unit size is determined by drainage characteristics of the reservoir and set out in field rules for the specific field

  - In the absence of a special field rule setting unit size, 16 TAC 3.38(b)(2)(A) sets the size based upon the spacing rules in that field:
    - 150/300 spacing 2 acre units
    - 200/400 spacing 4 acre units
    - 330/660 spacing 10 acre units
    - 330/933 spacing 20 acre units
    - 467/933 spacing 20 acre units
    - 467/1200 spacing 40 acre units
    - 660/1320 spacing 40 acre units

- Minimum percentage ownership required to pool

  - Voluntary pooling of interests is at lessee's discretion based upon the terms of the individual tract leases. The Texas Mineral Interest Pooling Act or "MIPA" [Tex. Nat. Res. Code § 102.001, *et seq*.] does not set a minimum percentage and the Railroad Commission has no regulations setting a minimum percentage ownership

- Timing of WIO and unleased owner's decisions to participate or be pooled

  - Under the MIPA, there is no set time period. However, the applicant seeking compulsory pooling must have made a reasonable voluntary pooling offer before seeking compulsory

pooling and all parties are entitled to at least 30 days advance notice of the hearing on the compulsory pooling application

- Timing of completion of proposed wells
    - There is no statutory deadline for drilling or completing wells. Any deadlines are contractual and contained in the lease, operating agreement or other contractual agreements among the operator, WI, and mineral owners. 16 TAC 3.5 specifies that drilling permits are valid for a period of 2 years from issuance. 16 TAC 3.16 specifies that Completion reports must be submitted within 90 days of completion of the well or within 150 days following cessation of drilling, whichever comes first

- What is pooled and when
    - Voluntary pooling is governed by the lease agreement – there is no statutory limitation on the size or timing of voluntary pooled units. Pooled units approved under the MIPA by the Railroad Commission are limited to the approximate size of a standard unit for a single well in the field for which the MIPA well is proposed

Interstate Oil and Gas Compact Commission
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Pooling and Spacing in Horizontal Well Development

Utah Rules and Regulation

Identification of potential issues, statutory conflicts

- Number of wells allowed within unit
  - One horizontal well per temporary spacing unit. Vertical wells can also be drilled in temporary spacing if 1320 feet from horizontal well bore completed in the same producing formation

- Unit size
  - The temporary spacing unit is 640 acres

- Minimum percentage ownership required to pool
  - None stated in rule. Pooling issues are brought before the board as individual petitions before the Board

- Timing of WIO and unleased owner's decisions to participate or be pooled
  - None stated in rule. Pooling issues are brought before the board as individual petitions before the Board

- Timing of completion of proposed wells
  - Once the well is perforated, the well is considered completed. A completion report must be submitted in 30 days to the Division

- What is pooled and when
  - The horizontal well is shared on a lease basis. Pooling is only obtained once the area is permanently spaced and a pooling order is brought before the Board

Interstate Oil and Gas Compact Commission
Legal and Regulatory Affairs Committee
Pooling and Spacing in Horizontal Well Development

Virginia Rules and Regulations

Identification of potential issues, statutory conflicts

- Number of wells allowed within unit
    - § 45.1-361.17. Statewide spacing of wells
        - *Normally just 1 well per unit
        - Unless prior approval has been received from the Virginia Gas and Oil Board or a provision of the field or pool rules so allows: Two per unit but must maintain a 600 foot spacing between wells

- Unit size
    - Chapter 22.1 – The Virginia Gas and Oil Act
        - *40 acres, 60 acres and 80 acre units for Coalbed methane wells
        - *112 acre unit for conventional wells
        - *Consists of multiple 20 acres units put together horizontally for horizontal wells
        - § 45.1-361.20. Field rules and drilling units for wells; hearings and orders.

A. In order to prevent the waste of gas or oil, the drilling of unnecessary wells, or to protect correlative rights, the Board on its own motion or upon application of the gas or oil owner shall have the power to establish or modify drilling units. Drilling units, to the extent reasonably possible, shall be of uniform shape and size for an entire pool. Any gas, oil, or royalty owner may apply to the Board for the establishment of field rules and the creation of drilling units for the field

- Minimum percentage ownership required to pool
  - The gas or oil owner who is authorized to drill and operate the well; provided, however, that except in the case of coalbed methane gas wells, the designated operators must have the right to conduct operations or have the written consent of owners with the right to conduct operations on at least 25% of the acreage included in the unit

- Timing of WIO and unleased owner's decisions to participate or be pooled
  - After the time for election provided in any pooling order has expired, the unit operator shall file an affidavit with the board stating whether or not any elections were made. If any elections were made, the affidavit shall name each respondent making an election and describe the election made. The affidavit shall state if no elections were made or if any response was untimely. The affidavit shall be accompanied by a proposed supplemental order to be made and recorded to complete the record regarding elections. The affidavit and proposed supplemental order shall be filed by the unit operator within 45 days of the last day on which a timely election could have been delivered or mailed, or within 45 days of the last date for payment set forth in the pooling order, whichever occurs last

- Timing of completion of proposed wells

  *Permits expire within two years if construction is not started

  *No regulation on timing of completing a well

- What is pooled and when

  - For an application to pool a coalbed methane gas unit, a statement of the percentage of the total interest held by the applicant in the proposed unit at the time the application for the hearing is filed.
  - A statement of the names of owners and the percentage of interests to be escrowed under § 45.1-361.21 D of the Code of Virginia for each owner whose location is unknown at the time the application for the hearing is filed
  - A description of the formation or formations to be produced.
  - An estimate of production over the life of well or wells, and, if different, an estimate of the recoverable reserves of the unit
  - An estimate of the allowable costs

- An estimate of production over the life of well or wells, and, if different, an estimate of the recoverable reserves of the unit

Interstate Oil and Gas Compact Commission
Legal and Regulatory Affairs Committee
Pooling and Spacing in Horizontal Well Development

West Virginia Rules and Regulations

Identification of potential issues, statutory conflicts

- Number of wells allowed within unit
    - Not specified as long as the unit acreage conforms and does not exceed 640 acres plus 10%

- Unit size
    - Maximum is 640 acres plus 10%

- Minimum percentage ownership required to pool
    - There is no minimum

- Timing of WIO and unleased owner's decisions to participate or be pooled
    - 30 days

- Timing of completion of proposed wells
    - Drilling permits expire in 2 years if well work has not begun; and there is a five year reclamation period for drilling pad

- What is pooled and when
    - The Oil and Gas Conservation Commission deep well pooling is specific to the formation and unit covering specific lease when requested by operator.

Interstate Oil and Gas Compact Commission
Legal and Regulatory Affairs Committee
Pooling and Spacing in Horizontal Well Development

Wyoming Rules and Regulations

Identification of potential issues, statutory conflicts

- Number of wells allowed within unit – Wyoming Statute 30-5-109 (b) allows for the drilling of one well in establishing a drilling and spacing unit by hearing. After establishing a drilling and spacing unit, operators may file an application for additional wells in the unit and must show, by engineering and geologic exhibits, that the additional wells are necessary to drain the minerals within the drilling and spacing unit. The evidence must show that the drainage of the combined wells is equal to or less than the area of the spacing unit.

- Unit size – Wyoming's statutes do not limit the size of a drilling unit and currently 1280 acres is the largest drilling and spacing unit (horizontal wells). The "default" spacing for horizontal wells is 640 acres by rule (Chapter 3, Section 2) with a 660 ft setback to the exterior boundary of the spacing unit.

- Minimum percentage ownership required to pool – None

- Timing of WIO and unleased owner's decisions to participate or be pooled
  There are no timing constraints but a hearing and Order is necessary to pool separately owned tracts. Parties who are pooled may elect to join in the drilling of the well up to the spud date.

- Timing of completion of proposed wells – After the Order for spacing is approved, there are no deadlines for the drilling of the initial well and any interest owner may file a drilling permit within the spaced area, ie Company "A" applies for the drilling and spacing unit but Company "B" files a drilling permit, which is allowed.

- What is pooled and when – The Force Pooling Order is specific to a formation and is well specific. The party drilling the rule can recover certain costs before the non-consenting party joins in the production of the well including 100% of production equipment costs, 100% of operating costs of the well, 200% of downhole equipment costs and up to 300% of the costs for drilling the well.

Appendix B:

ALABAMA

Spacing

1. Spacing requirements: Rule 400-1-2-.02 (onshore); Rule 400-2-2-.02 (offshore) Rule 400-3-2-.02 (coalbed methane).

   a. Density:

Onshore

Oil wells- 40-acre units

160-acre units (Supervisor may require written justification)

Gas wells- 40-acre units.

160-acre units (Supervisor may require written justification)

320-acre units (Fayette, Lamar, Pickens and Tuscaloosa Counties only)

640-acre units (Baldwin, Mobile, Escambia and Washington Counties only) (Supervisor may require written justification)

All well units shall consist of governmental sections or divisions; however, upon receipt of written justification units consisting of 40, 160, 320, and 640 contiguous acres other than a governmental section or division may be approved by the Supervisor or may be referred to the Board for notice and hearing.

Offshore (for offshore wells in an offshore tract)

Deeper than 6,000 feet- Entire offshore tract, ¾ tract, or ½ tract (where operator owns or controls 100% of working interest in entire offshore tract)

Deeper than 6,000 feet- Up to 1,400 acres (irregular offshore tracts)

6,000 feet or shallower- ½ offshore tract or ¼ tract (where operator owns or controls 100% of working interest in entire offshore tract)

6,000 feet or shallower- Quarter Quarter tract for regular tract and up to 360 acres for irregular tracts

For offshore wells not in an offshore tract- 40-acre units

160-acre units (Supervisor may require written justification)

640-acre units (Baldwin and Mobile Counties, only) (Supervisor may require written justification)

All well units shall consist of governmental sections or divisions; however, upon receipt of written justification units consisting of 40, 160, and 640 contiguous acres other than a governmental section or division may be approved by the Supervisor or may be referred to the Board for notice and hearing.

Coalbed gas- 40 acres

b. Lineal:

Onshore- 40 acre units - 330 feet from every exterior boundary

& 160 and 320 acre units - 660 feet from every exterior boundary

Coalbed 640 acre units - 1,320 feet from every exterior boundary

Offshore Wells deeper than 6,000 feet – 1,320 feet from every exterior boundary and 500 feet from the State/Federal boundary

Wells shallower than 6,000 feet – 660 feet from every exterior boundary and 500 feet from the State/Federal boundary

2. Exceptions: Rule 400-1-2-.02 (2) (g) (onshore), 400-2-2-.02(4) (offshore), 400-3-2-.02(2) (d) coalbed.

   a. Basis: If the well would be nonproductive or if topographical or other conditions make the drilling in compliance with the spacing requirements unduly burdensome. See Section 9-17-12(c) of the Code of Alabama (1975).

   b. Approval: After notice and hearing.

Pooling

1. Authority to establish voluntary: Yes.

2. Authority to establish compulsory: Yes.

Unitization

1. Compulsory unitization of all or part of a pool or common source of supply: Yes.

2. Minimum percentage of voluntary agreement before approval of compulsory unitization:

    a. Working interest: 66 2/3%

    b. Royalty interest: 66 2/3%

ALASKA

Spacing

3. Spacing requirements: Yes, in the absence of an order by the Commission establishing drilling units or prescribing a spacing pattern for a pool, the following statewide spacing requirements apply:

    a. Density: Governmental quarter section for an oil well; governmental section for a gas well.

    b. Lineal: Lineal: An oil well may be open to test or regular production within 500 feet of a property line only if the owner is the same and the landowner is the same on both sides of the line, 1,000' minimum separation from any well drilling to, or capable of producing from, the same pool.

    A gas well may be open to test or regular production within 1,500 feet of a property line only if the owner is the same and the landowner is the same on both sides of the line; 3,000' minimum separation from any well drilling

4. Exceptions: Yes.

    a. Basis: Prevention of waste and protection of the correlative rights of lessees in a pool based on operating and technical data.

    b. Approval: Applicant must file for exception. The Alaska Oil and Gas Conservation Commission must publish notice and hold a hearing if protest is received.

Pooling

3. Authority to establish voluntary: Yes. Owners of oil and/or gas properties may voluntarily pool their separate interests to form a drilling unit.

4. Authority to establish compulsory: Yes, discretionary. If one or more persons owning oil and gas rights fail to voluntarily pool their interests, the Commission upon petition or its own motion and after notice and public hearing will, in its discretion, issue an order pooling the owners' interest for the development of their land as a drilling unit.

Unitization

3. Compulsory unitization of all or part of a pool or common source of supply: Yes.

4. Minimum percentage of voluntary agreement before approval of compulsory unitization:

    a. Working interest: No minimum required.

    b. Royalty interest: No minimum required.

ARIZONA

Spacing

1. Spacing requirements: Yes. A.A.C. R12-7-107.

    c. Density: Minimum acreage for an oil well is 80 acres. Minimum acreage for a gas well is 640 acres.

    d. Lineal: No oil well shall be located closer than 330 feet from the boundary of drilling unit, nor closer than 330 feet to the shortest center line of drilling unit. Gas well no closer than 1,660 feet from section line.

2. Exceptions: Only after approval by Commission following notice and hearing. A.A.C. R12-7-107(F).

    a. Basis: Topographical or geological conditions, and in order to prevent waste.

    b. Approval: Request public hearing to present evidence of necessity, and to give all interested parties a chance to be heard.

Pooling

5. Authority to establish voluntary: Yes.

6. Authority to establish compulsory: Yes. A.A.C. R12-7-107(G); A.R.S. §27-505.

Unitization

5. Compulsory unitization of all or part of a pool or common source of supply: Yes. A.R.S. §27-531.

6. Minimum percentage of voluntary agreement before approval of compulsory unitization:

a. Working interest: 63% exclusive of royalty interest owned by lessees or subsidiaries of lessees.

b. Royalty interest: 63% exclusive of royalty interest owned by lessees or subsidiaries of lessees.

ARKANSAS

Spacing

1. Spacing requirements:

   e. Density: No minimum for oil or gas wells in uncontrolled production areas. In controlled production areas for oil, units are normally 10 to 160 acres with exceptions. In controlled production areas for natural gas, units are normally 640 acre governmental sections with exceptions.

   f. Lineal: Oil well setbacks are variable as specified by field rule. Conventional gas well setbacks are 1320 or 1180 feet, with exceptions, from the unit line based on specific field rule. Unconventional (horizontal shale wells) are 560 feet from the unit line, with exceptions. A minimum of 280' from a governmental division line, lease line or property line for oil or gas wildcat wells and wells drilled in fields not covered by field rules.

2. Exceptions: Yes.

   a. Basis: If a well drilled at a different location is likely to prevent waste or protect correlative rights of owners within the unit, or both.

   b. Approval: A public hearing held and ruling granted by the Commission. Administrative exceptional locations can also be granted, with a notice given to the parties having the right to drill in the unit being encroached, if no objections are filed within 15 days of publication of notice in certain circumstances.

Pooling

7. Authority to establish voluntary: Yes.

8. Authority to establish compulsory: Yes, Act 536 of 1963. Ark. Code Ann § 15-72-303.

Unitization

7. Compulsory unitization of all or part of a pool or common source of supply: Yes.

8. Minimum percentage of voluntary agreement before approval of compulsory unitization:

    a. Working interest: 75%.

    b. Royalty interest: 75% of royalty and overriding interests.

CALIFORNIA

Spacing

1. Spacing requirements: Yes. PRC 3600-3609; see also Code of Regulations 1721-1721.9

PRC CHAPTER 3. SPACING OF WELLS AND COMMUNITY LEASES

3600. Except as otherwise provided in this chapter, any well hereafter drilled for oil or gas, or hereafter drilled and permitted to produce oil or gas, which is located within 100 feet of an outer boundary of the parcel of land on which the well is situated, or within 100 feet of a public street or road or highway dedicated prior to the commencement of drilling of the well, or within 150 feet of either a well being drilled or a well theretofore drilled which is producing oil or gas or a well which has been drilled and is not producing but which is capable of producing oil or gas, is a public nuisance.

3601. Where several contiguous parcels of land in one or different ownerships are operated as a single oil or gas lease or operating unit, the term "outer boundary line" means the outer boundary line of the lands included in the lease or unit. In determining the contiguity of any such parcels of land, no street, road or alley lying within the lease or unit shall be deemed to interrupt such contiguity.

3602. Where a parcel of land contains one acre or more, but is less than 250 feet in width, there may be drilled on the parcel of land not more than one well to each acre of the area if the surface location of any well or wells is so placed as to be as far from the lateral boundary lines of the parcel of land as the configuration of the surface and the existing improvements thereon will permit.

3602.1. Where a parcel of land contains one acre or more and the hydrocarbons to be developed are too heavy or viscous to produce by normal means, and the supervisor so determines, the supervisor may approve proposals to drill wells at whatever locations he deems advisable for the purpose of the proper development of such hydrocarbons by the application of pressure, heat or other means for the reduction of oil viscosity, and such wells shall not be classed as public nuisances after approval by the supervisor.

3602.2. In determining the area of parcels of land for the purposes of this chapter, the area of the oil and gas mineral estate shall be used exclusively.

3603. For the purposes of this chapter, an alley which intersects or lies within any block or other subdivision unit is not a public street or road.

3604. Each day in which the drilling of any well is carried on, or on which it is permitted to produce oil or gas in violation of this chapter is a separate nuisance.

3605. The provisions of this chapter do not apply to any field producing oil or gas on August 14, 1931.

3606. Notwithstanding any other provisions of this chapter, where a parcel of land contains one acre or more and where all or substantially all of the surface of such parcel of land is unavailable for the surface location of oil or gas wells, there may be drilled or produced not more than one well into each acre of such parcel of land, and the surface location of such well may be located upon property which may or may not contain one acre or more of surface area, and the property upon the surface of which the surface location of such well may be located may or may not be contiguous to such parcel of land; provided:

1. No operator shall construct or maintain any derrick within 150 feet of any other derrick, then standing, of such operator unless approved in advance by the supervisor who may, in granting such approval, attach such conditions as are reasonably necessary to carry out the purposes of this chapter.
2. The surface location of such well, as measured from the center of the hole, shall be not less than 25 feet from an outer boundary of the surface of the property upon which such well is located, and shall be not less than 25 feet from any dedicated public street, road or highway which is so dedicated and in such public use at the time of the commencement of drilling of such well.
3. The producing interval of such well shall be not less than 75 feet from an outer boundary of the parcel of land into which such producing interval is drilled, and the producing interval of such well shall be not less than 150 feet, as measured horizontally in the same zone, from the producing interval of any other well which is producing or capable of producing oil or gas. If the parcel of land qualified to be drilled under this section is less than 150 feet in width, the producing interval of such well shall be as far from the lateral boundary lines of the property as is practicable.
To enforce the provisions of this section, the supervisor may require, at the time supervisor gives approval of notice of intention to drill, redrill or deepen, that a subsurface directional survey be made for such well, and that a plat of said directional survey be filed with the supervisor within fifteen (15) days of completion.

3606.1. The 150-foot restriction in Sections 3600 and elsewhere in this chapter shall apply only to wells drilled and producing from the same zone or pool; provided, however, that the well density shall not exceed one well per acre unless the supervisor shall determine that more than one zone or pool underlies the property and that it is not practical to produce from all of such zones or pools from a single well per acre and that such other zones or pools are being drained by offset wells. In such cases only, a maximum density of two wells per acre may be approved. These exceptions to the general spacing rule shall apply also to properties qualifying under Sections 3602 and 3606.

3607. The prohibition set forth in Section 3600 against drilling within 100 feet of any public street or highway shall not apply in the case of any street or highway which is opened through a field in which drilling was commenced prior to the opening of the street or highway.

3608. Where land aggregating less than one acre is surrounded by other lands, which other lands are subject to an oil and gas lease aggregating one acre or more, and if, under the provisions of Sections 3600 to 3607, inclusive, of the Public Resources Code, the drilling or producing of a well on said land is declared to be a public nuisance, said land shall, for oil and gas development purposes and to prevent waste and to protect the oil and gas rights of landowners, be deemed included in said oil and gas lease on

said other lands, and shall be subject to all the terms and provisions thereof, when the State Oil and Gas Supervisor has caused to be recorded with the county recorder of the county in which said land aggregating less than one acre is located a declaration as hereinafter provided. A request for inclusion of surrounded land aggregating less than one acre may be filed with the supervisor at any time by either the lessee of such other lands or by the owner or lessee of such surrounded land or the supervisor may act upon his own motion. Before filing such request the lessee of such other lands shall make a reasonable effort to include each parcel of surrounded land, within the oil and gas lease upon such other lands.

There shall be attached to such request a statement which shall set forth the name or names of the record owner or record owners of said land aggregating less than one acre which is to be included in said oil and gas lease on said other lands, the legal description of said land aggregating less than one acre, name of the lessee of the oil and gas lease in which such land is to be included, and a reference to the book and page of the official records of the county recorder where such oil and gas lease is recorded or a reference o the document number and date of recordation of such oil and gas lease. Within 20 days following receipt of such request and attached statement, the supervisor shall cause to be recorded with the county recorder of the county in which said land aggregating less than one acre is located, a declaration, signed by him or his assistant or deputy, that said land is deemed by the provisions of this section to be included in said oil and gas lease on said other lands. Such declaration shall set forth the same information required to be set forth in the statement attached to the request, and a copy thereof shall be mailed or otherwise delivered by the supervisor to the lessee. The county recorder shall accept such declaration for recordation and shall index such declaration in the names of all persons or corporations mentioned therein. From the time of recording thereof in the office of the county recorder such notice shall impart constructive notice of the contents thereof to all persons dealing with the land therein described.

The owners of the oil and gas mineral rights in said land so deemed included in said oil and gas lease on said other lands, as herein provided, shall thereafter receive in money, based upon the production of oil and gas from the leasehold including said land or land unitized or pooled therewith, a pro rata share of the landowners' royalty determined in accordance with the provisions of said oil and gas lease in the proportion that the area of said land bears to the aggregate of the total area covered by said oil and gas lease including the area of said land or as otherwise provided in said lease; provided further, that said owners of said oil and gas mineral rights in said land shall in no case receive less than their pro rata share determined, as herein provided, of the value of one-eighth part of the oil and gas produced, saved and sold from or allocated to the operating unit comprising said leasehold on said other lands and said land, computed in accordance with the provisions of said oil and gas lease with respect to the computation of landowners' royalty; provided further that upon recordation of the statement by the supervisor, the owners of such oil and gas mineral rights in such land shall also receive a pro rata share of any other benefits thereafter accruing to the owners of the oil and gas mineral rights under the terms of the oil and gas lease on such other lands; and provided further, that without the consent of said owners of said land the lessee or operator of said oil and gas leasehold shall have no right to use the surface of said land nor to use the subsurface thereof down to a depth of 200 feet below the surface thereof.

Where said land aggregating less than one acre is surrounded by lands which are not subject to a single oil and gas lease but is surrounded by lands which are subject to two or more separate oil and gas leases, one or more of which oil or gas leases aggregates one acre or more, then in such event the said land aggregating less than one acre shall, as herein provided, be included within and be joined to that oil and gas lease aggregating one acre or more as to which said parcel of land aggregating less than one acre has the longest common boundary. If there is no longest common boundary, the request shall designate the lease, aggregating one acre or more, into which the parcel aggregating less than one acre shall be included by the declaration of the supervisor; otherwise the supervisor shall make such designation.

In determining the contiguity of any parcels of land for the purposes hereof, no road, street or alley shall be deemed to interrupt such contiguity.

3608.1. The owner or operator of any leasehold, into which land has been included under the provisions of Section 3608, shall cause to be recorded an appropriate quitclaim to such land in the proper county recorder's office when such leasehold has been terminated.

3609. Notwithstanding any other provisions of this chapter, if the supervisor determines, pursuant to rules and regulations and after a public hearing, that the development of a pool discovered after the effective date of this section for the production of oil and gas, or either, requires the adoption of a well-spacing pattern other than that specified in Sections 3600 to 3608.1, inclusive, in order to prevent waste and to increase the ultimate economic recovery of oil or gas, he may adopt a well-spacing plan to apply to the surface and subsurface of a designated pool. Such plan shall be applicable to all wells thereafter drilled or redrilled into such pool. Such plan may include a requirement that, as a prerequisite to approval to drill or redrill a well, all or certain specified parcels of land shall be included in a pooling or unit agreement. The supervisor may provide in the rules and regulations for mandatory pooling agreements in connection with the well-spacing order.

a. Density: One well per acre for fields producing after August 14, 1931, or as approved or ordered by the Supervisor for pools discovered after Jan. 1, 1974. PRC 3602, 3605.

b. Lineal: See PRC 3600-3606.1 does not apply to fields producing on August 14, 1931. Applies to both oil and gas wells.

2. Exceptions:

a. Basis: For drilling islands and developing heavy hydrocarbons that necessitate closer well spacing. PRC 3602.1.

b. Approval: Through appeal to the State Oil and Gas Supervisor. PRC 3602.1.

Pooling

9. Authority to establish voluntary: Yes

10. Authority to establish compulsory: Under certain conditions (following petition to adopt a well-spacing plan other than that stated in PRC 3600-3608.1).

Unitization

1. Compulsory unitization of all or part of a pool or common source of supply: Yes, provisions as described in PRC 3630-3659. (For areas located in fields that have been producing for more than 20 years only.)

2. Minimum percentage of voluntary agreement before approval of compulsory unitization:

c. Working interest: 75%

d. Royalty interest: 75%

FLORIDA

Spacing

1. Spacing requirements:

    g. Density: 40 acres (≤7000 ft) and 160 acres (>7000 ft) for oil wells and 640 acres for gas wells.

    h. Lineal: Longest diagonal (of other than a square unit) may not exceed length of diagonal of a square of same size unit by more than 25% for both oil and gas wells.

2. Exceptions:

    a. Basis: 10% of size of unit designated.

b. Approval: Director, Division of Water Resource Management, Florida Department of Environmental Protection.

Pooling

11. Authority to establish voluntary: Yes.

12. Authority to establish compulsory: Yes.

Unitization

9. Compulsory unitization of all or part of a pool or common source of supply: Yes.

10. Minimum percentage of voluntary agreement before approval of compulsory unitization:

    a. Working interest: 75%

    b. Royalty interest: 75%

GEORGIA

Spacing

5. Spacing requirements: Flexible; to insure public safety at well or to maximize production; refer to Rules and Regulations.

    a. Density: Flexible.

    b. Lineal: Flexible.

6. Exceptions: Yes.

    a. Basis: Adequate technical justification.

    b. Approval: By the Director of the Environmental Protection Division.

Pooling

13. Authority to establish voluntary: Yes.

14. Authority to establish compulsory: Yes.

Unitization

11. Compulsory unitization of all or part of a pool or common source of supply: N/A at present; but rules and regulations provide for compulsory unitization.

12. Minimum percentage of voluntary agreement before approval of compulsory unitization:

    a. Working interest: N/A.

    b. Royalty interest: N/A.

IDAHO

Spacing

7. Spacing requirements

    a. Density: Oil well default spacing is one well per 40 acres. Gas well default spacing is one well per 640 acres.

    b. Lineal: Oil well is 920 foot minimum. Gas well has not analogous minimum linear distance.

8. Exceptions

    a. Basis: Discretion of the Commission based on presentation of good cause by applicant.

b. Approval: Application to be filed with Commission. Must show reason for exception request, and show consent by the owners of all drilling units (established or projected) directly or diagonally offsetting the drilling unit involved with the exception.

Pooling

15. Authority to establish voluntary: Title 47, Chapter 3, Idaho Code, Section 47-322.

16. Authority to establish compulsory: Title 47, Chapter 3, Idaho Code, Section 47-322.

Unitization

13. Compulsory unitization of all or part of a pool or common source of supply: Title 47, Chapter 3, Idaho Code, Section 47-322.

14. Minimum percentage of voluntary agreement before approval of compulsory unitization:

a. Working interest: N/A

b. Royalty interest: N/A

ILLINOIS

Spacing

9. Spacing requirements

a. Density: Oil - 10 acres for an oil well in a sandstone, 20 acres for an oil well in limestone, 40 acres for an oil well deeper than 4,000 feet. Gas - 10 acres for a gas well in a sandstone, 20 acres for a gas well in a limestone, 40 acres over 2,000 feet but less than 5,000 feet, 160 acres over 5,000 feet for discovery well, offset well spacing set by hearing.

b. Lineal: For an oil or gas well not less than 330 feet from the nearest external boundary lines of the drilling unit.

10. Exceptions

a. Basis: Topographical conditions, irregular section, secondary recovery operations, location over mine, or geological conditions.

b. Approval: Administratively after verification of submitted information or by hearing depending on basis stated above.

Pooling

17. Authority to establish voluntary: Yes

18. Authority to establish compulsory: No

Unitization

15. Compulsory unitization of all or part of a pool or common source of supply: No

16. Minimum percentage of voluntary agreement before approval of compulsory unitization:

    a. Working interest: 51%

    b. Royalty interest: 51%

INDIANA

Spacing

11. Spacing requirements: Yes

    a. Density: Oil well - 10 acres for sandstone and 20 acres for all other reservoirs except wells in the established Trenton formation which allow 5 acre spacing. Gas well - above 1,000 feet same as above; below 1,000 feet, 40 acres. Coal bed methane well – 40 acres.

    b. Lineal: Oil wells and Coal bed methane wells - 330 feet from a property or unit line; 660 feet from another well producing from the same formation. Gas well - above 1,000 feet same as oil; below 1,000 feet, 330 feet from a property or unit line and 1,320 feet

from another well. Non Commercial Gas well - no spacing or unit requirements. Established Trenton field wells 165 feet from property or unit line.

12. Exceptions: Yes

    a. Basis: When geological and pool conditions justify.

    b. Approval: By hearing.

Pooling

19. Authority to establish voluntary: Yes

20. Authority to establish compulsory: Yes

Unitization

17. Compulsory unitization of all or part of a pool or common source of supply: Yes

18. Minimum percentage of voluntary agreement before approval of compulsory unitization: None

    a. Working interest:

    b. Royalty interest:

KANSAS

Spacing

1. Spacing requirements:

    c. Density: Ten acres for oil and gas wells. K.A.R. 82-3-207 and 82-3-312.

    d. Lineal: Gas and oil wells shall be located 330' or more from any lease or unit boundary line to qualify for a full allowable. K.A.R. 82-3-108, 82-3-207 and 82-3-312. Also see Appendix I, Table B, EASTERN SURFACE CASING Order #133,891-C which requires notification to owners of water wells within 660 feet of an existing domestic or municipal water well.

2. Exceptions:

a. Basis: Oil wells drilled to a depth of less than 2,000 feet in certain counties in eastern Kansas have a lineal distance requirement of 165 feet from the nearest lease or unit boundary line. K.A.R. 82-3-108. Other exceptions to spacing requirements maybe granted by Commission order after notice of the application and possible hearing. K.A.R. 82-3-108.

b. Approval: Commission order. Hearing if needed after notice. K.A.R. 82-3-108.

Pooling

21. Authority to establish voluntary: Yes. Terms of contract (lease).

22. Authority to establish compulsory: No.

Unitization

19. Compulsory unitization of all or part of a pool or common source of supply: Yes, upon application of working interest owner, notice, and hearing. K.S.A. 55-1300 *et seq*.

20. Minimum percentage of voluntary agreement before approval of compulsory unitization:

a. Working interest: 63%

b. Royalty interest: 75% for efficient management; 63% for secondary recovery units.

KENTUCKY

Spacing

KRS 353.610

1. Spacing requirements:

e. Density:

7.85 acres for shallow oil wells in coal area
18.03 acres for shallow gas well spacing

Deep Wells: As established by Kentucky Oil and Gas Conservation Commission, or in lieu of approved spacing as follows:
70 acres for oil wells between 4,000-7,000 feet
281 acres for gas wells between 4,000-7,000 feet
143 acres for oil wells deeper than 7,000 feet
574 acres for gas wells deeper than 7,000 feet

f. Lineal:

Oil well (non-coal area & less than 2000 feet) - 400 feet between wells and 200 feet from mineral boundary. Oil well (coal areas and wells in non-coal area between 2000 feet and 4000 feet) - 660 feet between wells and 330 feet from mineral boundary.

Gas well - 1,000 feet between wells and 500 feet from mineral boundary for gas wells less than 4,000 feet deep. Varies with depth and geographic area.

2. Exceptions: Yes, KRS 353.620.

   a. Basis: For tracts that are so situated that they have no drillable site.

   b. Approval: By notice and hearing.

Pooling

KRS 353.630

23. Authority to establish voluntary: Yes.

24. Authority to establish compulsory: Yes.

Unitization

KRS 353.630

21. Compulsory unitization of all or part of a pool or common source of supply: Yes.

22. Minimum percentage of voluntary agreement before approval of compulsory unitization:

   a. Working interest: 51%

   b. Royalty interest: 51%

LOUISIANA

Spacing

1. Spacing requirements:

    a. Density: No minimum acreage requirements for oil or gas wells.

    b. Lineal: Statewide Order No. 29-E (LAC 43:XIX.1901) applies and states that wells drilled in search of gas shall not be located closer than 330 feet to any property line nor closer than 2,000 feet to any other well completed in, drilling to, or for which a permit shall have been granted to drill to, the same pool.

2. Where Statewide Order No. 29-E (LAC 43:XIX.1901) is applicable, no spacing shall be required for oil wells drilled in search of oil to depths less than 3,000 feet subsea. Wells drilled in search of oil to depths below 3,000 feet subsea shall not be located closer than 330 feet from any property line nor closer than 900 feet from any other well completed in, drilling to, or for which a permit shall have been granted to drill to, the same pool.

3. Statewide Order No. 29-H, applicable to "new" pools, has been terminated by Statewide Order No. 29-H-1. Spacing previously developed under Statewide Order No. 29-H will be regulated by Statewide Order No. 29-E. Any special order which adopted the spacing requirements of Statewide Order No. 29-H has been amended requiring the spacing provisions of Statewide Order 29-E (LAC 43:XIX.1901).

4. Exceptions: Yes.

    a. Basis: Refer to Statewide Order No. 29-E (LAC 43:XIX.1901).

b. Approval: By letter setting forth all pertinent facts and reasons why granting the exception is necessary.

Pooling

1. Authority to establish voluntary: No.

2. Authority to establish compulsory: Yes.

Unitization

1. Compulsory unitization of all or part of a pool or common source of supply: Yes.

2. Minimum percentage of voluntary agreement before approval of compulsory unitization:

    a. Working interest: None, however, 75% - if the unit is created under the provisions of LSA-RS-30:5C (multi-well or enhanced recovery).

    b. Royalty interest: None, however, 75% - if the unit is created under the provisions of LSA-RS-30:5C (multi-well or enhanced recovery).

MARYLAND

Spacing

1. Spacing requirements: Yes.

    g. Density: No proration units formed in Maryland for oil -- only voluntary units for gas.

    h. Lineal: 2,000 ft. from existing gas well, 1,320 ft. from existing oil well, 1,000 ft. from property line, 1,000 ft. from any occupied house, school, church, public building or place of public meeting for both oil and gas wells, 26.19.01.09 (C,D,E,F & G) and 26.19.08.06, Code of Maryland Regulations (CMR) and Section 14-112(a),(b)(c), PLM. Drilling prohibited in the Chesapeake Bay or its tributaries 26.19.01.09(A).

2. Exceptions: Yes. 26.19.01.09 (C, D, E, F & G), CMR.

    a. Basis: No permit will be issued to drill a well within 1,000 ft. of the boundary of a tract of land or the boundary of tracts of land included in a pooling agreement or within 1,000 ft. from any occupied dwelling house, school, church, public building or place of public meeting unless the permit holder has made a satisfactory written agreement with the oil and gas owner and lessee of such adjacent land or building. The Department may issue a permit to drill a well within 1,000 ft. of a boundary of a tract of land if it is impossible to locate a well 1,000 ft. or more from the boundaries of the tract.

    b. Approval: Following notice and hearing by the Department.

Pooling

25. Authority to establish voluntary: Yes. Section 14-113, PLM.

26. Authority to establish compulsory: No.

Unitization

23. Compulsory unitization of all or part of a pool or common source of supply: No.

24. Minimum percentage of voluntary agreement before approval of compulsory unitization:

    a. Working interest: N/A

    b. Royalty interest: N/A

MICHIGAN

Spacing

1. Spacing requirements: Minimum 40-acre drilling unit conforming to governmental surveyed quarter-quarter section of land. Wells located approximately 1,320 feet apart. R 324.301.

    i. Density: Oil well - 40 acres. Gas well - 40 acres. R 324.301.

    j. Lineal: Oil well - 1,320 feet. Gas well - 1,320 feet. R 324.301(b).

2. Exceptions: Yes. R 324.301(2) and R 324.303.

    a. Basis: Evidence and testimony.

    b. Approval: By order of the Supervisor of Wells pursuant to a public hearing, or pursuant to the voluntary pooling provisions of R 324.303.

Pooling

27. Authority to establish voluntary: Yes. R 324.303.

28. Authority to establish compulsory: Yes. A public hearing is necessary. R 324.304.

Unitization

25. Compulsory unitization of all or part of a pool or common source of supply: Yes. Part 617, Unitization, of NREPA.

26. Minimum percentage of voluntary agreement before approval of compulsory unitization: (Section 61706 of the NREPA.).

    a. Persons liable for 75 percent of costs and owners of 75 percent of royalty production.

    b. Persons entitled to 75 percent of all production proceeds and owners of 50 percent of royalty production.

    c. Persons entitled to 90 percent of all production (Section 61706 of the NREPA.).

MISSOURI

Spacing

1. Spacing requirements: Yes.

    k. Density: 10 CSR 50-2.070

    Oil - 2.5 acres; may be exempted for oil pools as approved by State Geologist

    Gas – 640 acres; may be excepted if less than 1500 feet deep to producing formation.

    l. Lineal: 10 CSR 50-2.070

    Oil well - 165 feet from lease boundary or property line.

    Gas well - 234 feet from lease boundary or property line.

    Noncommercial gas well – 165 from lease line.

2. Exceptions: Yes. 10 CSR 50-2.070.

    a. Basis: To protect against offset drainage from wells drilled prior to enactment of Chapter 259 RSMo. and special project development.

    b. Approval: Upon application to the State Geologist who is administrator. 10 CSR 50-2.070.

Pooling

29. Authority to establish voluntary: 10 CSR 50-2.040.

30. Authority to establish compulsory: 10 CSR 50-5.010.

Unitization

27. Compulsory unitization of all or part of a pool or common source of supply: Yes. 10 CSR 50-5.010.

28. Minimum percentage of voluntary agreement before approval of compulsory unitization: Chapter 259.120 RSMo.

    a. Working interest: 75%

    b. Royalty interest: 75%

NEBRASKA

Spacing

13. Spacing requirements

    a. Density: 40-acres per well statewide.

    b. Lineal: No closer than 500 feet to 40-acre legal subdivision line for oil or gas wells deeper than 2,500'. No closer than 300 feet to 40-acre legal subdivision for wells less than 2,500'.

14. Exceptions

    a. Basis: Topographical, irregular sections, geological or geophysical considerations.

    b. Approval: Administrative if all owners within 500 feet of proposed well approve, or by public hearing. Production may be limited to protect correlative rights.

Pooling

31. Authority to establish voluntary: Yes.

32. Authority to establish compulsory: Yes.

Unitization

29. Compulsory unitization of all or part of a pool or common source of supply: Yes.

30. Minimum percentage of voluntary agreement before approval of compulsory unitization:

    a. Working interest: 65%

    b. Royalty interest: 75%

NEVADA

Spacing

15. Spacing requirements: Yes.

    a. *Density:

    Oil well - 5,000' or less: 40 acres - not less than 330' from boundary of quarter-quarter section. Oil well - more than 5,000': 160 acres - not less than 330' from boundary of quarter section. Gas well - 5,000' or less: 160 acres - not less than 660' from boundary of quarter section.

    Gas well - more than 5,000': 640 acres - not less than 990' from boundary of section.

    b. Lineal: Determined after hearing.

    *The spacing requirements do not apply to federal units, working interest agreements, and areas subject to existing orders.

16. Exceptions: Yes.

    a. Basis: Protection of correlative rights of lessees, location may be nonproductive, or topographical conditions.

    b. Approval: By hearing after proper notice and order issued by the Division.

Pooling

33. Authority to establish voluntary: Yes.

34. Authority to establish compulsory: Yes.

Unitization

31. Compulsory unitization of all or part of a pool or common source of supply: Yes.

32. Minimum percentage of voluntary agreement before approval of compulsory unitization:

    a. Working interest: 62.5%

    b. Royalty interest: 62.5%

NEW MEXICO

Spacing

1. Spacing requirements: Yes. Rule 19.15.15 NMAC, or special pool rules, unless otherwise specified by special pool rules.

    c. Density: 40 acres for an oil well. SE gas: 160 acres to Top Wolfcamp and 320 acres (with 2 wells allowed per 320-acre unit) Wolfcamp and older. NW gas: 160 acres to base of the Dakota and 640 acres below the Dakota. All other areas 160- acre gas.

    d. Lineal: 330 feet from spacing unit boundary. Gas: 660 feet from spacing unit boundary 10 feet from any quarter/quarter line in a 160 acre or 320 acre unit; NW gas: 1200 feet from unit boundary, 130 feet from any quarter line and 10 feet from any quarter/quarter line in a 640-acre unit.

2. Exceptions: Yes.

    a. Basis: When necessary to prevent waste or protect correlative rights. Rule 19.15.15.13 NMAC . Water floods and pressure maintenance. Rule 19.15.26.8 NMAC.

    b. Approval: District Offices for waterfloods and pressure maintenance; Administrative for other reasons. Any application may be set for hearing.

Pooling

35. Authority to establish voluntary: Yes.

36. Authority to establish compulsory: Yes for separate tracts or undivided interests within a spacing unit. NMSA 1978, § 70-2-17 and 70-2-18, Rule 19.15.13 NMAC.

Unitization

33. Compulsory unitization of all or part of a pool or common source of supply: For secondary recovery and pressure maintenance only. NMSA 1978, § 70-7-1 through 70-7-21.

34. Minimum percentage of voluntary agreement before approval of compulsory unitization:

    a. Working interest: 75%

    b. Royalty interest: 75%

NEW YORK

Spacing

1. Spacing requirements: Yes

e. Density:

Gas wells outside of pre-1995 fields which are not being extended:

(1) Medina or shale, any depth: 40 acres +/- 10%.

(2) Onondaga reef or Oriskany, any depth: 160 acres +/- 10%.

(3) Fault-bounded Trenton and/or Black River hydrothermal dolomite, 4000 - 8000 feet deep: 320 acres +/- 10%.

(4) Fault-bounded Trenton and/or Black River hydrothermal dolomite, deeper than 8000 feet:

640 acres +/- 5%.

(5) All other pools, less than 4000 feet deep: 80 acres +/- 10%.

(6) All other pools, 4000 - 6000 feet deep: 160 acres +/- 10%.

(7) All other pools, 6000 - 8000 feet deep: 320 acres +/- 10%.

(8) All other pools, deeper than 8000 feet: 640 acres +/- 5%.

All other non-exempt fields, pools or wells: 40 acres or in the center of a circle of radius 660 feet, subject to change under provision of a spacing order.

f. Lineal:

Gas wells outside of pre-1995 fields which are not being extended:

(1) Medina or shale, any depth: 660 feet from any unit boundary.

(2) Onondaga reef or Oriskany, any depth: 660 feet from any unit boundary.

(3) Fault-bounded Trenton and/or Black River hydrothermal dolomite, 4000 - 8000 feet deep: one-half mile from any other well in another unit in the same pool and no less than

1000 feet from any unit boundary that is not defined by a field-bounding fault and in no even less than 660 feet from any unit boundary.

(4) Fault-bounded Trenton and/or Black River hydrothermal dolomite, deeper than 8000 feet: one mile from any other well in another unit in the same pool and no less than 1500 feet from any unit boundary that is not defined by a field-bounding fault and in no even less than 660 feet from any unit boundary.

(5) All other pools, less than 4000 feet deep: 660 feet from any unit boundary.

(6) All other pools, 4000 - 6000 feet deep: 660 feet from any unit boundary.

(7) All other pools, 6000 - 8000 feet deep: 1000 feet from any unit boundary.

(8) All other pools, deeper than 8000 feet: 1500 feet from any unit boundary.

All other non-exempt fields, pools, or wells: 660 feet from the boundary line of any lease or unit and 1,320 feet from any other producing well completed or being drilled to the same pool.

2. Exceptions: Yes

   a. Basis: Reasonable exceptions to protect correlative rights and prevent waste.

   b. Approval:

      Gas wells outside of pre-1995 fields which are not being extended: A spacing order is required before the well permit may be issued. The Order may be issued after notice and a comment period, without a hearing, if no substantive and significant issues are raised. A hearing will be scheduled if the Department determines that a substantive and significant issue has been raised in a timely manner.

      Approval, all other non-exempt fields, pools or wells: May be granted administratively after proper notice and if no objections are filed. A public hearing is required if a substantive and significant dispute exists.

Oil fields or pools discovered, developed and operated prior to 1/1/81 are exempt from spacing requirements.

Underground gas storage wells, solution salt mining wells, brine disposal wells, stratigraphic wells and geothermal wells are exempt from spacing requirements.

Pooling

37. Authority to establish voluntary: Yes.

38. Authority to establish compulsory: Yes.

Unitization

35. Compulsory unitization of all or part of a pool or common source of supply:

36. Minimum percentage of voluntary agreement before approval of compulsory unitization: Yes.

    a. Working interest: 60%

    b. Royalty interest: 60%

NORTH DAKOTA

17. Spacing requirements: NDAC Section 43-02-03-18. Within 30 days after oil or gas is discovered in a pool not covered by an order of the Commission, a spacing hearing is docketed. In the absence of an order of the Commission, the general spacing regulations are as follows:

    a. Density (vertical or directional oil well): 40 acres for vertical or directional oil wells drilled and projected no deeper than the Mission Canyon Formation; 160 acres for vertical or directional oil wells drilled or projected deeper than the Mission Canyon Formation; 160 acres for gas wells.

    b. Lineal (vertical or directional oil well): Not less than 500 feet from the 40-acre drilling unit boundary for vertical or directional oil wells no deeper than the Mission Canyon Formation and not less than 660 feet from the 160-acre drilling unit boundary for vertical or directional oil wells deeper than the Mission Canyon Formation. Not less than 500 feet to any 160-acre drilling unit boundary for gas wells projected no deeper than the Mission Canyon Formation and not less 660 feet to any 160-acre drilling unit boundary for gas wells projected deeper than the Mission Canyon Formation.

    c. Density (horizontal oil wells): 320 and 640 acres for horizontal oil wells.

    d. Lineal (horizontal oil wells): Not less than 500 feet from the 320 or 640-acre drilling unit boundary for horizontal oil wells.

    e. Density (gas wells): 160 acres for gas wells.

    f. Lineal (gas wells): Not less than 500 feet from the 160-acre drilling unit boundary for gas wells drilled or projected no deeper than the Mission Canyon Formation; not less than 660 feet from the 160-acre drilling unit boundary for gas wells drilled or projected deeper than the Mission Canyon Formation.

18. Exceptions: Yes—NDAC Section 43-02-03-18.1.

a. Basis: Surface conditions require or well at proper location would not produce in paying quantities, also, in order to protect correlative rights, prevent waste, or effect greater ultimate recovery of oil and gas.

b. Approval: By order of the Commission after notice and hearing.

Pooling

39. Authority to establish voluntary: Yes—NDCC Section 38-08-08 and NDAC Section 43-02-03-16.3.

40. Authority to establish compulsory: Yes—Section 38-08-08 and NDAC Section 43-02-03-16.3.

Unitization

37. Compulsory unitization of all or part of a pool or common source of supply: Yes—NDCC Section 38-08-09.1.

38. Minimum percentage of voluntary agreement before approval of compulsory unitization: NDCC Section 38-08-09.5.

a. Working interest: 60%

b. Royalty interest: 60%

OHIO

Spacing

1. Spacing requirements: Rule 1501: 9-1-04 O.A.C. No distinction is made between oil wells or gas wells. The general spacing regulations are as follows:

   a. Density:
      a) Wells drilled to a pool from zero to 1,000 feet in depth require a subject tract or drilling unit containing not less than one acre.
      b) Wells drilled to a pool from 1,000 to 2,000 feet in depth require a subject tract or drilling unit containing not less than 10 acres.
      c) Wells drilled to a pool from 2,000 to 4,000 feet require a subject tract or drilling unit containing not less than 20 acres.
      d) Wells drilled to a pool from 4,000 feet or deeper require a subject tract or drilling unit containing not less than 40 acres.

   b. Lineal: (note these correlate with the above density categories)
      a) Well must be located not less than 200 feet from any well drilling to, producing from, or capable of producing from the same pool. Well must be located not less than 100 feet from any boundary of the subject tract or drilling unit. (0 to 1,000 feet in depth)
      b) Well must be located not less than 460 feet from any well drilling to, producing from, or capable of producing from the same pool. Well must be not less than 230 feet from any boundary of the subject tract or drilling unit. (1,000 to 2,000 feet in depth)
      c) Well must be located not less than 600 feet from any well drilling to, producing from, or capable of producing from this same pool. Well must be located not less than 300 feet from any boundary of the subject tract or drilling unit. (2,000 to 4,000 feet in depth)
      d) Well must be located not less than 1,000 feet from any well drilling to, producing from, or capable of producing from the same pool. Well must be located not less than 500 feet from any boundary of the subject tract or drilling unit. (4,000 feet or deeper)

2. Exceptions:

c. Basis: For offset wells and if an applicant can demonstrate that such exception will protect correlative rights and/or promote conservation by permitting oil and gas to be produced which could not otherwise be produced.

d. Approval: Exceptions can be granted by the Chief. Establishing temporary minimum well spacing in vicinity of discovery wells. Rule 1501: 9-1-04 (D) O.A.C. requires approval of the Technical Advisory Council.

Pooling

41. Authority to establish voluntary: Yes. Section 1509.26 O.R.C.

42. Authority to establish compulsory: Yes. Section 1509.27 O.R.C.

Unitization

39. Compulsory unitization of all or part of a pool or common source of supply: Yes, Section 1509.28 O.R.C.

40. Minimum percentage of voluntary agreement before approval of compulsory unitization:

    a. Working interest: 65%

    b. Royalty interest and fee owners: 65%

OKLAHOMA

Spacing

1. Spacing requirements: Not mandatory. If desired, upon application, notice (to each person or governmental entity having the right to participate in production from the proposed drilling and spacing unit or the existing drilling and spacing unit and publication notice in a newspaper of general circulation published in Oklahoma County and in each county in which lands embraced in the application are located) and hearing. See Okla. Stat. Tit. 52 § 87.1 and OAC 165:5-7-6. Standard square drilling and spacing units: 10, 40, 160, or 640 acres. Standard rectangular drilling and spacing units: 20, 80 or 320 acres. See OAC 165:10-1-22. Drilling additional well(s) into a drilling and spacing unit is permitted only after notice and hearing. The Commission may establish drilling and spacing units not to exceed 640 acres in size regarding reservoir dewatering to extract oil from reservoirs having initial water saturations at or above 50%. Okla. Stat. Tit. 52 § 87.1. See OAC 165:10-15-18 regarding production tests and reports for reservoir dewatering oil spacing units.

    a. Density: Permitted well locations-the center of the unit for any standard square drilling and spacing unit. The permitted well locations within standard rectangular drilling and spacing units shall be the centers of alternate square tracts constituting the units (alternate halves of the units). Well will be deemed drilled at the permitted location if drilled within the following tolerance areas: (i) Not less than 165 feet from the boundary of any standard 10-acre drilling and spacing unit or the proper square 10-acre tract within any standard 20-acre drilling and spacing unit. (ii) Not less than 330 feet from the boundary of any standard 40-acre drilling and spacing unit or the proper square 40-acre tract within any standard 80-acre drilling and spacing unit. (iii) Not less than 660 feet from the boundary of any standard 160-acre drilling and spacing unit or the proper square 160-acre tract within any standard 320-acre drilling and spacing unit. (iv) Not less than 1320 feet from the boundary of any standard 640-acre drilling and spacing unit. See OAC 165:10-1-21, OAC 165:10-1-24, OAC 165:10-1-26, OAC 165:5-7-9, OAC 165:5-15-4 and OAC 165:5-15-6 regarding permitted well locations and well location exceptions, and OAC 165:10-1-27, OAC 165:5-7-10 and OAC 165:5-15-5 pertaining to increased density wells.

    b. Lineal: A horizontal well is a well drilled, completed, or recompleted with one or more laterals in a common source of supply in a manner in which, for at least one lateral, the horizontal component of the completion interval in the common source of supply exceeds the vertical component thereof and the horizontal component extends a minimum of 150 feet in the formation. For information concerning horizontal well units, horizontal well unitizations, multiunit horizontal wells, well location requirements, determination of unit size and

allowable, horizontal well spacing requirements, etc. refer to OAC 165:10-3-28, OAC 165:10-5-5, OAC 165:5-7-6, OAC 165:5-7-6.1, OAC 165:5-7-6.2, OAC 165:5-7-27 and OAC 165:5-15-3. See also the 2011 Shale Reservoir Development Act in Okla. Stat. Tit. 52 §§ 87.6 through 87.9.

2. Exceptions

   a. Basis: To prevent waste, protect correlative rights, to encounter the edge of a known producing reservoir, or because of surface obstructions.

   b. Approval: Upon application, notice (including written notice to offset operators and working interest owners toward whom the location is to be moved) and hearing. An allowable penalty may be imposed.

Pooling

1. Authority to establish voluntary: Yes, by private contract.

2. Authority to establish compulsory: Yes, for owners of the right to drill who cannot agree as to how the unit should be developed. Spacing is a prerequisite. Okla.Stat.Tit.52 § 87.1(e). See OAC 165:5-7-7, OAC 165:5-15-3 and OAC 165:10-25-1, et seq.

Unitization

1. Compulsory unitization of all or part of a pool or common source of supply: For enhanced recovery, see Okla. Stat. Tit. 52 § 287.1 et seq., OAC 165:5-7-20 and OAC 165:5-15-2. Regarding horizontal well unitization for a shale reservoir, see Okla. Stat. Tit. 52 § 87.6 et seq., OAC 165:10-3-28 and OAC 165:5-7-6.1.

2. Minimum percentage of voluntary agreement before approval of compulsory unitization.

   For enhanced recovery:

   a. Working interest: Not less than 63% by lessees of record of the unit area affected thereby.

   b. Royalty interest: Not less than 63% by owners of record (exclusive of royalty interests owned by lessees or by subsidiaries of any lessee) of the normal 1/8 royalty interest in and to the unit area.

   For horizontal well unitizations for a shale reservoir:

   a. Working interest: Not less than 63% by lessees of record in the shale reservoir in the area to be included in the unit.

b. Royalty interest: Not less than 63% by owners of record, exclusive of royalty interests owned by lessees or by subsidiaries of any lessee, of the 1/8 royalty interest in the shale reservoir in the area to be included in the unit.

3. Unitized management of a common source of supply-brine and associated gas. See OAC 165:5-7-21.

OREGON

Spacing

1. Spacing requirements: Yes.

   e. Density: 1 well/160 ac. In the mist gas field, no spacing requirement in wildcat area. Spacing units are set when a discovery is made.

   f. Lineal:

2. Exceptions:

   a. Basis: Based on geologic data showing the actual size of the pool at depth.

   b. Approval: Board approved.

Pooling

43. Authority to establish voluntary: Yes. ORS § 520.240.

44. Authority to establish compulsory: Yes. OAR § 632-10-161, ORS § 520.220.

Unitization

41. Compulsory unitization of all or part of a pool or common source of supply: Yes.

42. Minimum percentage of voluntary agreement before approval of compulsory unitization: Board approved, field specific.

    a. Working interest: N/A

    b. Royalty interest: N/A

PENNSYLVANIA

Spacing

19. Spacing requirements: Act 13: None. 58 Pa.C.S. § 3215 contains well location restrictions, including a setback from certain water wells, structure, and water bodies. RCA:: Gas wells which penetrate a workable coal seam, except those permitted under the OGCL penetrating the Onondaga formation, must be at least 1,000 feet from any other well. "No permit for a gas well covered by this act which is intended to be part of a well cluster shall be issued unless the well cluster is located not less than 2,000 feet from the nearest well cluster as measured from the center of the well bore of the nearest well . . .." Section 7. Well cluster is defined as an area within a well pad intended to host multiple OGCL: An operator may apply for a spacing order pursuant to Section 7 of the Act. A conservation well must be at least 330 feet from the boundary of the tract or unit.

    a. Density: N/A

    b. Lineal: N/A

20. Exceptions: RCA: Yes.

    a. Basis: Written consent between the well permit applicant and the owner of the workable coal seam.

    b. Approval: By the Department of Environmental Protection.

21. Exceptions: OGCL: Yes, if the well would not be likely to produce in paying quantities, if there are adverse surface conditions, or if coal operators have objected and a well is prohibited in a certain area. Section 7.

    a. Approval: By the Department of Environmental Protection.

Pooling

45. Authority to establish voluntary: Yes.

46. Authority to establish compulsory: Yes. OGCL, Section 8 for conservation wells.

Unitization

43. Compulsory unitization of all or part of a pool or common source of supply: Yes, for certain wells outlines in the OGCL, upon application for an integration order by an operator having an interest in the spacing unit.

44. Minimum percentage of voluntary agreement before approval of compulsory unitization:

    a. Working interest: No provision.

    b. Royalty interest: No provision.

SOUTH DAKOTA

Spacing

1. Spacing requirements: Rule 74:12:02:04, 74:12:02:05, and 74:12:02:06 and SDCL 45-9-20 through 45-9-29.

    b. Density: Oil- 40 acres, Gas- 640 acres

    c. Lineal: Oil- 500 feet from quarter-quarter boundary and 1,000 feet between wells. Gas- 500 feet from section line and 3,750 feet between wells.

2. Exceptions: Yes. Address request to Department at above address.

    a. Basis: Topographic reasons, well at prescribed location cold not produce economically or other good cause shown. Rule 74:12:02:08.

    b. Approval: Administratively by the Department. Applicant must provide evidence of "good cause," must provide affidavit of service by certified mail to "any person whose property may be affected by the hearing." The Department publishes a Notice of Recommendation on the matter in the official county newspaper. Upon 20 days notice, if no objections are filed, the application may be approved. If objections are made, a hearing is required.

Pooling

47. Authority to establish voluntary: Yes. SDCL 45-9-30.

48. Authority to establish compulsory: Yes SDCL 45-9-31 et seq. Board has the authority to assess a penalty for risk on a non-participating owner in a spacing unit. Rules 74:12:10:01 to 74:12:10:03.

Unitization

45. Compulsory unitization of all or part of a pool or common source of supply: Yes. If "Such operation is reasonable necessary to increase substantially the ultimate recovery of oil or gas; and the values of the estimated additional recovery of oil or gas exceeds the estimated additional cost incident to conducting such operations." SDCL 45-9-37, 45-9-38. Risk compensation is allowed up to 200% of a working interest owner's share and 100% of an unleased mineral owner's share of the reasonable actual unit expenses, exclusive of a one-eighth royalty, to be recovered out of production from the unit. Rules 74:12:10:04 to 74:12:10:06.

46. Minimum percentage of voluntary agreement before approval of compulsory unitization:

    a. Working interest: 60%

    b. Royalty interest: 60%

TENNESSEE

1. Spacing requirements:

    d. Density:

    Oil wells - 0-1,000 feet, 10 acres; 1,001-2,000 feet or to the base of the Devonian Chattanooga Shale, whichever is deeper, 20 acres; more than 2,000 feet or below the base of the Devonian Chattanooga Shale, whichever is deeper, 40 acres. No density requirement for horizontal wells.

    Gas Wells - 0-1,000 feet, 10 acres; 1,001-2,000 feet or to the base of the Devonian Chattanooga Shale, whichever is deeper; 20 acres; more than 2,000 feet deep or below the base of the Devonian Chattanooga Shale, whichever is deeper - 5,000 feet or to the top of the Cambrian Conasauga Group, whichever is deeper, 40 acres; more than 5,000 feet deep or below the top of the Cambrian Conasauga Group, whichever is deeper, 160 acres. No density requirement for horizontal wells.

    e. Lineal:

    Oil wells - 330 feet or more from any property (lease) or unit line, and 660 feet or more from any other well completed in, drilling to, or for which a permit shall have been granted to drill to the same pool. No specific well-to-well distance requirement for horizontal wells.

    Gas wells - 0-5,000 feet or to the top of the Cambrian Conasauga Group, whichever is deeper, 330 feet or more from any property (lease) or unit line, and 660 feet or more from any other well completed in, drilling to, or for which a permit shall have been granted to drill to the same pool; more than 5,000 feet deep or below the top of the Cambrian Conasauga Group, whichever is deeper, 660 feet or more from any property (lease) or unit line, and 1,320 feet or more from any other well completed in, drilling to, or which a permit shall have been granted to drill to the same pool. No specific well-to-well distance requirement for horizontal wells

2. Exceptions:

    a. Basis: Yes.

    b. Approval: Administratively by Supervisor, 0400-52-4-.01(k), or by Oil and Gas Board after public hearing. 0400-52-4-.01(k6). Existing wells may be deepened and produced for oil or gas from whatever zone(s) production may be obtained on the existing

permitted unit size. Spacing of oil and gas wells - Referendum TCA 60-1-106. Oil or gas wells in Overton County: 0-2, 500 feet, 200 feet or more from any property line, and 400 feet or more from any other well completed in, drilling to, or for which a permit shall have been granted to drill to the same pool. Oil and gas wells in Clay and Pickett Counties: 200 feet or more from any property line, and 400 feet or more from any other well completed in, drilling to, or for which a permit shall have been granted to drill to the same pool.

Pooling

49. Authority to establish voluntary: Yes; TCA 60-1-202; 0400-52-2-.02(8) of Rules and Regulations.

50. Authority to establish compulsory: Yes; TCA 60-1-202(4)(M).

Unitization

47. Compulsory unitization of all or part of a pool or common source of supply: Yes; 0400-55-01-.01.

48. Minimum percentage of voluntary agreement before approval of compulsory unitization:

    a. Working interest: Board Approval.

    b. Royalty interest: Board Approval.

TEXAS

Spacing

1. Spacing requirements:

f. Density: §3.38 Well Densities

(1) No well may be drilled on substandard acreage except as hereinafter provided.

(2) Standard units.

(A) The standard drilling unit for all oil, gas, and geothermal resource fields wherein only spacing rules, either special, country regular, or statewide, are applicable is hereby prescribed to be the following.

Spacing Rule	Acreage Requirements
(1) 150 - 300	2
(2) 200 - 400	4
(3) 330 - 660	10
(4) 330 - 933	20
(5) 467 – 933	20
(6) 467 – 1200	40
(7) 550 – 1320	40

(B) The spacing rules listed above are not exclusive. Any spacing rule not listed above is brought to the attention of the RRC will be given an appropriate acreage assignment.

Development to final density. An application to drill a well for oil, gas, or geothermal resource on a drilling unit composed of surplus acreage, commonly referred to as the "tolerance well," may be granted as regular when the operator seeking such permit certifies to the RRC the necessary data to show that such permit is needed to develop a lease, pooled unit, or unitized tract to final density, and only in the following circumstances:

(1) when the amount of surplus acreage equals or exceeds the maximum amount provided for tolerance acreage by special or county regular rules for the field, provided that this paragraph does not apply for a lease, pooled unit, or unitized tract that is completely developed with optional units and the special or county regular rules for the field do not have a tolerance provisions expressly made applicable to optional proration units;

(2) if the special or county regular rules for the field do not have a tolerance provision expressly made applicable to optional proration units, when the amount of surplus acreage equals or exceeds one-half of the smallest amount established for an optional drilling unit; or

(3) if the applicable rules for the field do not have a tolerance provision for the standard drilling or proration unit, when the amount of surplus acreage equals or exceeds one-half the amount prescribed for the standard unit.

(d) Applications involving the voluntary subdivision rule.

(1) Density exception not required. An exception to the minimum density provision is not required for the first well in a field on a lease, pooled unit, or unitized tract composed of substandard acreage, when the leases, or the drillsite tract of a pooled unit or unitized tract took its present size and shape prior to the date of attachment of the voluntary subdivision rule; or took its present size and shape after the date of attachment of the voluntary subdivision rule and was not composed of substandard acreage in the field according to the density rules in effect at the time it took its present size and shape.

(2) Density exception required. An exception to the density provision is required, and may be granted only to prevent waste, for a well on a lease, pooled unit, or unitized tract that is composed of substandard acreage and that took its present size and shape after the date of attachment of the voluntary subdivision rule; and was composed of substandard acreage in the field according to the density rules in effect at the time it took its present size and shape.

(3) Unit dissolution. If two or more separate tracts are joined to form a unit for oil or gas development, the unit is accepted by RRC, and the unit has produced hydrocarbons in the preceding 20 years, the unit may not thereafter be dissolved into the separate tracts with RRC rules applicable to each separate tract if the dissolution results in any tract composed of substandard acreage for the field from which the unit produced, unless RRC approves such dissolution. RRC may grant approval only after application, notice, and an opportunity for hearing. A RRC designee may grant administrative approval if the designee determines that granting the application will not result in the circumvention of the density restrictions of this section or other RRC rules, and if either written waivers are filed by all affected persons; or no protest is filed within the time set forth in the notice of application.

An exception to the minimum density provision is not required for a well in a unitized area for which RRC has granted an entity for density order, if the sum of all applied for, permitted, or completed producing wells in the field within the unitized area, multiplied by the applicable density provision, does not exceed the total number of acres in the unitized area.

RRC, in order to prevent waste or, to prevent the confiscation of property, may grant exceptions to the density provisions set forth in this section. Such an exception may be granted only after notice and an opportunity for hearing.

(g) Filing requirements.

When filing an application for an exception to density requirements, in addition to the plat requirements in §3.5, the applicant must attach to each copy of the application a plat that: (A) depicts the lease, pooled unit, or unitized tract, showing thereon the acreage assigned to the drilling unit for the proposed well and the acreage assigned to all current applied for, permitted, or completed oil, gas, or oil and gas wells in the same field or reservoir which are located within the lease, pooled unit, or unitized tract; (B) on large leases, pooled units, or unitized tracts, if the established density is not exceeded as shown on the face of the application, outlines the acreage assigned to the well for which the permit is sought and the immediately adjacent wells on the lease, pooled unit, or unitized tract; (C) on leases, pooled units, or unitized tracts from which production is secured from more than one field, outlines the acreage assigned to the wells in each field that is the subject of the current application; (D) corresponds to the listing required under subsection (g)(1)(A). (E) is certified by a person acquainted with the facts pertinent to the application that the plat is accurately drawn to scale and correctly reflects all pertinent and required data.

(3) Substandard acreage. An application for a permit to drill on a lease, pooled unit, or unitized tract composed of substandard acreage must include a certification in a prescribed form indicating the date the lease, or the drillsite tract of a pooled unit or unitized tract, took its present size and shape.

(4) Surplus acreage. An application for permit to drill on surplus acreage must include a certification in a prescribed form indicating the date the lease, pooled unit, or unitized tract took its present size and shape.

(5) Certifications. Certifications required under paragraphs (3) and (4) must be filed on Form W-1A, Substandard Acreage Certification. (A) The operator must file the Form W-1A with the drilling permit application and shall indicate the purpose of filing. The operator shall accurately complete all information required on the form in accordance with instructions on the form. The operator must list the field or fields for which the substandard acreage certification applies in the designated area on the form. If there are more than three fields for which the certification applies, the operator shall attach additional Forms W-1A and shall number the additional pages in sequence. The

operator must file the original Form W-1A with RRC's Austin office and a copy with the appropriate district office, unless the operator files electronically. The operator must certify the information provided on the Form W-1A is true, complete, and correct by signing and dating the form, and listing the requested identification and contact information. Failure to timely file the required information on the appropriate form may result in the dismissal of the application.

(h) Procedure for obtaining exceptions to the density provisions.

(1) Filing requirements. If a permit to drill requires an exception to the applicable density provision, the operator must file, in addition to the items required by subsection (g): (A) a list of the names and addresses of all affected persons. For the purpose of giving notice of application, the RRC presumes that affected persons include the operators and unleased mineral interest owners of all adjacent offset tracts, and the operators and unleased mineral interest owners of all tracts nearer to the proposed well than the prescribed minimum lease-line spacing distance. RRC may determine that such a person is not affected only upon written request and a showing by the applicant that: competent, convincing geological or engineering data indicate that drainage of hydrocarbons from the particular tracts subject to the request will not occur due to production from the proposed well; and notice to the particular operators and unleased mineral interest owners would be unduly burdensome or expensive; (B) engineering and/or geological data, including a written explanation of each exhibit, showing that the drilling of a well on substandard acreage is necessary to prevent waste or to prevent the confiscation of property; (C) additional data requested by the RRC.

(2) Notice of application. Upon receipt of a complete application, the RRC will give notice of the application by mail to all affected persons for whom signed waivers have not been submitted.

(3) Approval without hearing. If RRC determines, based on the data submitted, that a permit requiring an exception to the applicable density provision is justified, RRC may issue the exception permit administratively if signed waivers from all affected persons were submitted with the application or proper notice of application was given and no protest was filed within 21 days of the notice or no person appeared to protest the application at a hearing.

(4) Hearing on the application. If a written protest is filed within 21 days after the notice of application is given, the application will be set for hearing. If the application is not protested and RRC determines that a permit requiring an exception to the applicable density provision is not justified, the operator may request a hearing to consider the application.

(i) Duration. A permit is issued as an exception to the applicable density provision expires 2 years from the effective date of the permit; unless drilling operations are commenced in good faith within the 2 year period.

g. Lineal: 16 TAC §3.37 Statewide Spacing Rule.

(a) Distance requirements.

(1) No well for oil, gas, or geothermal resource may be drilled nearer than 1,200 feet to any well completed in or drilling to the same horizon on the same tract or farm, and no well may be drilled nearer than 467 feet to any property line, lease line, or subdivision line; provided RRC, in order to prevent waste or to prevent the confiscation of property, may grant exceptions to permit drilling within shorter distances when RRC determines that such exceptions are necessary either to prevent waste or to prevent the confiscation of property. These distances are minimum distances to provide standard development on a pattern of one well to each 40 acres in areas where proration units have not been established.

(2) When an exception to this section is desired, application shall be made by filing the proper fee and the appropriate form according to the instructions on the form, accompanied by a plat described in subsection (c). A person acquainted with the facts pertinent to the application shall certify that all facts stated in it are true and within the knowledge of that person.

(A) When an exception to only the minimum lease-line spacing requirement is desired, the applicant shall file a list of the mailing addresses of all affected persons, who, for tracts closer to the well than the greater of one-half of the prescribed minimum between-well spacing distance or the minimum lease-line spacing distance, include: the designated operator; all lessees of record for tracts that have no designated operator; and all owners of record of unleased mineral interests.

(B) When an exception to the minimum between-well spacing requirement of this section is desired, the applicant is required to file the mailing addresses of those persons identified in subparagraph (A)(i)-(iii) for each adjacent tract and each tract nearer to the well than the greater of one-half the prescribed minimum between-well spacing distance or the minimum lease-line spacing.

(3) An exception may be granted pursuant to subsection (h)(2), or after a public hearing held after at least 10 days notice to all persons described in paragraph (2). At any such hearing, the burden shall be on the applicant to establish that an exception to this section is necessary either to prevent waste or to prevent the confiscation of property. For purposes of giving notice of an application for an exception, RRC presumes that every person described in paragraph (2) will be affected by the application.

(c) In filing an application for an exception to the distance requirements of this section, in addition to the plat requirements in §3.5 (Application to Drill, Deepen, Reenter, or Plug Back), the applicant shall attach to each copy of the form a plat that: (1) shows to scale the property on which the exception is sought; all other applied for, permitted, and completed oil, gas, or oil and gas wells in the same field and reservoir on said property;

and all adjoining surrounding properties and completed wells in the same field and reservoir within the prescribed minimum between-well spacing distance of the applicant's well; (2) shows the entire lease, pooled unit, or unitized tract indicating the names and offsetting properties of all affected offset operators; (3) corresponds to the listing required under subsection (a)(2); (4) is certified by a person acquainted with the facts pertinent to the application that the plat is accurately drawn to scale and correctly reflects all pertinent and required data.

(d) In the interest of protecting life and for the purpose of preventing waste and preventing the confiscation of property, the RRC reserves the right in particular oil, gas, and geothermal resource fields to enter special orders increasing or decreasing the minimum distances provided by this section.

(f) No operator shall commence the drilling of a well, either on a regular location or on a Rule 37 exception location, until first having been notified by RRC that the regular location has been approved, or that the Rule 37 exception location has been approved. Failure of an operator to comply with this subsection will cause such well to be closed in and the holding up of the allowable of such well.

(g) Subdivision of property.

(1) In applying the Statewide Spacing Rule and in applying every special rule with relation to spacing in every field in this state, no subdivision of property made subsequent to the adoption of the original spacing rule will be considered in determining whether or not any property is being confiscated within the terms of such spacing rule, and no subdivision of property will be regarded in applying such spacing rule or in determining the matter of confiscation if such subdivision took place subsequent to the promulgation and adoption of the original spacing rule.

(2) Any subdivision of property creating a tract of such size and shape that it is necessary to obtain an exception to the spacing rule before a well can be drilled thereon is a voluntary subdivision and not entitled to a permit to prevent confiscation of property if it were either segregated from a larger tract in contemplation of oil, gas, or geothermal resource development or segregated by fee title conveyance from a larger tract after the spacing rule became effective and the voluntary subdivision rule attached.

(3) The date of attachment of the voluntary subdivision rule is the date of discovery of oil, gas, or geothermal resource production in a certain continuous reservoir, regardless of the subsequent lateral extensions of such reservoir, provided that such rule does not attach in the case of a segregation of a small tract by fee title conveyance which is not located in an oil, gas, or geothermal resource field having a discovery date prior to the date of such segregation.

(4) The date of attachment of the voluntary subdivision rule for multiple reservoir fields located in the same structural feature and separated vertically but not laterally, shall

be the same date as that assigned to the earliest discovery well for such multiple reservoir structure.

(5) If a newly discovered reservoir is located outside the then productive limits of any previously discovered reservoirs and is classified by RRC as a newly discovered field, then the date of discovery of such newly found reservoir remains the date of attachment for the voluntary subdivision rule, even though subsequent development may result in the extension of such newly discovered reservoir until it overlies or underlies older reservoirs with prior discovery dates.

(6) The date of attachment of the voluntary subdivision rule for a reservoir that has been developed through expansion of separately recognized fields into a recognized single reservoir and is merged by RRC order is the earliest discovery date of production from such merged reservoir, and that date will be used subsequent to the date of merger of the fields into a single field.

(7) The date of attachment of the voluntary subdivision rule for a reservoir under any special circumstance which RRC deems sufficient to provide for an exception may be established other than as prescribed in this section, so that innocent parties may have their rights protected.

2. Exceptions:

a. Basis:

b. Approval:

(h) Exceptions to Rule 37.

(1) An order granting exception to Rule 37 wherein protest is had shall carry as its last paragraph the following language: It is further ordered by RRC that this order shall not be final until 20 days after it is actually mailed to the parties by RRC; provided that if a motion for rehearing of the application is filed by any party at interest within such 20-day period, this order shall not become final until such motion is overruled, or if such motion is granted, this order shall be subject to further action by the RRC.

(2) The director of the OGD may issue an exception permit for drilling, deepening, or additional completion, recompletion, or reentry in an existing well bore if a notice of at least 10 days has been given, and no protest has been made to the application; or written waivers of objection are received from all persons to whom notice is required to be given.

(3) Applications filed for drilling, deepening, or additional completion, recompletion, or reentry will be processed and permit issued in accordance with this regulation, subject to RRC's discretion to set any application for hearing. If the director declines to grant an application, the operator may request a hearing.

(i) Rule 37 permits. Unless otherwise specified in a permit or in a final order granting an exception to this section, permits issued by RRC for completions requiring an exception to this section shall expire 2 years from the effective date of the permit unless drilling operations are commenced in good faith within the 2-year permit period. The permit period will not be extended. So long as a Rule 37 exception is in litigation, the 2-year permit period will not commence. On final adjudication and decree from the last court of appeal the two-year permit period will commence, beginning on the date of final decree.

(j) Once an application for a spacing exception has been denied, no new application can be entertained except on changed conditions. Changed conditions in RRC's administration of Rule 37 and amendments thereto applicable to the various special fields and reservoirs of Texas and in passing upon applications for permits under said rule and amendments shall include, among other things, the following.

(1) Any material changes in the physical conditions of the producing reservoir under the tract under consideration or under the area surrounding said tract which would materially affect the recovery of oil, gas, or geothermal resource from the given tract.

(2) Any material changes in the distribution or allocation of allowable production in the area surrounding the tract under consideration which would materially affect or tend to affect the recovery of oil, gas, or geothermal resource from the given tract.

(3) Any additional permits granted by RRC for wells drilled in the area surrounding or on offset tracts to the tract under consideration which would materially affect or tend to affect the recovery of oil, gas, or geothermal resource from the given tract.

(4) Any additional facts or evidence thereof materially affecting or tending to affect the recovery of oil, gas, or geothermal resource from the applicant's tract, or the property rights of applicant, which were not known of and considered by RRC at any previous hearing or application thereon.

(k) Exceptions to Rule 37 apply to the total depth for which the permit is granted or if special field rules are applicable, an exception to the spacing rule shall be granted only for the reservoir or reservoirs or applicable depth to which the well is projected. Subsequent recompletion of the well to reservoirs other than that covered by the permit issued would be granted only after the filing and processing of a new application.

(l) Salt dome oil or gas fields. The provisions of this section shall not apply to certain approved salt dome oil or gas fields.

(m) Wells that were deviated, whether intentionally or otherwise, prior to April 1, 1949, and are bottomed on the lease where permitted, are legal wells. The RRC will develop the record in each reapplication for such deviated wells so that RRC can determine the condition of each such well. The following will be adduced from sworn testimony and

authenticated data at each such hearing: (1) That the well was deviated before April 1, 1949; (2) that the well was completed on the lease where the surface location was permitted; (3) that the bottom hole location is one that either is not in direct violation of a condition or limitation placed in the permit to drill, or is not in violation of a specific RRC order; and (4) that the current operator of the well or his predecessor has not filed either a false inclination or a false directional survey with RRC. A well that is either bottomed off the lease, deviated after April 1, 1949, drilled in direct violation of a specific condition or limitation placed in the Rule 37 permit, or is in violation of a specific RRC order, is an illegal well and it shall not be permitted, and such well where permit is refused shall not be considered a replaceable well under RRC replacement-well regulation. However, this does not preclude an operator from applying for approval of the bottom hole location of a deviated well as a reasonable location under the rules and regulations now applicable, provided, that such bottom hole location shall not be approved unless the applicant proves that a vertical projection of the permitted surface location for such well is within the productive limits of the reservoir.

Pooling

51. Authority to establish voluntary:

16 TAC §3.40, relating to Assignment of Acreage to Pooled Development and Proration Units.

(a) An operator may pool acreage, in accordance with appropriate contractual authority and applicable field rules, for the purpose of creating a drilling unit or proration unit by filing an original certified plat delineating the pooled unit and a Certificate of Pooling Authority, Form P-12, according to the following requirements:

(1) Each tract in the certified plat shall be identified with an outline and a tract identifier that corresponds to the tract identifier listed on the Form P-12.

(2) The operator must provide information on the Certificate of Pooling Authority, Form P-12, accurately and according to the instructions on the form: separately list each tract committed to the pooled unit by authority granted to the operator; for each listed tract, shall state the number of acres contained within the tract; shall indicate if, within an individual tract, there exists a non-pooled and/or unleased interest; must state the total number of acres in the pooled unit; and must certify the information.

The operator must file the Form P-12 and certified plat: (A) with the drilling permit application when two or more tracts are joined to form a pooled unit for RRC purposes to obtain a drilling permit; (B) with completion paperwork when the pooled unit's acreage is being used or assigned for allowable purposes; (C) to designate a pooled unit formed after completion paperwork has been filed when the pooled unit's acreage is being used or assigned for allowable purposes; or (D)

to designate a change in a pooled unit previously recognized by the RRC. The operator shall file any changes to a pooled unit in accordance with the requirements of §3.38(d)(3) (Well Densities).

If a tract to be pooled has an outstanding interest for which pooling authority does not exist, the tract may be assigned to a unit where authority exists in the remaining undivided interest, provided, that total gross acreage in the tract is included for allocation purposes, and the certificate filed with the RRC shows that a certain undivided interest is outstanding in the tract. The RRC will not allow an operator to assign only his undivided interest out of a basic tract, where a nonpooled interest exists.

The nonpooled undivided interest holder retains his development rights in his basic tract, and should such rights be exercised, authority to develop the basic tract be approved by RRC, and a well completed as a producer thereon, then the entire interest in the basic tract must be allocated to said well, and any interest insofar as it is pooled with another tract must be assigned to the well on the basic tract for allocation purposes. Splitting of undivided interest in a basic tract between two or more wells on two or more tracts is not acceptable.

Acreage assigned to a well for drilling and development, or for allocation of allowable, shall not be assigned to any other well or wells projected to or completed in the same reservoir; such duplicate assignment of acreage is not acceptable, provided, however, that this limitation shall not prevent the reformation of development or proration units so long as no duplicate assignment of acreage occurs, and further, that such reformation does not violate other conservation regulations.

52. Authority to establish compulsory:

Unitization

49. Compulsory unitization of all or part of a pool or common source of supply: No.

50. Minimum percentage of voluntary agreement before approval of compulsory unitization:

    a. Working interest:

    b. Royalty interest:

VIRGINIA

Spacing

1. Spacing requirements: Yes. In the absence of field rules established by the Virginia Gas and Oil Board, statewide spacing, based on minimum distance between wells, is as stated in 45.1-361.17. Statewide spacing of wells.

    h. For oil: not within 1,250 ft. of another well completed in the same pool, and not within 625 ft. of the boundary of acreage supporting the well.

    i. For gas: not within 2,500 ft. of another well completed in the same pool, and not within 1,250 ft. of the boundary of acreage supporting the well

    j. For coalbed methane gas wells: not within 1,000 ft. of another coalbed methane gas well, and not within 500 ft. of the boundary of acreage supporting the well.

    k. For coalbed methane wells located in the gob: not within 500 ft. of another coalbed methane gas well completed in the gob and not within 250 ft. of the boundary of acreage supporting the well. Section 45.1-361.17, Virginia Gas and Oil Act.

2. Exceptions: Yes

    a. Basis: The Virginia Gas and Oil Board hears unique testimony regarding each application for a location exception and renders a decision based on that testimony.

    b. Approval: All exceptions to statewide spacing must be approved by the Board and detailed in an order issued by the Board. Section 45.1-361.17, Virginia Gas and Oil Act, and Board Regulation 4 VAC 25-160-60.

Pooling

53. Authority to establish voluntary: Yes. Section 45.1-361.18, Virginia Gas and Oil Act.

54. Authority to establish compulsory: Yes. By authority of by Virginia Gas and Oil Board. 45.1-361.21 and 45.1-361.22.

Unitization

51. Compulsory unitization of all or part of a pool or common source of supply: Upon order of the Virginia Gas and Oil Board Sections 45.1-361.15, 45.1-361.20 Virginia Gas and Oil Act and Regulation 4 VAC 25-160-50.

52. Minimum percentage of voluntary agreement before approval of compulsory unitization:

    a. Working interest: Optional. 45.1-361.21.

b. Royalty interest: 25% interest of the unit on conventional wells and none set for coalbed methane wells.

WASHINGTON

Spacing

1. Spacing requirements: Yes. Not smaller than the maximum area that can be efficiently drained by one well. Because we have no production, specific limits have never been set.

    l. Density: Not greater than 160 acres for oil or 640 acres for gas.

    m. Lineal: Not closer than 500 feet to lease boundary line.

2. Exceptions:

    a. Basis: Department rules that prescribed location would not produce in paying quantities or that surface conditions would add a burden or hazard.

    b. Approval: From the department.

Pooling

55. Authority to establish voluntary:

56. Authority to establish compulsory:

Unitization

53. Compulsory unitization of all or part of a pool or common source of supply: Yes, but only for secondary recovery.

54. Minimum percentage of voluntary agreement before approval of compulsory unitization:

    a. Working interest: As determined by the Department.

    b. Royalty interest: As determined by the Department.

WEST VIRGINIA

Spacing

22. Spacing requirements

    General rule: deep wells; 3,000' from existing wells and permitted locations, producing from, or capable of producing from, the same formation and 400' from lease line; shallow wells; under certain circumstances, 1000’ for wells less than 3000’ deep and 1500’ for wells greater than 3,000’ deep, and for which an objection has been made by a coal entity. Coalbed methane wells; 1600’ without consent from coal owner/operator between wells and 100' from lease line.

    a. Density: Maximum - 640 acres for gas wells and 160 acres for oil wells in a unit.

    b. Lineal: Deep wells only 3,000' from wells producing from the same formation except by special field rules; none for shallow wells for gas or oil.

23. Exceptions: Yes

    a. Basis: Economic, geological or topographic or reservoir necessity.

    b. Approval: By application, hearing and order.

Pooling

57. Authority to establish voluntary: Yes.

58. Authority to establish compulsory: Yes, Oil and Gas Conservation Commission, Deep wells in primary production; all wells in enhanced recovery. CBM wells and the Coalbed Methane Review Board.

Unitization

55. Compulsory unitization of all or part of a pool or common source of supply: N/A

56. Minimum percentage of voluntary agreement before approval of compulsory unitization:

    a. Working interest: N/A

    b. Royalty interest: N/A

WYOMING

Spacing

1. Spacing requirements: Yes.

    c. Density: 40 acres for an oil well; One and up to two wells per 160 acres for gas wells; 40 and 80 acres for a coalbed methane well; 640 acres for PRB wells greater than 11,000' to the Muddy, Dakota or Frontier formations.

    d. Lineal: For an oil well, not closer than 460 feet to the exterior boundaries of a 40-acre subdivision. Same for a gas well or a coalbed methane well, center of NE/4 or SW/4 with 200 feet of tolerance on 40 acres, and the center of a 160-acre tract with 200 feet of tolerance. Chapter 3, Section 2.

2. Exceptions: Yes.

    a. Basis: Geologic or topographic.

    b. Approval: Administratively in the absence of any objection; by Commission order should there be an objection. Chapter 3, Section 3 and Chapter 5, Section 16.

Pooling

1. Authority to establish voluntary: Yes. W.S. 30-5-109(c).

2. Authority to establish compulsory: Yes.

Unitization

1. Compulsory unitization of all or part of a pool or common source of supply: Yes.

2. Minimum percentage of voluntary agreement before approval of compulsory unitization:

    a. Working interest: after six months can be lowered to 75%.

    b. Royalty interest: after six months can be lowered to 75%.

BRITISH COLUMBIA

Spacing

1. Spacing requirements
    a. Density: gas - per section; oil – per ¼ section
    b. Lineal: n/a
2. Exceptions
    a. Basis: increase resource recovery, but not acceleration
    b. Approval: good engineering practice

Pooling

1. Authority to establish voluntary: Ministry of Energy and Mines
2. Authority to establish compulsory: Ministry of Energy and Mines

Unitization

1. Compulsory unitization of all or part of a pool or common source of supply: yes
2. Minimum percentage of voluntary agreement before approval of compulsory unitization: none
    a. Working interest: n/a
    b. Royalty interest: n/a

NEWFOUNDLAND AND LABRADOR

Spacing

24. Spacing requirements

    a. Density: Not applicable; based on approved development plan.

    b. Lineal: Not applicable; based on approved development plan.

25. Exceptions

    a. Basis: Under review.

    b. Approval: Under review.

Pooling

59. Authority to establish voluntary: *Petroleum Regulations.* As per approved development plan

60. Authority to establish compulsory: N/A

Unitization

57. Compulsory unitization of all or part of a pool or common source of supply: As per approved development plan.

58. Minimum percentage of voluntary agreement before approval of compulsory unitization:

    a. Working interest: As per approved development plan.

    b. Royalty interest: As per approved development plan.

YUKON

Spacing

26. Spacing requirements

    a. Density:

       Oil Well – 4 wells per section

       Gas Well – 1 well per section

    b. Lineal: Project specific

27. Exceptions

    a. Basis: Project specific

    b. Approval: Approval would be made by the Chief Operations Officer

Pooling

61. Authority to establish voluntary: Yes a working interest must apply to have a Pooling Order

62. Authority to establish compulsory: If the Pooling Order is passed by the Chief Operations Officer the effects are compulsory to all included in the order (even those working interests that may have been against it).

Unitization

59. Compulsory unitization of all or part of a pool or common source of supply: A mandatory Unitization Order can be made if it is proven through a hearing process that unitization would prevent waste

60. Minimum percentage of voluntary agreement before approval of compulsory unitization:

    a. Working interest: No minimum set

    b. Royalty interest: No minimum set

Compulsory Pooling Percentages around the Country

Alabama:	A majority, if a risk compensation fee (additional 150% of certain costs) is sought (51%)
	No minimum if a risk compensation fee is not requested
Alaska:	No minimum requirement
Arizona:	No minimum requirement
Arkansas:	Exploratory Drilling Unit - at least an undivided 50% interest in the right to drill and produce
	Established Drilling Unit – no minimum requirement, provided that one or more persons owning an interest in the right to drill and produce oil or gas requests
Colorado:	No minimum percentage ownership is required
Delaware:	No minimum percentage required
Florida:	No minimum percentage required
Illinois:	No minimum percentage required
Indiana:	No minimum percentage specified
Kansas:	Does not have forced pooling (100%)
Kentucky:	Shallow wells – At least 51% of mineral owners
	Deep wells – At least 75% of mineral owners
Louisiana:	75% of both owners and royalty owners, but this is only considered if the unit requested encompasses the entire reservoir
Michigan:	No minimum percentage required
Nevada:	62.5% vote by owners of record
New Mexico:	No minimum percentage required
New York:	No less than 60%
North Dakota:	No minimum percentage required
Ohio:	65%
Oklahoma:	No minimum percentage required
Pennsylvania:	Unclear, and has never been used
Texas:	No minimum percentage required
Utah:	No minimum percentage required
Virginia:	25%
West Virginia:	No minimum percentage required
Wyoming:	No minimum percentage required

Final Report of the Compulsory Pooling Study Group
S.L. 2012-143

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Table of Contents

Executive Summary

Session Law 2012-143 directed the Mining and Energy Commission, in conjunction with the Department of Environment and Natural Resources and the Consumer Protection Division of the North Carolina Department of Justice, to study the State's current law on the issue of integration or compulsory pooling and other states' laws on the matter. To comply with this legislative mandate, the Mining and Energy Commission created the Compulsory Pooling Study Group.

The Study Group is comprised of four commissioners. There was also a larger resource group that advised the Compulsory Pooling Study Group including staff members of the Department of Environment and Natural Resources, a member of the Consumer Protection Division of the Department of Justice, and representatives from North Carolina State Employees' Credit Union, North Carolina State University, the North Carolina Department of Insurance, the State Energy Office, Lee County Strategic Services, the North Carolina Department of Agriculture and Consumer Services, the North Carolina Conservation Network, Rural Advancement Foundation International, and the North Carolina Real Estate Commission.

The Study Group studied and made recommendations on legal and landowner issues relevant to compulsory pooling in the context of oil and gas exploration, including matters of landowner protection, the extinguishment of dormant mineral estates, cost sharing, and compensation for damages related to oil and gas operations. The following summarizes the final recommendations made by the Study Group. Although these recommendations were informed by the discussions of both the commissioners and the resource group members of the Study Group, the final recommendations presented in this report were voted on only by the four members of the Mining and Energy Commission who were the primary members of the Study Group.

Compulsory Pooling: In the interest of protecting the correlative rights of landowners and minimizing waste, the Study Group recommends that compulsory pooling be allowed where 90% of the owners of the surface acreage of a drilling unit have voluntarily leased or consented to developing their oil and gas rights (see Section I-D and II-B.2).

Landowner Protections: The Study Group recommends as a perquisite to the issuance of a pooling order: (1) a requirement that applicants for a compulsory pooling order show that they have made fair and reasonable offers to owners (see Section II-B.1); (2) a prohibition on surface disturbances without the consent of the mineral interest owner (see Section II-B.2); (3) a surface use agreement is in place prior to filing an application for a pooling order(see Section II-B.2); (4) additional notice requirements to subsurface owners prior to the commencement of

subsurface operations (see Section II-C); (5) additional reporting of production requirements for operators to owners in the drilling unit, including the right to audit (see Section II-D); and (6) time limitations on the pooling order (see Section II-E).

Dormant Minerals: The Study Group recommends further study on the issue of amending current dormant mineral statutes regarding extinguishment and other consumer protection issues related to split estates. The Department of Revenue, county register of deeds offices across the state, and the General Assembly should be consulted before proceeding with further research and recommendations on this topic (see Section III-C).

Cost Sharing: The pooling order will set the terms for sharing of costs and production revenues from the well. There are three general approaches to compulsory pooling and cost sharing: free ride, risk penalty, and surrender of working interest. The Study Group recommends repealing the current free ride provision of the Oil and Gas Conservation Act, G.S. 113-393(a), and adopting a cost sharing statute that allows the compelled owner to elect from various cost sharing options. Those options would include: (1) sharing in cost as a participating owner; (2) surrender of the working interest for reasonable consideration; and (3) carrying the compelled owner for costs and assessing the owner a risk penalty out of production (see Section IV-B).

The Study Group recommends that the risk penalty be capped at a maximum of 200% of costs. The Study Group further recommends establishing an acreage threshold requirement, which would require the Commission to consider assessing no penalty to landowners who own less than 10 acres within a drilling unit (see Section IV-C).

The Study Group recommends that under the risk penalty option, statutes and regulations treat unleased, carried interest owners differently than leased owners. The costs and risk penalty for the unleased owner should be paid from seven-eighths of the carried owner's share of production, while that owner would receive one-eighth of his or her share from the start of production (see Section IV-C).

Compensation for Damages Associated with Exploration and Development: The Study Group recommends providing tort immunity to unleased oil and gas interest owners that are compelled into a pool and do not share in production as participating owners. The Study Group also recommends requiring operators to indemnify such oil and gas interest owners from any property, personal and economic injuries the owners incur as a result of the operators' activities (see Section V).

I. Overview of Compulsory Pooling

In the process of modernizing existing state oil and gas law, the General Assembly directed the Mining and Energy Commission to study current North Carolina law on the issue of integration or compulsory pooling and other states' laws on this same issue.[1] The Mining and Energy Commission formed the Compulsory Pooling Study Group to research the issues and make recommendations regarding compulsory pooling in the context of a modern oil and gas regulatory program.

As defined by Bruce Kramer in his treatise on pooling and unitization, pooling is "the joining together of small tracts or portions of tracts for the purpose of having sufficient acreage to receive a well drilling permit under the state or local spacing laws and regulations."[2] Under certain circumstances, pooling is a mechanism used to compel landowners, who have not elected to participate in a pool or drilling unit voluntarily through private contract, to join the pool. Compulsory pooling is also referred to as integration, forced pooling, or statutory pooling.

Most states, including North Carolina, authorize compulsory pooling through statutes that were developed to address what is known as the "rule of capture."[3] The rule refers to a common law doctrine from England that states that a landowner who extracts or "captures" natural resources from a well within the subsurface of his land owns that resource.[4] That means that if a landowner can extract oil or gas from a well drilled on his property, he owns the resource even if he pulled that resource from the subsurface of his neighbor's property. The rule of capture allows one landowner to profit off the resources he extracted from his neighbor's property.

As a result of the rule of capture, many who feared their resources would be drained from their property began drilling their own wells. In the early 1900s, oil and gas wells littered the landscape in states like Pennsylvania and Texas in a race to capture limited resources.[5] To curb the drilling of wells and promote the equitable distribution of resources, states developed regulatory controls in the form of oil and gas conservation statutes aimed at mitigating the

[1] N.C. S.L. 2012-143, Part III, Section 2.(l) (2012).
[2] Bruce M. Kramer & Patrick H. Martin, The Law of Pooling and Unitization § 1.02 (LexisNexis Matthew Bender 2011).
[3] Sharon O. Flanery & Ryan J. Morgan, Steptoe & Johnson, PLLC, "Overview of Pooling and Unitization Affecting Appalachian Shale Development," (2011) at 5, retrieved from http://www.steptoe-johnson.com.
[4] Id.
[5] Id. at 5-6.

harsh effects of the rule of capture by requiring that all landowners in the pool be compensated based on their proportionate share of acreage contributed to the pool. These state statutes generally authorize an oil and gas conservation commission to develop spacing rules and issue orders that integrate properties into a "drilling unit," commonly defined as an area that can be effectively drained by one well. Pooling is the grouping of rights that lay within a common drilling unit.

A. Objectives of the Compulsory Pooling Study Group

The Compulsory Pooling Study Group was established by the Mining and Energy Commission, at the direction of the General Assembly, as a part of the mandate to create a modern oil and gas regulatory program.[6] The Clean Energy and Economic Security Act of 2012 states:

> "The Mining and Energy Commission, in conjunction with the Department of Environment and Natural Resources and the Consumer Protection Division of the North Carolina Department of Justice, shall study the State's current law on the issue of integration or compulsory pooling and other states' laws on the matter. The Department shall report its findings and recommendations, including legislative proposals, to the Joint Legislative Commission on Energy Policy, created under Section 6(a) of this act, and the Environmental Review Commission on or before January 1, 2013 [amended to October 1, 2013]."[7]

To fulfill this mandate, the Study Group includes Mining and Energy Commission members, DENR staff, and a member from the Consumer Protection Division of the Department of Justice. The Study Group also had the participation of Resource Group members from the North Carolina State Employees' Credit Union, North Carolina State University, the North Carolina Department of Insurance, the State Energy Office, Lee County Strategic Services, the North Carolina Department of Agriculture and Consumer Services, the North Carolina Conservation Network, Rural Advancement Foundation International, and the North Carolina Real Estate Commission.

The Study Group's stated goal is to set up a system that will encourage all parties involved in the development and production of oil and natural gas to negotiate in good faith to develop a working relationship.

[6] N.C. S.L. 2012-143, Part III, Section 2.(l); amended by N.C. S.L 2012-201 (2012).
[7] Id.

B. Current Law on Compulsory Pooling

Soon after the enactment one of the nation's first pooling laws, of the Oklahoma Well Spacing Act, it was challenged as an unconstitutional taking in *Patterson v. Stanolind Oil & Gas Co.*[8] In that case, the Oklahoma Supreme Court held that compulsory pooling was a reasonable use of the state's police power.[9] The United States Supreme Court dismissed an appeal challenging Oklahoma's pooling statute for lack of a substantial federal question, effectively upholding Oklahoma's use of the state police power to prevent waste through compulsory pooling.[10]

The North Carolina Oil and Gas Conservation Act ("Act") dates back to 1945. Voluntary and compulsory pooling are both permitted under the Act.[11] The Act states:

> "[W]hen two or more separately owned tracts of land are embraced within an established drilling unit, the owners thereof may agree validly to integrate their interests and to develop their lands as a drilling unit. Where, however, such owners have not agreed to integrate their interests, the Commission shall, for the prevention of waste or to avoid drilling unnecessary wells, require such owners to do so and to develop their lands as a drilling unit."[12]

For an in depth review of North Carolina's current law and regulations with regard to compulsory pooling, see the North Carolina Department of Justice report on the topic as presented at the January meeting of the Study Group.[13]

C. Policy Rationales for Retaining Compulsory Pooling

The most common policy justifications in favor of compulsory pooling are to protect the correlative rights of landowners, to prevent waste, to avoid the drilling of unnecessary wells, to mitigate harm to natural resources and to maximize the ultimate recovery of oil and gas.

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[8] Brigid R. Landy & Michael B. Reese, *Getting to "Yes": A Proposal for a Statutory Approach to Compulsory Pooling in Pennsylvania*, 41 ELR 11044, 11051 (2011); 1938 Okla. 138, 182 Okla. 155, 77 P.2d 83, *appeal dismissed*, 305 U.S. 576 (1939).
[9] Id.
[10] Id.
[11] N.C. Gen. Stat. § 113-393 (2012).
[12] Id.
[13] North Carolina Department of Justice, Consumer Protection Division, "North Carolina Oil and Gas Study under Session Law 2011-276: Impacts on Landowners and Consumer Protection Issues," [hereinafter "DOJ Report"] (2012), *available at* http://portal.ncdenr.org/c/document_library/get_file?uuid=bdd3a76c-a23c-4930-9b82-66d673a6d116&groupId=8198095.

A correlative right refers to the landowner's opportunity to develop his or her equitable share of the oil or gas in a pool. As discussed above, the rule of capture could have unfair consequences, and compulsory pooling laws were developed to ensure landowners receive fair compensation for drainage of oil and gas from their land. Oil and gas conservation laws can provide a mechanism for all landowners to be included in the development by allowing either an operator developing a pool or a landowner interested in joining a pool to petition the state for a compulsory pooling order.

Waste can refer to physical or economic waste.[14] For example, the drilling of unnecessary wells may constitute waste, as a pool is not being efficiently and economically drained if two wells are drilled in an area that can be effectively drained by one well. Unnecessary wells also cause environmental degradation. In addition, efficient well development through spacing regulations and integration maximizes the ultimate recovery of oil and gas by reducing physical surface waste and preventing oil and gas from becoming stranded.

Furthermore, where there are split estates, compulsory pooling helps balance the interests of surface and subsurface owners by reducing the number of wells and the attendant infrastructure such as access roads, piping, and utilities. This reduces overall surface use and the disruption to surface estates owners.

Despite these policy objectives, pooling is not favored by all landowners, particularly those who oppose the development and production of oil and gas on their property. Any new legal and regulatory framework adopted in North Carolina should aim to ensure that all landowners—both those that participate willingly and those that may be compelled to participate—are treated on fair and reasonable terms.

D. Compulsory Pooling in North Carolina and Other States

Current North Carolina law authorizes the voluntary and compulsory pooling of the rights of landowners in order to develop their lands as a drilling unit. The General Assembly enacted the Oil and Gas Conservation Act in 1945 to allow pooling to prevent waste of oil and gas in the state.[15] Significantly, in 2012, the General Assembly did not repeal this provision of the Oil and Gas Conservation Act but rather directed the Department to make recommendations for a modern regulatory regime, based on guidance from the Mining and Energy Commission.

[14] For the definition of waste as provided in the North Carolina Oil and Gas Conservation Act *see* Appendix I: Definitions.
[15] N.C. Gen. Stat. § 113-393.

Compulsory pooling is a mechanism currently utilized in established oil and gas producing states.[16] Notably, Kansas does not have pooling at the state level but does allow municipalities to pool.[17] Although Pennsylvania law authorizes the practice below certain depths, compulsory pooling is not authorized for development of the Marcellus Shale.[18] Pennsylvania, however, recently passed a bill allowing for pooling for operators who have a lease in the Marcellus Shale, unless the terms of the lease expressly prohibit pooling.[19] Pennsylvania still does not allow the pooling of the rights of landowners in the Marcellus Shale that have not leased their rights to operators. Proponents of compulsory pooling have also attempted to pass legislation in West Virginia, which also authorizes pooling only in Deep Wells, but the West Virginia General Assembly has failed to pass such legislation.[20]

Recommendation on Compulsory Pooling

In the interest of protecting the correlative rights of landowners and minimizing waste, the Study Group recommends that compulsory pooling be allowed where 90% of the owners of the surface acreage have voluntarily leased or consented to developing their oil and gas rights. [21]

E. Unitization

Pooling and unitization are two distinct doctrines that are often referred to interchangeably. To pool is to combine tracts into a unit. This report defines a drilling unit as the area which may be efficiently and effectively drained by one well.[22] Pooling is a process used to create a drilling unit, while unitization is "the consolidation of mineral or leasehold interests covering all or part of a common source of supply" in order to create a geographic unit to be explored or developed for production.[23]

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[16] Marie C. Baca, "Forced Pooling: When Landowners Can't Say No to Drilling," Propublica (May 18, 2011), http://www.propublica.org/article/forced-pooling-when-landowners-cant-say-no-to-drilling. The article states 39 states have some type of forced pooling law. Id.

[17] Kramer & Martin, *supra* note 2, § 10.01; Kan. Stat. Ann. § 55-1610-1613.

[18] Baca, *supra* note 16. Both states have general compulsory pooling laws that apply to deeper wells. 58 Pa. Stat. Ann. § 406, *et seq.* (2012); W. Va. Code § 22C-9-7 (2012).

[19] S.B. 259, Regular Session 2013-2014 (Pa. June 30, 2013), *available at* http://www.legis.state.pa.us/cfdocs/billInfo/billInfo.cfm?sYear=2013&sInd=0&body=S&type=B&bn=259.

[20] Natural Gas Horizontal Well Control Act, W. Va. S.B. 424 (Feb. 4, 2011).

[21] For a discussion on minimum voluntary agreement, see *infra* Part II-B(2).

[22] See Appendix I; Definitions.

[23] Kramer, *supra* note 2, § 1.02.

Unitization refers to the field or reservoir development, which is a broader concept than pooling around a single well. The Mining and Energy Commission, however, has assigned the development of regulations regarding drilling units to the Administration of Oil and Gas Committee which may decide to define drilling units independently of the standard definition as the area drained by one well.

The primary goal of unitization is to maximize production by efficiently draining the whole reservoir.[24] With the exception of Texas, every major oil and gas producing state has a compulsory unitization statute.[25] Many statutes require that a certain percentage of both the working and royalty interest owners consent to the unitization and to a unit operating agreement.[26] The working interest owner is an owner who pays into the costs of drilling the well, usually the operator, and the royalty interest owner is an owner who owns a right to a part of the income. These terms are usually defined by the statute and can be found in Appendix I of this report.[27]

Recommendation on Unitization

The Mining and Energy Commission is given the authority to "establish unit or units for each pool."[28] Due to the specialized technical expertise needed to determine the appropriate parameters of a unit, such as acreage and boundary, the Study Group recommends that the rules regarding unitization should be developed by the Administration of Oil and Gas Committee of the Mining and Energy Commission consistent with rationales made on recommendations for compulsory pooling found in this report.

[24] Id.
[25] Id. § 18.01.
[26] Id.
[27] *See* Appendix I: Definitions.
[28] N.C. Gen. Stat. § 113-392(b).

II. Landowner Protections Associated with Compulsory Pooling

The Study Group has conducted an in depth investigation of the challenges and complexities of regulating compulsory pooling in other states while also considering the context unique to North Carolina, including the local geography and the relative absence of oil and gas development in the State to date. In light of its investigation, the Study Group has determined that additional policy issues must be considered and laws and regulations adopted to protect landowners and the State's natural resources in conjunction with updating North Carolina's pooling law. Specifically, the Study Group examined other states' laws and regulations related to: ensuring good faith negotiation with landowners; requiring a minimum amount of voluntarily pooled acreage prior to compulsory pooling; and requiring landowner consent for surface operations. The laws and regulations of Arkansas, Colorado, Ohio, and Texas are particularly instructive on these issues.

The Study Group also found that additional rules and regulations regarding notice of subsurface entry and reporting on production would be necessary. Current law can be interpreted not to address the issue of notice of subsurface entry for both surface owners and mineral owners. Providing notice to these owners will allow time for preparation and promote good relations between owners and operators. Additionally, current law does address reporting of production by operators but does not specifically require a number of elements that are essential for determining proper payment. The Study Group made recommendations to fill these gaps in notice and reporting.

A. Landowner Protections in Various States

1. Arkansas

i. Good Faith Negotiation

Arkansas regulations require that oil and gas operators make a good faith attempt at negotiating a voluntary agreement with landowners before applying for a compulsory pooling order. Accordingly, an application for a pooling order must include a statement that "bona fide efforts to reach an agreement commenced at least sixty days prior to the date of the hearing; and that there are sufficient contacts to show that the Applicant has exhausted all reasonable efforts to reach an agreement."[29]

[29] Ark. Oil & Gas Comm. Rule A-3(b)(2)(G)(i) (2012).

ii. Minimum Voluntarily Pooled Acreage

In addition, to apply for a pooling order for an exploratory well, the operator must have the voluntary agreement of 50 percent of the owners of the acreage for gas within the drilling unit.[30] If it is an established unit as opposed to an exploratory unit, however, there is no minimum percentage of voluntary agreement needed to apply for an order. Shane Khoury, Deputy Director and General Counsel for the Commission, described the difference between an exploratory unit and established unit as follows:

> "In order for a unit to be established as opposed to exploratory, it is either in the confines of a field for which the Commission has established field rules; or if it is in the area covered by General Rule B-43 (Fayetteville Shale area) or General Rule B-44 (portion of the Arkoma Basin), then it is established if a well is drilled in any of the eight contiguous or adjacent units."[31]

iii. Compulsory Pooling in Arkansas

According to the Commission's Hearings archive, in 2011 there were 124 orders issued for established units and 9 orders issued for exploratory units.[32] Since the requirement for 50% voluntary agreement of the surface acreage only applies to exploratory units, the vast majority of compulsory pooling orders issued did not require any minimum percentage of voluntary agreement.

2. Colorado

i. Good Faith Negotiation

The Colorado Oil and Gas Commission may not enter into a pooling order over the protest of an owner unless it is shown that the owner has "been tendered a reasonable offer to lease upon terms no less favorable than those currently prevailing in the area," and has "been furnished in writing such owner's share of the estimated drilling and completion costs of the well, the location and objective depth of the well," and the estimated start date of operations.[33] An unleased owner will be deemed a nonconsenting owner if he has failed or refused a reasonable

[30] Ark. Code Ann. § 15-72-302(e) (2012).
[31] Shane Khoury, Deputy Director/General Counsel, Arkansas Oil & Gas Comm., email correspondence, Nov. 27, 2012.
[32] "Hearings: Orders Archive 2011," Arkansas Oil & Gas Comm., retrieved from http://www.aogc.state.ar.us/Hearing_Orders_Archive.htm (last accessed Nov. 27, 2012).
[33] Colo. Rev. Stat. § 34-60-116(7)(d).

offer to lease.[34] When determining what a reasonable offer is, the Commission is required to consider the following lease terms for the proposed lease and all cornering and contiguous units: "(1) date of lease and primary term or offer with acreage in lease; (2) annual rental per acre; (3) bonus payment or evidence of non-availability; (4) mineral interest royalty; and (5) such other lease terms as may be relevant."[35]

The Colorado Reasonable Accommodation Doctrine, which was codified into law in 2007, directs oil and gas operators to conduct operations in a manner that accommodates surface owners and minimizes intrusion upon and damage to surface lands.[36] Under the statute, minimizing intrusion and damage to land means "selecting alternative locations for wells, roads, pipelines, or production facilities, or employing alternative means of operation, that prevent, reduce, or mitigate the impacts of the oil and gas operations on the surface, where such alternatives are technologically sound, economically practicable, and reasonably available to the operator."[37]

To enforce the Reasonable Accommodation standard, any surface owner may object to the placement of wells. According to the agency regulations, if a party objects to a location and cannot reach an agreement, the operator may apply for a hearing before the Commission for an exception to the setback rules for the well location.[38]

ii. Minimum Voluntarily Pooled Acreage

Colorado law does not specify any minimum percentage of voluntary agreement to obtain a statutory pooling order.

iii. Compulsory Pooling in Colorado

According to the online hearings archive on the Colorado Oil and Gas Commission's website, there were 139 applications for pooling orders in 2011.[39]

3. Ohio

The Ohio compulsory pooling law was significantly updated by the passage of Senate Bill 165 in 2010.[40] In accordance with the law, if a tract of land is of insufficient size or shape to meet the

[34] Colo. Oil & Gas Comm. Rule 530(c) (2012).
[35] Id.
[36] Colo. Rev. Stat. § 34-60-127 (1).
[37] Id. § 34-60-127(1)(b).
[38] Id. Rule 318 (c).
[39] "Hearings," Colorado Oil and Gas Conservation Comm., cogcc.state.co.us (last accessed Nov. 19, 2012).

requirements for drilling a well and the owner has been unable to form a drilling unit by agreement, the owner may submit an application to the Ohio Department of Natural Resources Division of Oil and Gas Resources to obtain a pooling order.[41]

i. Consent for Surface Use

The pooling law requires that the owner of the tract making a pooling application also own the mineral interest.[42] Furthermore, the law prohibits surface operations or disturbances to the surface of the land from occurring on a tract pooled by an order without the written consent of the owner that approves of the operations or disturbances.[43] The application fee for each mandatory pooling order is $5,000 and each individual or operator is limited to a maximum of five applications per year.[44]

ii. Good Faith Negotiations

The permit application for a compulsory pooling petition requires the submission of sworn affidavits that must include the following: (1) an explanation of why a mandatory pooling order is needed and what acreage and or distance is involved; (2) a statement detailing the attempts to obtain a lease and form a voluntary pooling agreement; and (3) copies of any correspondence sent to the affected individual.[45] In order for an application to be granted, there must be no other obvious alternate location for the drilling unit.[46]

iii. Minimum Voluntary Agreement

While Ohio law does not specify that a minimum percentage of surface acreage must be leased before a pooling order will issue, the Division has an unofficial minimum requirement that 90 percent of the surface acreage must be leased before an application for pooling will be considered. [47] Ninety percent is a high requirement compared to the laws of other states and perhaps explains the relatively low number of pooling applications received by the Division.

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[40] Ohio Substitute Senate Bill 165, 128th General Assembly (June 30, 2010).
[41] Ohio Rev. Code § 1509.27.
[42] Id.; See also Ohio Legislative Service Comm., "Final Analysis Substitute Senate Bill 165, 128th General Assembly," (June 30, 2010) at 23, retrieved from http://www.lsc.state.oh.us/analyses128/10-sb165-128.pdf.
[43] Ohio Rev. Code Ann. § 1509.27.
[44] Id.
[45] Ohio Division of Mineral Resources Management, "Mandatory Pooling Procedural Outline," (June 10, 2010) at 1, retrieved from http://www.ohiodnr.com/portals/11/oil/pdf/mandatory_pooling_procedural_outline.pdf.
[46] Id.
[47] Id.

iv. Compulsory Pooling in Ohio

According to the Division, it received 12 applications for compulsory pooling in 2011; 11 were approved and one was tabled.[48] In 2012, the number of compulsory pooling applications dropped to three and all were approved.[49]

4. Texas

i. Minimum Voluntary Agreement

The Mineral Interest Pooling Act authorizes compulsory pooling in Texas.[50] The law does not specify any minimum voluntary agreement requirements, but it does encourage landowners and operators to reach a voluntary agreement.

ii. Good Faith Negotiations

In order to file an application for compulsory pooling, the Act states:

> "(a) The applicant shall set forth in detail the nature of voluntary pooling offers made to the owners of the other interests in the proposed unit; (b) The commission shall dismiss the application if it finds that a fair and reasonable offer to pool voluntarily has not been made by the applicant, [and] (c) An offer by an owner of a royalty or any other interest in oil or gas within an existing proration unit to share on the same yardstick basis as the other owners within the existing proration unit are then sharing shall be considered a fair and reasonable offer." [51]

Furthermore, a pooling offer or pooling order is not considered "fair and reasonable" if it has any of the following terms:

> "(1) preferential right of the operator to purchase mineral interests in the unit; (2) a call on or option to purchase production from the unit; (3) operating charges that include any part of district or central office expense other than

[48] Jocelyn Kozlowski, Public Information Officer, Ohio Dept. of Natural Resources, Division of Oil and Gas Resources Management, e-mail correspondence, Nov. 29, 2012 and August 14, 2013.
[49] Id.
[50] Tex. Nat. Res. Code § 102.001, *et seq* (2012).
[51] Id. § 102.013.

reasonable overhead charges; or (4) prohibition against nonoperators questioning the operation of the unit."[52]

iii. Compulsory Pooling in Texas

Since the Mineral Interest Pooling Act law was first enacted in 1965, the Texas Railroad Commission has approved approximately 100 pooling applications.[53] It is likely the reason so few orders have been issued is because the Railroad Commission disfavors compulsory pooling as a matter of policy.[54]

B. Recommendations on Landowner Protections

After reviewing the laws of various states, the Study Group made the following recommendations for mineral owners subject to a pooling order. The purpose of the recommendations below is to provide protections to owners who may be pooled and to encourage voluntary agreement among all owners and operators in a drilling unit.

1. Good Faith Negotiation

A number of states, including Arkansas, Colorado, and Texas, require evidence that a fair and reasonable offer is made before issuing a pooling order.[55] The Study Group recommends that the Mining and Energy Commission also require evidence that operators demonstrate good faith attempts at voluntary agreement by making fair and reasonable offers to all owners in the pool.[56]

2. Minimum Voluntarily Agreement on Pooled Acreage

Many states require that a certain percentage of the pool voluntarily agree to pool their interests before the operator can apply for a compulsory pooling order. This percentage is generally calculated by surface acreage and varies greatly from state to state. For example, Kentucky requires 51% agreement of the owners of the surface acreage to agree to develop the

[52] Id. § 102.015.
[53] Brent G. Sonnier, "Oil and Gas Development and Unitization Laws in Various States," (March 2010) at 36, *available at* www.hadoa.org/.../2010/04%20-%20UnitznPaper_V2NADOA.doc.
[54] Id. ("It [compulsory pooling] appears to be infrequently used just as a matter of Railroad Commission policy, with voluntary pooling (or else likely none at all) the norm.").
[55] Ark. Oil & Gas Comm. Rule A-3(b)(2)(G)(i); Colo. Rev. Stat. § 34-60-116(7)(d); Tex. Nat. Res. Code § 102.013.
[56] The Study Group recommends the following language based on Colorado's statue: "No order pooling an unleased nonconsenting oil and gas interest owner shall be entered by the Commission until the Commission has received evidence the unleased oil and gas owner was tendered a reasonable offer to lease upon terms no less favorable than those currently prevailing in the area at the time that application for such order was made."

unit before the applicant can apply for a pooling order.[57] Only 25% of the owners of the surface acreage must agree in Virginia.[58] Ohio has unofficial requirement of 90% agreement of owners of the surface acreage.[59]

Recommendation

The Study Group recommends a minimum voluntary agreement minimum requirement of 90% of the owners of the surface acreage. Appendix III shows maps of how a standard natural gas parcel of 320 acres and one of 640 acres would look in Lee County, given different percentages of voluntary agreement.[60] The regulations for a drilling unit have yet to be determined. Assuming the drilling unit will be a square mile or 640 acres is only a hypothetical. The Administration of Oil and Gas Committee of the Mining and Energy Commission will determine future drilling unit regulations.

3. Landowner Consent for Surface Use

Ohio and West Virginia provide that surface operations or well placement requires the consent of the mineral interest owner.[61] The Study Group recommends that unleased mineral owners who are compulsory pooled should have to give consent to use of the surface. That is, surface operations should be prohibited without the express agreement of the unleased mineral interest owner subject to the pooling order.[62]

Additionally, the Study Group recommends that prior to applying for a pooling application, the applicant should have a surface use agreement in place.

C. Notice of Subsurface Entry

Current North Carolina law requires that gas operators provide the surface owner with notification at least 30 days in advance of entering a property to initiate any activity that will disturb the surface.[63] It provides that gas operators provide a 14-day notice in advance of

[57] Ky. Rev. Stat. Ann. § 353.630(2)(2012).
[58] Va. Code Ann. § 45.1-361.21(C)(3)(2012).
[59] "Mandatory Pooling Overview," *supra* note 44 (the Ohio percentage is not a statutory requirement but guidance provided by their environmental agency).
[60] Don Kovasckitz of Lee County Strategic Services prepared the maps found in Appendix II.
[61] Ohio Rev. Code § 1509.27; W. Va. Code § 22C-9-7 (b)(1)(2012).
[62] The Study Group recommends the following language: "No surface operations or disturbances to the surface of the land shall occur on a tract pooled by an order without the written consent of or a written agreement with the owner of the tract that approves the operations or disturbances."
[63] N.C. Gen. Stat. § 113-420(b).

entering a property to initiate activities that will not disturb the surface.[64] The latter provision could be read to require a notice be provided in the case of an entry to the subsurface. However, it seems more likely that the provision was intended and would be understood by a court to mean that a 14-day notice be provided prior to an entry onto the surface to conduct a non-surface-disturbing activity such as surveying. As a result, current law appears to fail to address the issue of notice of subsurface entry that is part of the drilling process.

Surface owners would benefit significantly from receiving notice of subsurface entry to provide them the opportunity to complete any water quality or other environmental testing that they wish to complete in addition to the baseline testing required by the State. Mineral rights owners also would benefit because it would provide them an indication that drilling is imminent, allowing them to become attentive to receiving payments from the gas production and to monitoring reporting of their contribution to well costs. For owners of compelled mineral rights and for surface owners who own the surface above these compelled mineral estates and the remaining subsurface rights, these benefits are even greater. Such surface owners and compelled mineral rights owners are likely to have had less time to make such preparations than their neighbors who leased their mineral rights months if not years before the pooling order was issued.

Providing advance notice to landowners and mineral rights owners also is not likely to place any appreciable burden on industry. Operators likely will have surface and mineral rights owners' names and addresses from their leasing efforts and their research for preparing the plats for their applications to designate production units. Even if not, the availability of this information online or at a central location within each county would make gathering it administratively easy.

Finally, providing and receiving notice promotes good relations between operators and surface owners or mineral rights owners in the production unit, which will facilitate resolution of any later disputes. While entry to the subsurface may not be as apparent as a surface entry to a general observer, to many landowners, particularly those who have been compelled into the unit, it will feel just as intrusive.

[64] Id. § 113-420(a).

Recommendation

The Study Group recommends that all operators within a drilling unit shall provide written notice between 30 days and six months prior to initiating drilling in the production unit containing the compelled mineral estate to the following parties:

1. owners of compelled mineral rights who were required to be provided notice of the compulsory pooling process;
2. owners of surface estates above the compelled mineral rights whose names are recorded as surface owners with the county register of deeds at the time that the application for a compulsory pooling order was filed;
3. owners of surface estates above the compelled mineral rights that provide the operator with a request for notice subsequent to a pooling order;
4. each holder of a mortgage lien against the compelled property that has recorded the lien with the county register of deeds at the time that the application for a mandatory pooling order was filed; and
5. each mortgage lien holder against a compelled property that subsequent to a pooling order requests a notice and provides the operator a copy of a recorded lien against the compelled property.

D. Reporting on Production

Current North Carolina law requires that gas operators report the following production information to parties from whom they have leased gas and oil rights: "the time period for which the royalty payment is made, the quantity of product sold within that period, and the price received, at a minimum."[65] It also provides that "[u]pon written request, the lessor shall be entitled to inspect and copy records of the oil or gas developer or operator related to production and royalty payments associated with the lease."[66] Current law makes no provision regarding the reporting requirements to parties who have retained a working interest.

Except for the information provided by the operator of their production unit, mineral rights owners will have no information about the royalty payments and other funds that they are due from the production of their oil and gas. To ensure that they are being properly compensated, mineral rights owners need sufficient information to be able to determine independently that

[65] Id. § 113-423(c).
[66] Id.

they are receiving the proper payment for the proper share of the production from the proper well.

While current North Carolina law requires in general terms that operators provide some information needed to calculate well royalties, it does not specifically require a number of elements that are essential for confirming proper payment. Providing such information to mineral rights owners should not burden operators because it is the same information that operators require to calculate an individual mineral rights owner's payments. The Study Group has proposed the recommendations below to ensure all relevant information will be reported to all appropriate parties.

Recommendations

Operators should be required to provide the following information in a clearly written statement accompanying each royalty payment or working interest share payment:

Identification Information:

1. Name of oil and gas rights owner (lessor or working interest owner);
2. Owner's identification number (account number or payee number utilized by producer); and
3. Lease number (if applicable), property name, API well number, and well name.

Payment Calculation Information:

1. Total volume sold of oil (in barrels), of gas (in MMBtu (1000's of Btus)), of natural gas liquids (NGL) (in gallons or barrels), and of other products (in relevant units);
2. Price per unit of oil, gas, NGL, and other products sold;
3. Month and year of sale (to confirm price);
4. Owner's interest in sale expressed as a decimal;
5. Owner's share in dollars before deductions and adjustments;
6. Each deduction including severance, production, and other taxes, transportation, line loss, compression, processing, treatment, marketing, gathering, third party charges and a key explaining each deduction; and
7. Owner's share in dollars after deductions and adjustments.

Contact Information to be included with every payment:

1. Address;
2. Telephone number; and

3. Email address where additional information may be obtained and questions answered.

The following persons should receive the report:

1. Each recipient of well production proceeds who is compelled into a production unit;
2. Each holder of a mortgage lien against the compelled property that has recorded the lien with the county register of deeds at the time that the application for a compulsory pooling order is filed; and
3. Each mortgage lien holder against a compelled property that subsequent to a pooling order provides the operator a copy of a recorded lien against the compelled property.

Records subject to review include records containing the source of information identified in the above recommendation and should include, at a minimum, the following information necessary to verify those records: third party evidence of pricing (e.g., purchase contract), wellhead charts, master meter readings, and meter calibration reports. In addition, mineral rights owners should have the right to audit any records used or relied upon by the operator in determining well production or calculating payments.

E. Dissolution of the Drilling Unit

Once a unit is established, there may be instances in which the unit should be dissolved automatically. This will protect landowner rights by freeing the property for other uses and development where the oil and gas exploration has failed to commence in a timely manner. It will also provide incentive for oil and gas companies to begin exploration where a unit has been established.

Recommendation

Consistent with Texas law on the dissolution of the drilling unit, the Study Group recommends that a drilling unit be automatically dissolved if no production occurs one year after the pooling order has been issued, six months after the completion of a dry hole, or six months after production has ended, whichever occurs first.[67]

[67] Tex. Nat. Res. Code § 102.082. The Study Group recommended language identical to the Texas law as follows: "A unit is automatically dissolved: (1) one year after its effective date if no production or drilling operations have been had on the unit; (2) six months after the completion of a dry hole on the unit; or (3) six months after cessation of production from the unit." Id.

III. Clarification of Mineral Rights Ownership

"Under long established principles of property law, the minerals in place underneath the surface of the earth, including oil and gas, can be owned separately and distinctly from the surface of the property."[68] That is, the minerals in the subsurface are capable of being a separate estate from the surface estate. When the oil, gas, or mineral rights are separately conveyed, the rights are said to have been severed, and the estate is called a severed or split estate.[69] In order to be recognized as valid under principles of real property law, mineral rights and oil and gas rights must be created and conveyed in writing and should be recorded in the county register of deeds office.[70]

A. Oil and Gas Interests as Distinct from Mineral Rights

Case law with regard to split estates often refers to the mineral estate generally in distinguishing it from the surface estate.[71] North Carolina statutes, however, may be interpreted to distinguish oil and gas rights as distinct from mineral rights. Oil and gas is not included in the definition of "mineral" in The Mining Act of 1971. The Mining Act defines "mineral" to mean "soil, clay, coal, stone, gravel, sand, phosphate, rock, metallic ore, and any other solid material or substance of commercial value found in natural deposits on or in the earth."[72] The Act defines "mining" as follows:

> "a. The breaking of the surface soil in order to facilitate or accomplish the extraction or removal of minerals, ores, or other solid matter.
> b. Any activity or process constituting all or part of a process for the extraction or removal of minerals, ores, soils, and other solid matter from their original location.
> c. The preparation, washing, cleaning, or other treatment of minerals, ores, or other solid matter so as to make them suitable for commercial, industrial, or construction use."[73]

[68] DOJ Report, *supra* note 13, at 11. For more information, the DOJ Report provides a thorough legal analysis of mineral and surface rights issues.
[69] Id.
[70] Id.
[71] Id. at 12.
[72] N.C. Gen. Stat. § 74.49(6).
[73] Id. §74.49(7).

While the Mining Act does not expressly include oil and gas rights in the definition of minerals or mining, the Oil and Gas Conservation Act applies to all "common sources of supply of natural gas."[74]

Mineral deeds will often convey the rights to all minerals and may specify oil and gas rights in addition to mineral rights. In *Frye v. Arrington*,[75] a deed from 1946 listed a reservation of "oil, gas and minerals in and under the surface of said lands and all rights and ownership therein…"[76] When a deed does not address oil and gas rights as distinct from mineral rights, the terms of the conveyance and the intent of the parties at the time of the conveyance are used to determine whether a reservation of the mineral estate alone would include oil and gas rights.[77]

B. Dormant Mineral Statutes

The practice of severing the mineral estate from the surface estate combined with generations of conveyance, devise, and descent has resulted in estates with numerous mineral owners. Owners of such interests may be absent from the locality or unaware they own the interest. In order to address these issues and encourage development, the General Assembly enacted laws known as the "dormant minerals" statutes to address fractured property interests and allow owners to merge a severed estate if certain conditions are met.[78]

In North Carolina, there are ten dormant mineral statutes: nine statutes that cover individual counties and one statute that applies to the remaining counties. All the statutes share similar language as excerpted below from G.S. § 1-49:

> "Where it appears on the public records that the fee simple title to any oil, gas or mineral interests in an area of land has been severed or separated from the surface fee simple ownership of such land and such interest is not in actual course of being mined, drilled, worked or operated, or in the adverse possession of another, and that the record titleholder of any such oil, gas or mineral interests has not listed the same for ad valorem tax purposes in the county in which the same is located for a period of five years prior to January 1, 1986, any person, having the legal capacity to own land in this State, who has on January 1, 1986, an unbroken chain of title of record to the surface estate of the area of

[74] Id. § 113-387.
[75] 58 N.C. App. 180, 292 S.E.2d 772 (N.C. App. 1982).
[76] DOJ Report, *supra* note 13, at 12.
[77] Id.
[78] Id. at 13, citing N.C. Gen. Stat. § 1-42.1 – § 1-42.9.

> land for at least 30 years and provided the surface estate is not in the adverse possession of another, shall be deemed to have a marketable title to the fee estate[.]"[79]

Additionally, North Carolina law provides for extinguishment by abandonment or adverse possession of both surface and subsurface rights.[80] In order to be subject to extinguishment, the resource cannot be in use as of the effective date or the subsurface interest cannot be in adverse possession. Actual mining is required to establish adverse possession of oil, gas, and mineral rights. Mere lapse of time and nonpayment of taxes are not sufficient to establish abandonment.[81]

In accordance with the statutes, the county in which an extinguishment is being sought must have given notice of the statute in a newspaper on or before January 1986.[82] It is not clear which counties did or did not give proper notice, which leaves an open question as to whether these notice provisions were properly satisfied.

Additionally, dormant minerals statutes similar to North Carolina's have been challenged in other states as an unconstitutional taking of private property rights without notice and compensation. In 1982, the United States Supreme Court weighed in on the issue and declared an Indiana dormant minerals statute constitutional.[83] In *Texaco Inc. v. Short*, the Court held that an Indiana law which allowed extinguishment of mineral interests after 20 years without the occurrence of an event to preserve those interests was rationally related to a legitimate state interest in generating tax revenue, encouraging mineral development, and identifying the owners of the mineral estates.[84] The Indiana statute did not require notice prior to the interest being extinguished.[85]

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[79] N.C. Gen. Stat. § 1-49(a).
[80] Ted Feitshans, CLE: Representing Landowners in Oil and Gas Leasing Transactions, at II-14, North Carolina Bar Association (Dec. 8, 2011).
[81] Id. at II-16.
[82] Id.; "The board of county commissioners shall publish a notice of this section in a newspaper published in the county or having general circulation in the county once a week for four consecutive weeks prior to January 1, 1986." N.C. Gen. Stat. § 1-49(e).
[83] Texaco, Inc. v. Short, 454 U.S. 516 (1982).
[84] Id. at 529.
[85] Roy A. Powell, et al., United States: Dormant Minerals Acts and the Marcellus and Utica Shale Plays, Jones Day (April 22, 2013), http://www.mondaq.com/unitedstates/x/234980/Oil+Gas+Electricity/Dormant+Minerals+Acts+and+the+Marcellus+and+Utica+Shale+Plays. The current language of the statute: "An interest in coal, oil and gas, and other minerals, if unused for a period of twenty (20) years, is extinguished and the ownership reverts to the owner of the

In *Texaco*, the Supreme Court avoided the takings issue by finding that the statute was not a government action, but rather based on the inaction of the mineral interest owner.[86] The North Carolina Court of Appeals favorably cited *Texaco* in a 2008 decision, *Rowlette v. State*.[87] In *Rowlette*, the plaintiffs brought a challenge under the Unclaimed Property Act.[88] The court ruled in favor of the State, citing *Texaco* in finding that "the State does not take possession of private property through any overt action on its part. Rather, the State comes into possession of the property as a result of the owner's neglect which causes the property to be unclaimed for the prescribed period of time, and thus deemed abandoned."[89]

However, an older North Carolina Supreme Court case concerning a state railroad extinguishment statute was held unconstitutional for lack of due process.[90] The statute at issue in the case *McDonald's Corp. v. Dwyer* created a presumption that title to an abandoned railroad easement would vest in an adjacent property owner if the railroad did not file an action within a year to rebut the presumption.[91]

The Court distinguished the statute at issue in *Texaco*, stating:

> "The Supreme Court in *Texaco* held that the statute fulfilled due process requirements because 'it is the owner's failure to make any use of the property – and not the action of the State – that causes the lapse of the property right...'

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interest out of which the interest in coal, oil and gas, and other minerals was carved. However, if a statement of claim is filed in accordance with this chapter, the reversion does not occur." Ind. Code § 32-23-10-5 (2002).

[86] 454 U.S. 516, 530 ("It is the owner's failure to make any use of the property — and not the action of the State — the causes the lapse of the property right; there is no "taking" that requires compensation. The requirement that an owner of a property interest that has not been used for 20 years must come forward and file a current statement of claim is not itself a 'taking.'").

[87] 188 N.C. App. 712 (2008).

[88] Id. at 712.

[89] Id. at 732.

[90] McDonald's Corp. v. Dwyer, 338 N.C. 445 (1994).

[91] Id. at 446, citing N.C. Gen. Stat. § 44.1. "Whenever a railroad abandons a railroad easement, all right, title and interest in the strip, piece or parcel of land constituting the abandoned easement shall be presumed to be vested in those persons, firms or corporations owning lots or parcels of land adjacent to the abandoned easement, with the presumptive ownership of each adjacent landowner extending to the centerline of the abandoned easement... Persons claiming ownership contrary to the presumption established in this section shall have a period of one year from the date of enactment of this statute or the abandonment of such easement, whichever later occurs, in which to bring any action to establish their ownership." Id.

> Unlike *Texaco*, here it is only the State's action that causes the lapse. No neglect, failure to use, or abandonment is attributable to defendants."[92]

The North Carolina dormant mineral statutes are consistent with the Indiana statute at issue in *Texaco*, in that it is the owner's failure to make use of the property that leads to extinguishment.

C. Recommendation on the Clarification of Mineral Rights Ownership

The Study Group recommends that the issue of amending the dormant minerals statutes be studied further. It was determined that making a recommendation on this issue is outside the scope of the Study Group. It was further recommended that the Mining and Energy Commission consult with the Department of Revenue and county register of deeds offices on the issue.

One model that may be followed is the process to register rights to submerged lands as provided in N.C. Gen Stat. § 113-205. This statute required that persons claiming submerged land property rights had three years to register claims with the Secretary of the Department of Environment and Natural Resources after notice was given by publication each year.[93]

[92] Id. at 445, quoting 454 U.S. 516, 530.
[93] N.C. Gen. Stat. § 113-205.

IV. Cost Sharing and Compulsorily Pooled Interests

The pooling order will set the terms for sharing of costs and production revenues from the well. There are three general approaches to compulsory pooling and cost sharing: free ride, risk penalty, and surrender of working interest.

The first approach is the free ride statute, which is currently the law in North Carolina.[94] Free ride statutes allow the non-consenting owner to share in the profits of production, and to share in the costs to the extent such costs are covered by revenues, without being responsible for the risks involved with exploration or development. That is, if a well is successful, the non-consenting owner will be entitled to his or her pro rata share of the production, less costs. On the other hand, if the well is a dry hole, or non-producing, the operator and those who voluntarily joined the pool will absorb the whole loss in accordance with their agreement. The non-consenting owner who was compulsory pooled will owe nothing. Other free ride states include Alaska, Arizona, Indiana and Missouri.[95] Experts have noted that free ride statutes can create reverse incentives to hold out; the landowner may be discouraged from joining voluntary pooling agreements when there is no risk or penalty associated with being compulsorily pooled.[96]

The second approach, called the risk penalty approach, was designed in part to address the problem of owners who hold out for a better price or deal through a pooling order. A risk penalty is a percentage of well costs above well costs applied to reimburse the well operator for the risk involved with the development of the well. This approach seeks to eliminate the owner's free ride and to compensate the operator for both the costs and risk associated with drilling. The non-consenting owner would be carried through the drilling phase, and, if the drilling is successful, the operator may withhold the owner's share of costs and the additional percentage of risk penalty. If the well is unsuccessful, the non-consenting owner would not be responsible for costs. Close to half the states with compulsory pooling statutes offer this approach to interest holders.[97]

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[94] N.C. Gen. Stat. 113-393 ("After being reimbursed for the actual expenditures for drilling and equipping and operating expenses incurred during the drilling operations and until the operator is reimbursed, the operator shall thereafter pay to the owner of each tract within the pool his ratable share of the production calculated at the market price in the field at the time of such production less the reasonable expense of operating the well.").
[95] Kramer & Martin, *supra* note 2, § 12.02.
[96] Bruce M. Kramer, *Compulsory Pooling and Unitization: State Options in Dealing with Uncooperative Owner,* 7 J. ENERGY L. & POL'Y 255 (1986).
[97] Kramer & Martin, *supra* note 2, § 12.02.

A third approach, called the surrender of working interest approach, allows the non-consenting owner a chance to assign his interest to the operator. Non-consenting owners who do not want to pay costs upfront or as the well is drilled and do not want to be subject to a risk penalty may elect to surrender their working interest to the operator in exchange for a bonus payment, a royalty interest, or some combination of the two.[98] Essentially this arrangement would operate the same as a lease, except the terms of the lease would be determined by the State.[99] Among other terms, the State would have to determine the duration and extent of the assignment and how to treat other interests carved out of the interest prior to the assignment in a manner that is just and reasonable. The states that follow this approach include Arkansas, Idaho, Illinois, South Dakota and West Virginia.[100]

Some states allow non-consenting owners to choose which approach will best serve their interests by offering a choice of elections that utilizes the approaches described above. A regulatory scheme involving elections for the oil and gas owner allows the non-consenting owner to participate in the well and to share in both the well's risk of failure and the opportunity for profits. Before an order is issued by a state conservation commission, a common process is to send the owner a notice of potential elections he or she can choose from within a designated period of time after a pooling order has been issued.

A. Cost Sharing in Other States

1. Arkansas

The Arkansas Oil and Gas Conservation Act provides that the non-consenting owner who does not elect to share in the costs of operating a well shall assign his or her rights in the unit to those who do participate in the costs of the unit operations.[101] A compulsory pooling order must establish reasonable terms to afford each owner in the unit an opportunity to recover his or her just and reasonable share of oil and gas in the pool.[102] Non-consenting owners in Arkansas also have the option to execute a lease voluntarily or to pay into costs as a working

[98] Landy & Reese, *supra* note 8.
[99] Id. at 11053.
[100] Kramer & Martin, *supra* note 2, § 12.02.
[101] Ark. Code Ann. § 15-72-304(d)(2012).
[102] Id. § 15-72-304(a).

interest owner.[103] If the owner does not wish to participate, the statute takes a surrender of the working interest approach as follows:

> "[A]n owner who does not affirmatively elect to participate in the risk and cost of the operations shall transfer his rights in the drilling unit and the production from the unit well to the parties who elect to participate therein for a reasonable consideration and on a reasonable basis, which in the absence of agreement between the parties, shall be determined by the commission. The transfer may be either a permanent transfer or may be for a limited period pending recoupment out of the share of production attributable to the interest of the nonparticipating owner by the participating parties of an amount equal to the share of the costs that would have been borne by the nonparticipating party had he participated in the operations, plus an additional sum to be fixed by the commission."[104]

If the non-consenting owner chooses not to sign a lease or participate in the drilling, he or she may be carried by the operators for cost. If the well is productive, the operator may retain the revenue allocated to those non-consenting interests until it reaches an amount those parties would have paid for participating, plus an additional sum to be determined by the Arkansas Oil and Gas Commission.[105]

The election rights are different if a producing well already exists at the time the order is issued by the Arkansas Oil and Gas Commission. In that event, the order must designate a time period within which a nonparticipating owner will either reimburse the drilling parties in cash for his or her share of the actual costs or transfer his or her rights in the drilling unit and the production of the well until the parties have received the share of production attributable to the interest in an amount equal to the share of costs that would have been paid had that owner participated.[106]

In the event there is an unleased oil and gas interest, the owner thereof shall be regarded as the owner of a royalty interest of one-eighth of the gas sold.[107] According to the Act, one-eighth of all gas sold shall be considered royalty gas and the net proceeds should be distributed

[103] Charles A. Morgan, The Arkansas Leasing Manual, at 19 (2008), *available at* http://www.geology.ar.gov/pdf/Leasing%20Manual%202008.pdf.
[104] Ark. Code Ann. § 15-72-304 (b)(4).
[105] Id.
[106] Id. § 15-72-304(c).
[107] Id. § 15-72-304(d).

to the owners of marketable title to the royalty interest.[108] Unless all of the royalty owners within the unit agree otherwise, the Act provides the method of distribution.[109]

2. Colorado

In accordance with the Colorado Oil and Gas Conservation Act, a compulsory pooling order must first establish the pro rata share of interest of each owner in the drilling unit and provide that each consenting owner is entitled to receive the share of production attributable to his or her interest.[110] For the non-consenting owner, the order must provide for the proportionate payment of costs to the consenting owners out of the non-consenting owner's share of production costs.[111] A working interest owner that does not consent to the drilling and refuses to pay for costs is subject to a 100% recoupment of the costs of drilling including surface equipment and 200% of the costs of drilling preparation, well drilling, and completion of the well, including wellhead connections.[112] These penalties apply to owners who are oil and gas lessees.[113]

The statute gives unleased non-consenting owners a royalty interest of one-eighth share of production until the consenting owners recover costs out of the other seven-eighths of the non-consenting owner's share of production.[114] After costs are recovered, the unleased non-consenting owner will own its whole 100% share of the well.[115] The Act provides:

> "A non-consenting owner of a tract in a drilling unit which is not subject to any lease or other contract for the development thereof for oil and gas shall be deemed to have a landowner's proportionate royalty of twelve and one-half percent until such time as the consenting owners recover, only out of the non-consenting owner's proportionate seven-eighths share of production... After recovery of such costs, the non-consenting owner shall then own his proportionate eight-eighths share of the well, surface facilities, and production

[108] Id. § 15-72-305(a)(3).
[109] Id.
[110] Colo. Rev. Stat. § 34-60-166(6) (2012).
[111] Id. § 34-60-116(a).
[112] Id. § 30-60-116(7)(b)(I-II).
[113] Id. § 34-60-116(a).
[114] Id. § 34-60-116(7)(c); Landy & Reese, *supra* note 8, at 11054.
[115] Colo. Rev. Stat. § 34-60-116(7)(c).

> and then be liable for further costs as if he had originally agreed to drilling of the well."[116]

Unleased owners are treated differently in certain statutes, including the Colorado statute, because they are likely to be private landowners and typically are entitled to a greater share of production because they have not assigned any of their oil and gas rights.[117] Colorado's cost sharing provision ensures a "just and equitable" share of production is allocated to the unleased landowner.[118]

3. Ohio

Section 1509.27 of the Ohio Revised Code provides that if an owner of a tract pooled by an order does not elect to participate in the risk and costs of operating the well, that individual will be designated a nonparticipating owner and will be carried subject to terms and conditions that are just and reasonable as determined by the Chief of the Division.[119] The applicant or operator who bears the cost is entitled to the nonparticipating owner's share of production from the drilling unit, minus that nonparticipating owner's share of the royalty interest, until the applicant or operator has received the share of costs charged to the nonparticipating owner plus an additional percentage of the share of costs as determined by the Chief of the Division.[120] The allocation of production is based on surface acreage.[121]

Furthermore, the additional percentage or the risk penalty cannot exceed 200% of the share of costs charged to the nonparticipating owner.[122] After the costs have been paid to the operator, the nonparticipating owner shall receive a proportionate share of the working interest in the well and a proportionate share of the royalty interest, if any.[123]

4. Texas

The Mineral Interest Pooling Act sets forth the right for non-consenting owners in a pooled unit.[124] Since pooling is discouraged in Texas, the statute's cost allocation scheme is relatively

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[116] Id.
[117] Landy & Reese, *supra* note 8, at 11056.
[118] Id.
[119] Ohio Rev. Code Ann. § 1509.27 (2012).
[120] Id.
[121] Id.
[122] Id.
[123] Id.
[124] Tex. Nat. Res. Code § 102.051 (2012).

simple and has not substantially changed since its enactment in 1965.[125] According to the Act, the production shall be allocated according to the proportion of surface acreage owned in the unit.[126] However, if the Railroad Commission finds that the allocation based on surface acreage is unfair, it must allocate the production so that each tract receives its fair share.[127]

For an owner who does not wish to pay into the costs, the Act takes a risk penalty approach.[128] The Railroad Commission "shall make provision in the pooling order for reimbursement solely out of production, to the parties advancing the costs, of all actual and reasonable drilling, completion, and operating costs plus a charge for risk not to exceed 100 percent of the drilling and completion costs."[129] That is, the non-consenting owner will be responsible for costs and a maximum of a 100% risk penalty. If there is a dispute over costs, the Railroad Commission will have a hearing to determine proper costs and their allocation.[130]

5. West Virginia

West Virginia provides an election scheme for cost sharing in a drilling unit under its Deep Wells Statute.[131] Under the Statute, a non-consenting landowner may elect from two different options as follows:

- Option 1. To surrender such interest or a portion thereof to the participating owners on a reasonable basis and for a reasonable consideration, which, if not agreed upon, shall be determined by the commission; or
- Option 2. To participate in the drilling of the deep well on a limited or carried basis on terms and conditions which, if not agreed upon, shall be determined by the commission to be just and reasonable.[132]

Thus, an owner who did not voluntarily participate in the pool could choose between the surrender of the working interest approach or the risk penalty approach. Under the risk penalty approach, the operating owner is entitled to the share of production from tracts pooled, exclusive of one-eighth of the production attributable to all unleased tracts, until the market

[125] Sonnier, supra note 53, at 37-39.
[126] Id.
[127] Id.
[128] Id. § 102.052.
[129] Id.
[130] Id.
[131] W. Va. Code 22C-9-7(b)(5) (2012).
[132] Id.

value of the non-consenting owner's share equals double the share of costs charged to the interest of the non-consenting owner.[133]

The West Virginia Legislature considered a proposal for cost sharing and compulsory pooling in shallow wells in 2011 Senate Bill 424.[134] Under the proposed bill, the non-consenting unleased party would have had the following options:

- Elect to assign his or her oil and gas ownership interest pursuant to the terms of the lease submitted by the operator with the drilling unit application;
- Elect to become a non-operating working interest owner by participating in the costs and risk of the well; or
- Elect to participate in the operation of the well as a carried interest owner subject to a risk penalty to be determined by the Commission (between 200 and 300%).[135]

The proposed bill provided that the owner had 30 days to make an election after the pooling order issued or be subject to the first option by default.[136] While this bill failed to pass the legislature with the compulsory pooling provision intact, it does offer a modern approach to an elections statute that could be used by other states.

B. Recommendations

In the interest of developing a modern framework for compulsory pooling that is protective of owners who are compulsorily pooled, the Study Group recommends that the General Assembly repeal the free ride provision of N.C. Gen. Stat. § 113-393(a) and adopt a cost sharing statute that allows the compelled owner to choose from various cost sharing options. Experts have noted that free ride statutes can create reverse incentives to hold out; the landowner may be discouraged from joining voluntary pooling agreements where no risk or penalty is associated with being compulsorily pooled.[137] The Study Group recommends the following options for the election of the compelled owner once a pooling order has issued:

a. Share in Costs as a Participating Owner: The oil and gas interest owner pays its share of the costs of drilling, equipping, and operating the well as the costs are incurred.

[133] Id. § 22C-9-7(b)(6).
[134] Natural Gas Horizontal Well Control Act, W. Va. S.B. 424, § 22C-9-7(b)(6)(Feb. 4, 2011).
[135] Id.
[136] Id.
[137] Kramer, *supra* note 96.

b. Surrender of Working Interest: The oil and gas interest owner surrenders its working interest in the well in exchange for reasonable consideration, which may be a combination of a bonus payment and royalty interest.

c. Risk Penalty: The oil and gas interest owner may have its portion of the costs of drilling, equipping, and operating the well carried by the other interest owners until the production stage, but will be charged a risk penalty to be determined by the Mining and Energy Commission.

The Study Group felt that the cost sharing options are designed to ensure that owners receive a fair and equitable share without incentivizing operators or owners to resort to the administrative process. In addition to providing fair and equitable alternatives for owners, the options approach is designed to reduce the administrative burden of reviewing pooling applications and orders by encouraging all parties to come to a voluntary agreement.

C. Additional Recommendations: The Risk Penalty

The Study Group recommends that the operator be required to quantify the risk associated with drilling a well in a pooled unit as part of its application for a pooling order and to recommend a risk penalty for landowners based upon the estimated risk for the Mining and Energy Commission's consideration but that in no instance should the risk penalty exceed 200%. The costs associated with the risk penalty are the costs of drilling, equipping and completing the well.

There was a concern that small landowners would not receive a just and equitable share under the risk penalty provision. Thus, the Study Group further recommended having an acreage threshold requirement that would allow the Commission to set the risk penalty at zero percent for small landowners. The Study Group agreed that a threshold between half an acre and 10 acres would ensure small landowners receive a just and equitable share of production.

The North Carolina Oil and Gas Conservation Act requires that each owner be provided "the opportunity to recover or receive his just and equitable share of the oil and gas in the pool without unnecessary expense."[138] Accordingly, the Study Group recommends that in assigning risk penalties to each landowner, the Mining and Energy Commission take into account that owners of small acreage interests must bear legal and administrative costs similar in size to those borne by larger area landowners but from a significantly smaller share of the pool's revenue. Specifically, the Study Group recommends that in assigning risk penalties to small

[138] N.C. Gen. Stat. § 113-393.

acreage landowners, the Mining and Energy Commission take into consideration the expenses incurred by an owner in retaining legal counsel to evaluate and respond to lease offers as recommended by the State, in defending the owner's rights in responding to the pooling application and participating in the pooling order process, and in monitoring and auditing the payments it receives over the life of the well.

The Study Group further recommends unleased owners be treated differently under the risk penalty option of a cost sharing statute. The unleased owner will have the costs of drilling, equipping, and operating the well carried until the production stage, but will be charged a risk penalty to be determined by the Mining and Energy Commission. The risk penalty will be paid from seven-eighths of the carried interest owner's share of production. The carried interest owner will receive one-eighth of his or her share of production until the share of costs and the risk penalty have been paid.[139]

[139] This is an approach taken in Colorado and Arkansas. *See* Landy & Reese, *supra* note 8, at 11-2011.

V. Compensation to Landowners for Damages Associated with Exploration and Development

Investigating compulsory pooling led the Study Group to consider associated issues, such as mechanisms for ensuring that landowners are held harmless and compensated for damages sustained as a result of exploration and development activities that take place on their property. Based on its review of regulatory frameworks of other states, the Study Group became aware of deficiencies in North Carolina law that should be addressed.

North Carolina law addresses indemnification for all landowners. Section 422 of the North Carolina Oil and Gas Conservation Act, as amended by Session Law 2012-143, states:

> "An oil or gas developer or operator shall indemnify and hold harmless a surface owner against any claims related to the developer's or operator's activities on the surface owner's property, including, but not limited to, (i) claims of injury or death to any person; (ii) for damage to impacted infrastructure or water supplies; (iii) damage to a third party's property that is real or personal property; and (iv) violations of any federal, State, or local law, rule, regulation, or ordinance, including those for protection of the environment."[140]

Recommendations

The purpose of the following recommendations is to expand on the above section and address concerns particular to compulsory pooling. All rights to indemnification should survive dissolution of the unit.[141]

A. Unleased Owners

The Study Group recommends that an unleased owner with involvement in neither exploration for, nor production of, gas, oil, or related resources from said owner's property should have absolute tort immunity from any action arising from any exploration or production activities on or near said owner's property. Mere receipt of payments in lieu of bonus, royalty, or damage payments by an unleased owner should not constitute involvement in either exploration or production activities. An unleased owner should be held harmless in that the production company should have a duty to defend against any third-party actions, including but not limited to private lawsuits and governmental actions of whatever nature, brought against the unleased

[140] N.C. Session Law 2012-143, § 113-422 (2012).
[141] This applies if the recommendation for automatic dissolution is adopted, *see* Part II-E.

owner. The unleased owner should be entitled to indemnification from the production company for any sums ordered paid and expenses, including attorney fees and costs, incurred as the result of any third-party action.

An unleased owner should be entitled to indemnification for any injuries to his or her own property, person, person of a family member or guest, and other economic interests that are not merely speculative. Other interests may include, but are not limited to, loss of value of real or personal property, rollback taxes under the present use value (PUV) tax program, increased taxes as the result of the partial or complete loss of present use value (PUV) tax program eligibility, loss of income from agriculture, forestry, agritourism, or other business resulting from oil and gas exploration and production activities, and losses associated with violations of federal or state conservation programs, provisions of conservation easements, or acceleration or other clauses or provisions in security agreements for which oil and gas exploration or production activities trigger liability. These protections should not be allowed to be waived by contract.[142]

B. Production Companies

Where two or more production companies are compelled to participate in a single production unit, with a single company selected to conduct exploration or production, rights to indemnification, if any, should be governed by the terms of the joint operating agreement, either as agreed upon by the parties or, in the absence of agreement, as imposed by the Mining and Energy Commission.[143]

C. Leased Owners

The rights of a leased owner (lessor) should be determined by the terms of the joint operating agreement, the original lease, or N.C.G.S. §§ 113-421, -422, whichever provides greater protection to the owner.[144]

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[142] Theodore A. Feitshans, Department of Agriculture and Resource Economics, North Carolina State University, Indemnification Proposals at the meeting of Compulsory Pooling Study Group (May 31, 2013), *available at* http://portal.ncdenr.org/c/document_library/get_file?uuid=7ea3cd2b-51d5-48eb-9e52-a434b0ba665b&groupId=8198095). Under the options approach to compulsory pooling, circumstances can be envisioned under which an initially unleased owner should be deemed a leased owner. The line needs to be defined. In general, the determination should be made based upon the extent to which the owner has assumed the risks and benefits of exploration and production. Id.

[143] Id.

[144] Id. An indemnification provision that did not provide at least that contractually agreed upon in a lease might violate the Contract Clause of Article I, section 10 of the U.S. Constitution. Id.

Appendix I: Definitions

Assignment of the lease – transfer of all rights of the lease from the lessee to another party.

Compulsory pooling – mandatory inclusion of oil and gas interests into a drilling unit after the applicant was unable to form a drilling unit through voluntary agreement.

Drilling unit or **spacing unit** – refers to the area which may be efficiently and effectively drained by one well. The unit may dictate both the minimum acreage required to drill a well and the well density over the designated common source of supply.

Duty to defend – duty imposed by law or contract upon one party, to defend a legal action brought against another. The duty may include a right on the part of the one assuming the duty to direct the course of the defense, including the choice of counsel.

Gas – shall mean all natural gas, including casing-head gas, and all other hydrocarbons not defined as oil in subdivision (7). (Subdivision (7): "'Oil' shall mean crude petroleum oil, and other hydrocarbons, regardless of gravity, which are produced at the well in liquid form by ordinary production methods, and which are not the result of condensation of gas after it leaves the reservoir."). (GS § 113-389(3),(7))

Indemnification – restoration of a victim (an indemnitee) of a loss, in whole or in part, by one (an indemnitor) required by law or contract to so. Indemnification includes but is not limited to losses to the indemnitee that result from a legal action by a third party against the indemnitee. Potential losses for which an indemnitee may be indemnified include any economic loss including both losses to the property and person of the indemnitee. Such losses do not generally include non-economic losses or losses that are highly speculative.

Landman – an individual who performs various services for oil and gas exploration companies. According to the website of the American Association of Professional Landmen (AAPL), these services include: negotiating for the acquisition or divestiture of mineral rights; negotiating business agreements that provide for the exploration for and/or development of minerals; determining ownership in minerals through the research of public and private records; reviewing the status of title, curing title defects and otherwise reducing title risk associated

with ownership in minerals; managing rights and/or obligations derived from ownership of interests in minerals; and unitizing or pooling of interests in minerals.[145]

Leased interest owner – an oil and gas owner who has entered into an oil and gas lease.

Lessee – shall mean the person entitled under an oil and gas lease to drill and operate wells. (GS § 113-389(6a))

Lessor – shall mean the owner of subsurface oil or gas resources who has executed a lease and who is entitled to the payment of a royalty on production. (GS § 113-389(6b))

Oil – shall mean crude petroleum oil, and other hydrocarbons, regardless of gravity, which are produced at the well in liquid form by ordinary production methods, and which are not the result of condensation of gas after it leaves the reservoir. (GS § 113-389(7))

Oil and gas developer or operator or **developer or operator** – shall mean a person who acquires a lease for the purpose of conducting exploration for or extracting oil or gas. (GS § 113-389(7a))

Owner – shall mean the person who has the right to drill into and to produce from any pool, and to appropriate the production either for himself or for himself and others. (GS § 113-389(8))

Leased interest owners – those persons who have assigned their oil and gas rights for development.

Partial or absolute tort immunity – partial or complete exemption from tort liability (which may require a motion to dismiss and proof of status within the exempt class).

Pool – shall mean an underground reservoir containing a common accumulation of crude petroleum oil or natural gas or both. Each zone of a general structure which is completely separated from the other zone in the structure is covered by the term "pool" as used herein. (GS § 113-389(10))

Producer – shall mean the owner of a well or wells capable of producing oil or gas, or both. (GS § 113-389(11))

Production cost – cost of drilling, completion, and operating, including raw materials and labor.

[145] Derived from AAPL bylaws. *Bylaws,* American Association of Professional Landmen, http://www.landman.org/about-aapl/bylaws (last visited July 16, 2013).

Risk Penalty – a percentage of well costs above the actual costs of the well applied to reimburse the well operator for the risk involved with the development of the well.

Royalty interest – a share of production, or the value or proceeds of production, free of the costs of production, when and if there is production.[146]

Royalty interest owner – those entitled to a percentage of the proceeds after costs are paid.

Severed estate – split ownership of the surface and subsurface by conveyance of the oil and gas rights from the owner or by reservation of the oil and gas rights by the owner.

Surface owner – means the person who holds record title to or has a purchaser's interest in the surface of real property. (GS § 113-389(12b))

Surface use agreement – an agreement to determine use of the surface by an operator during oil, gas or mineral development and compensation to surface owner for any use or disturbance of the surface.

Unleased interest owners – those persons who have not assigned their oil and gas rights for development.

Unitization – designates a common source of supply, such as a reservoir of oil, for the efficient and economic development of oil and gas.

Waste – in addition to its ordinary meaning, shall mean 'physical waste' as that term is generally understood in the oil and gas industry. It shall include:

a. The inefficient, excessive or improper use or dissipation of reservoir energy; and the locating, spacing, drilling, equipping, operating or producing of any oil or gas well or wells in a manner which results, or tends to result, in reducing inefficiently the quantity of oil or gas ultimately to be recovered from any pool in this State.
b. The inefficient storing of oil, and the locating, spacing, drilling, equipping, operating or producing of any oil or gas well or wells in a manner causing, or tending to cause, unnecessary or excessive surface loss or destruction of oil or gas.
c. Abuse of the correlative rights and opportunities of each owner of oil and gas in a common reservoir due to nonuniform, disproportionate, and unratable withdrawals causing undue drainage between tracts of land.

[146] John S. Lowe, Oil and Gas Law in a Nutshell, West's Law in a Nutshell Series (5th ed. 2009).

d. Producing oil or gas in such manner as to cause unnecessary water channelling or coning.

e. The operation of any oil well or wells with an inefficient gas-oil ratio.

f. The drowning with water of any stratum or part thereof capable of producing oil or gas.

g. Underground waste however caused and whether or not defined.

h. The creation of unnecessary fire hazards.

i. The escape into the open air, from a well producing both oil and gas, of gas in excess of the amount which is necessary in the efficient drilling or operation of the well.

j. Permitting gas produced from a gas well to escape into the air.

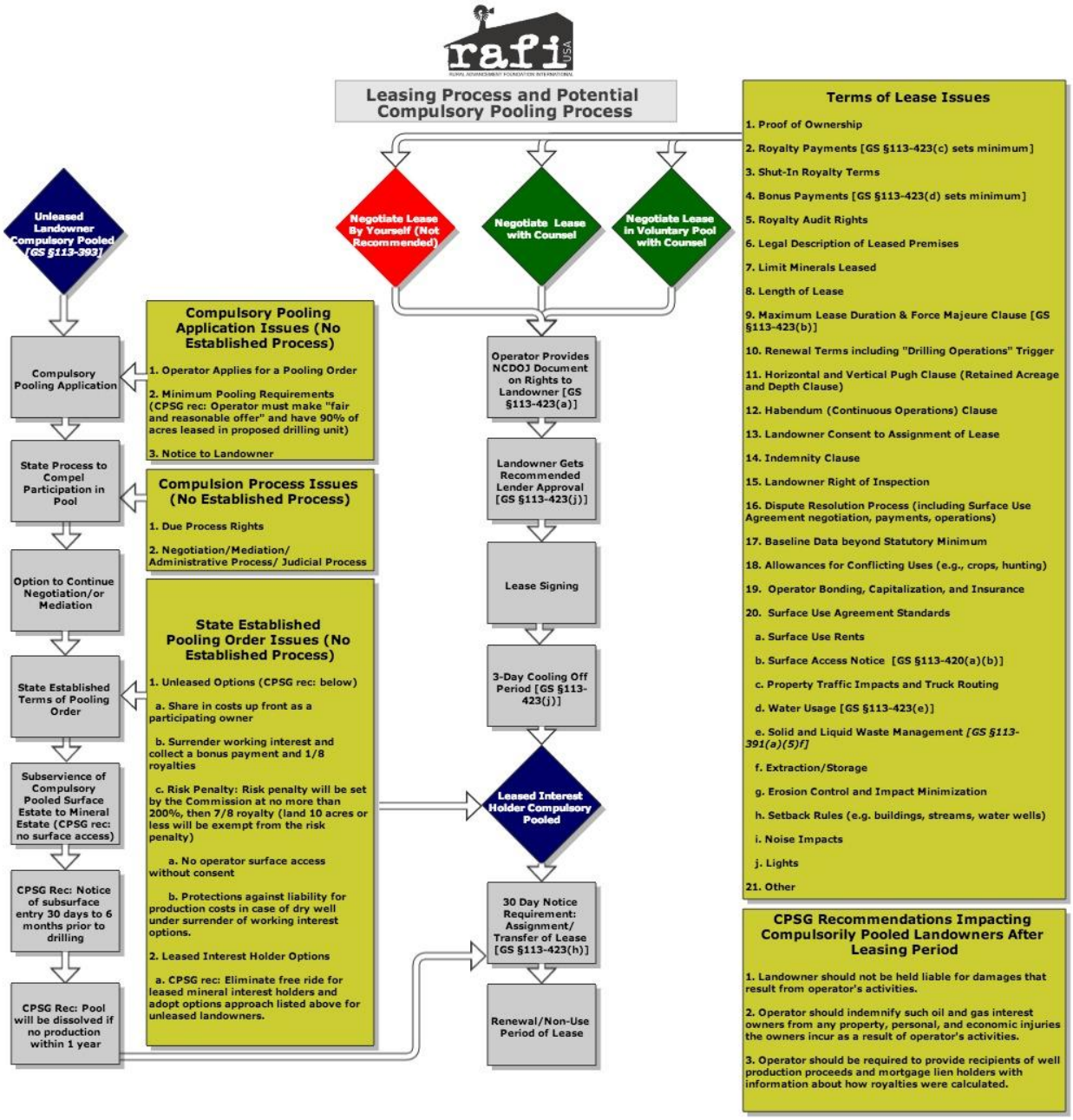
(GS § 113-389(14))

Working interest – the rights to the oil and gas interest granted by an oil and gas lease whereby the developer or operator acquires the right to work on the property to explore, develop, and produce oil and gas and the developer or operator has the obligation to pay all costs.[147]

Working interest owners – those persons who participate in the costs of unit production.

[147] Id.

Appendix II: RAFI Chart[148]



[148] RAFI would like to note that developing this chart is not an endorsement of compulsory pooling in North Carolina. This chart was developed as a tool to help identify issues related to compulsory pooling.

Appendix III: GIS Maps

Figure 1. 320 Acres- 80%

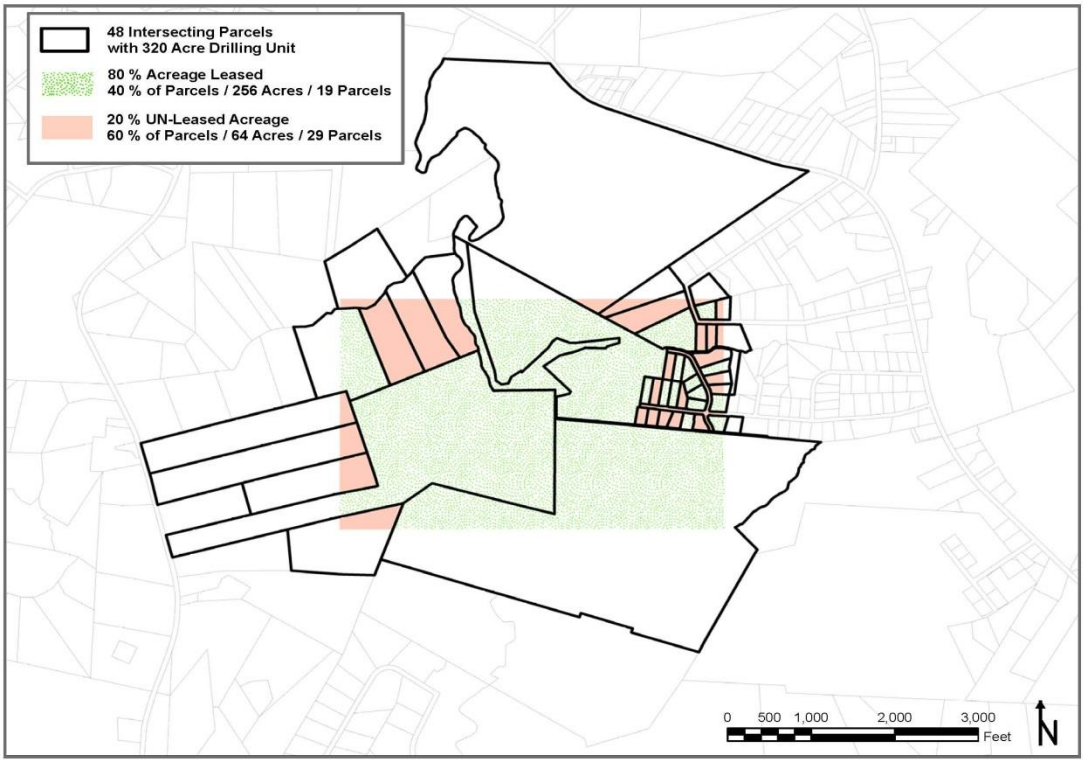


Figure 1 shows a hypothetical drilling unit of 320 acres in Sanford, Lee County with 80% of the surface acreage leased.

Figure 2. 640 acres – 80%

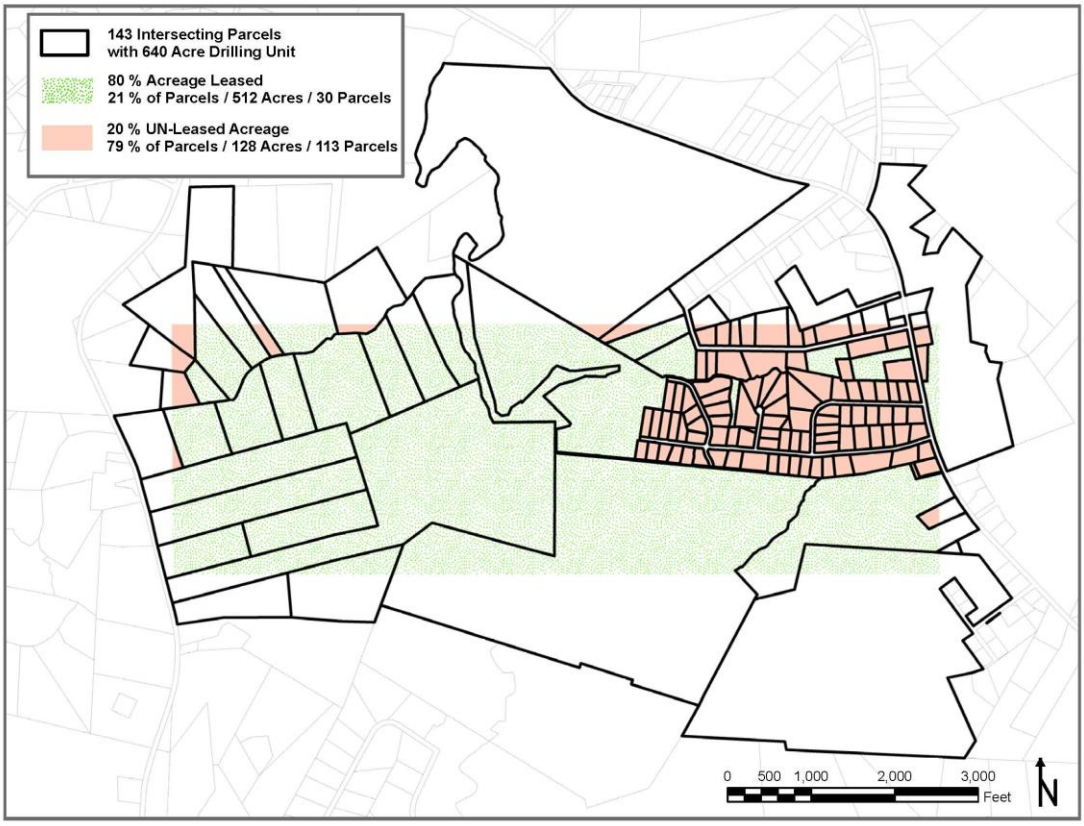


Figure 2 shows a hypothetical drilling unit of 640 acres in Sanford, Lee County with 80% of the surface acreage leased.

Figure 3. 320 acres – 90%

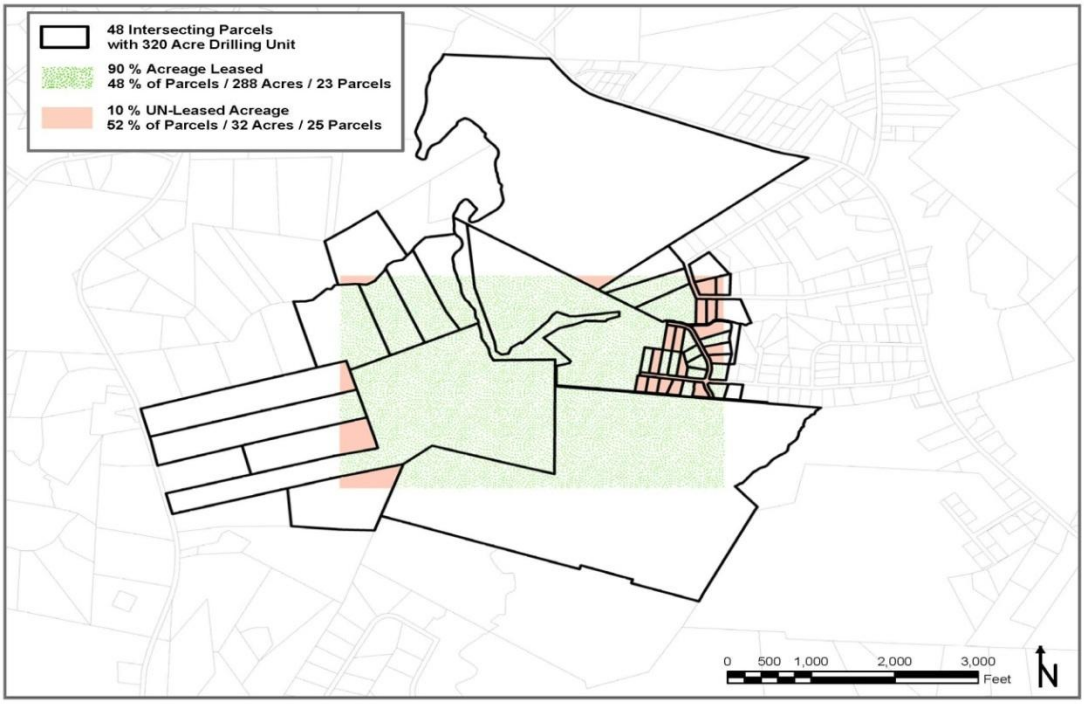


Figure 3 shows a hypothetical drilling unit of 320 acres in Sanford, Lee County with 90% of the surface acreage leased.

Figure 4. 640 acres – 90%

Figure 4 shows a hypothetical drilling unit of 640 acres in Sanford, Lee County with 90% of the surface acreage leased.

Figure 5. 320 acres – 95%

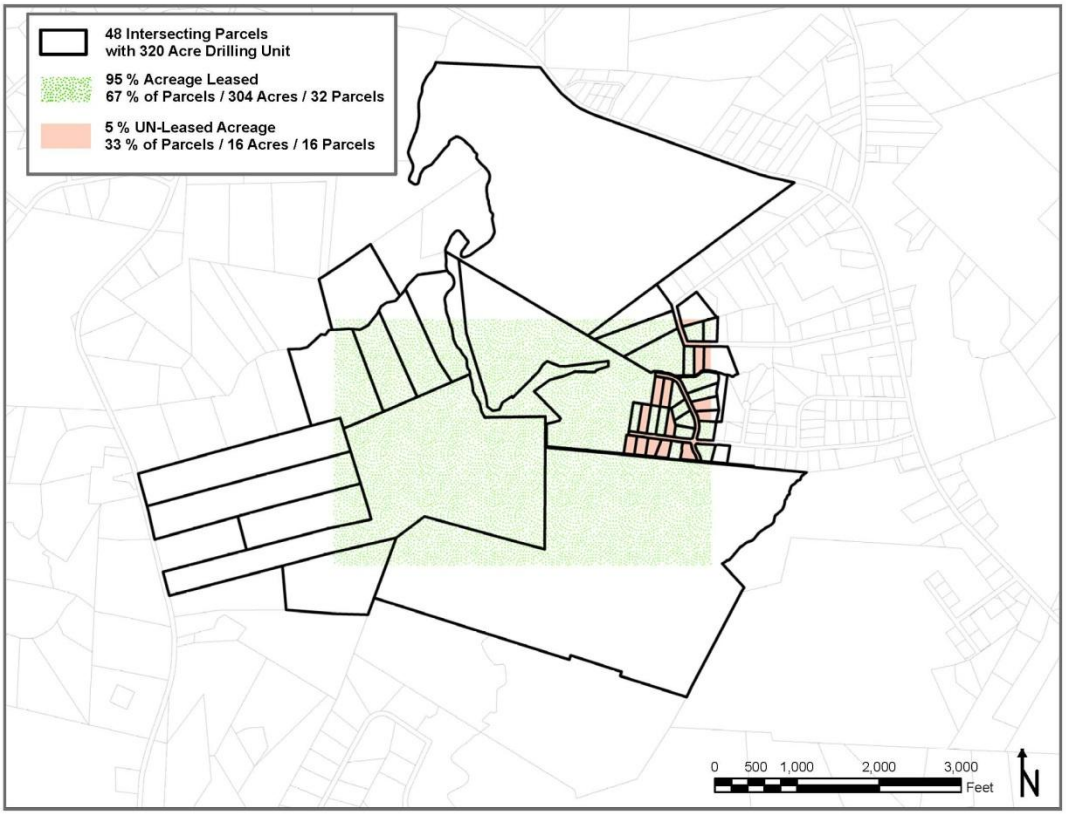


Figure 5 shows a hypothetical drilling unit of 320 acres in Sanford, Lee County with 95% of the surface acreage leased.

Figure 6. 640 acres – 95%

Figure 6 shows a hypothetical drilling unit of 640 acres in Sanford, Lee County with 95% of the surface acreage leased.

North Carolina Department of Environment and Natural Resources

MEMORANDUM

TO: Environmental Review Commission
The Honorable Brent Jackson, Chairman
The Honorable Mike Hager, Co-Chairman
The Honorable Ruth Samuelson, Co-Chairman

Joint Legislative Commission on Energy Policy
The Honorable Bob Rucho, Co-Chairman
The Honorable Mike Hager, Co-Chairman

FROM: Department of Environment and Natural Resources
J. Neal Robbins, Director of Legislative and Intergovernmental Affairs

SUBJECT: Compulsory Pooling Findings and Recommendations

DATE: October 1, 2013

OVERVIEW

Session Law 2012-143 Section 2(l), as amended by Session Law 2012-201 Section 12(c), directed the Mining and Energy Commission, in conjunction with the Department of Environment and Natural Resources and the Consumer Protection Division of the Attorney General's Office, to study the State's current law on integration or compulsory pooling and other states' laws on the same issue. The Department of Environment and Natural Resources was directed to report its findings and recommendations, including legislative proposals, to the Joint Legislative Commission on Energy Policy and the Environmental Review Commission.

To comply with this mandate, the Mining and Energy Commission created the Compulsory Pooling Study Group consisting of four commissioners. The Study Group was also composed of resource members representing a diversity of interests, including various departments of state government and environmental conservation organizations. The final report of the Study Group, summarizing research and recommendations voted on by the four Commissioners, was submitted to the Department on September 16, 2013. The following

are the findings and recommendations of the Department after reviewing the final report of the Study Group.

FINDINGS

I. Creation of a Drilling Unit

The Department finds that compulsory pooling is a legal tool that is common in oil and gas producing states.

The North Carolina Oil and Gas Conservation Act currently authorizes the use of voluntary and compulsory pooling under G.S. §113-393. The Oil and Gas Conservation Act is silent with respect to any required voluntary agreement based on surface acreage within a proposed drilling unit. Many states with compulsory pooling have no voluntary minimum acreage requirement, including Colorado and Texas. Other states have varied minimum acreage requirements as follows: Virginia requires 25% agreement (Va. Code Ann. §45.1-361.21); Arkansas requires 50% agreement for exploratory wells (Ark. Code Ann. §15-72-303); Tennessee and Kentucky require more than 50% agreement (Tenn. Code Ann. §60-1-202, Ky. Rev. Stat. Ann. §353.630); and Ohio has guidelines of the regulatory agency requiring 90% agreement (not in statute or regulation).

II. Cost Sharing

The pooling provision of the existing state Oil and Gas Conservation Act takes what is known as a "free ride" approach to cost sharing. Once an owner is compelled into a drilling unit, he or she will be carried for costs and will receive his or her proportionate share of production minus costs from the revenue of the well.

An alternative to cost sharing taken by many states is to include a risk penalty, to be assessed on top of the costs of drilling, to compensate the operator for the risk of drilling a non-producing well while also equitably sharing the benefits of production with the landowner. The approach states take to quantifying the risk penalty varies. Arkansas allows the penalty to be determined within the discretion of its commission on a case by case basis (Ark. Code Ann. §15-72-304). Texas has a risk penalty not to exceed 100% (Tex. Nat. Res. Code Ann. § 102.052). Ohio has a risk penalty not to exceed 200% (Ohio Rev. Code Ann. §1509.27). Wyoming has a risk penalty not to exceed 300% (Wyo. Stat. Ann. §30-5-109).

III. Landowner Protections

The Oil and Gas Conservation Act requires notice and a hearing before an owner is compelled to join a pool, but is silent on application requirements.

IV. Notice and Reporting

Current law requires operators to provide the surface owner with notification at least 30 days in advance of entering a property to initiate land-disturbing activities. Additionally,

current law requires reporting to royalty interest owners the time period in which the royalty payment is made, the quantity sold in that time period, and the price received.

V. Extinguishment of Ancient Mineral Rights

Under real property law, the surface estate can be owned separately and distinctly from the mineral estate. Where estates have been separated, issues arise where mineral owners are unknown or cannot be found. To address this issue, the state passed a series of laws known as the dormant minerals statutes to extinguish ancient mineral rights that have been abandoned. It is unclear if counties provided proper notice under the dormant minerals statutes.

VI. Compensation for Damages

The Oil and Gas Conservation Act provides indemnification for all landowners for claims of injury or death, for damage to impacted infrastructure or water, for damage to a third party's property, and for violations of any law, including those for protection of the environment.

RECOMMENDATIONS

The Department recommends that prior to establishing new laws related to compulsory pooling, the General Assembly should consider the rules adopted by the Mining and Energy Commission related to oil and gas exploration, including, but not limited to, rules concerning drilling units, spacing requirements, and setbacks, all of which will affect the regulation of compulsory pooling in the state. The Department recommends that decisions on the status and implementation of a compulsory pooling law precede decisions related to cost sharing, notifications, and compensation for damages.

The Department also recommends further study on the issue of amending current dormant mineral statutes regarding extinguishment and other consumer protection issues related to split estates.