

Bulletin 2010-39

November 25, 2010

Invitation for Feedback on Province-Wide Framework for Well Spacing for Conventional and Unconventional Oil and Gas Reservoirs

The Energy Resources Conservation Board (ERCB/Board) is seeking stakeholder input with respect to its province-wide framework for well spacing for conventional and unconventional oil and gas reservoirs. This bulletin describes four proposed changes to the current well spacing framework (see Attachment 1 for the rationale behind each change), provides related background information, and explains how interested parties can provide their comments.

These changes reflect an ongoing commitment to restructure and improve the ERCB's regulatory framework respecting all oil and gas development.

Background

Existing well spacing regulations, designed for early basin development and assembled over a long period of time, are continually being amended to respond to the changing nature of oil and gas development in the province. As a result, today's well spacing framework is complex and difficult to understand. The most recent amendment, effective as of April 1, 2010, was the harmonization of well spacing for the applicable zones subject to Development Entities No. 1 and 2.

The current well spacing framework is described in Attachment 2. At this time, there are no standard spacing provisions that specifically apply to production from lower-quality reservoirs, such as shallow gas, coal (coalbed methane [CBM]), or shale.

Changes to well spacing may be obtained by filing an application for a holding. A holding is an area of common ownership comprising one or more drilling spacing units (DSUs) subject to a prescribed buffer zone and well density. Currently, well licensees wishing to develop unconventional resources, such as CBM or shale oil and gas, need to apply for increased well density in the same manner as for conventional oil or gas.

Proposed Changes

The ERCB is proposing the following four changes to its province-wide well spacing framework.

- 1) Remove well density controls for CBM (including coal seams with interbedded thin sands) and shale gas reservoirs throughout the province and for all gas zones to the base of the Colorado Group in the area outlined in Schedule 13A of the *Oil and Gas Conservation Regulations (OGCR)* (for guidance on the designation of shale reservoirs for the purpose of well spacing, refer to *Bulletin 2010-28: Zones Eligible for Shale Gas Fluid Codes*).
- 2) Increase baseline well densities from one well per pool per standard DSU to two wells per pool per standard DSU province-wide for conventional gas reservoirs.

- 3) Standardize province-wide target areas for standard DSUs. All target areas will be centered 150 metres (m) from the boundaries of the DSU for gas and 100 m from the boundaries of the DSU for oil.
- 4) Streamline the regulations. This will include amendments to the legislation respecting fractional DSUs along meridian lines. It also includes eliminating legislation and related applications regarding change in target area and reducing the size of a DSU. Approval holder designation will also be removed from holdings established by well spacing applications.

Attachment 3 describes the areas and zones affected by these proposed change.

The ERCB is also exploring the possibility of increasing the baseline well density from one well per pool per standard DSU to two wells per pool per standard DSU for oil pools. At this time, the ERCB is not prepared to implement this change, but is seeking feedback related to conservation and equity from stakeholders.

The ERCB is aware of unconventional and shale oil and gas development in the province. The ERCB has initiated work on assessing the regulatory framework for this type of development.

Request for Comments

The ERCB invites your feedback on the proposed changes to the province-wide framework for well spacing for conventional and unconventional reservoirs by January 21, 2011. Any feedback or questions may be forwarded to the ERCB as follows:

E-mail: Spacing@ercb.ca

Mail: Energy Resources Conservation Board
Resources Applications Group
Spacing Framework Review
Suite 1000, 250 – 5 Street SW
Calgary, Alberta T2P 0R4

All feedback received will be reviewed for the purposes noted in this bulletin and to finalize the changes noted above. All of the comments, feedback, and information collected, used, and disclosed through this consultation will form part of the public record and are subject to the Alberta *Freedom of Information and Protection of Privacy Act*. The ERCB may use the contact information you provide for follow-up communication related to your feedback.

Questions and answers, updates, and further details on the proposed changes will be posted on the ERCB Web site www.ercb.ca as they become available.

<original signed by>

Stephen Smith
Executive Manager
Applications Branch

Attachments

Attachment 1 Rationale Behind Proposed Changes to the Province-Wide Framework for Well Spacing for Conventional and Unconventional Oil and Gas Reservoirs

Following an internal review of the well spacing application process, the ERCB is proposing the four changes to the province-wide well spacing framework. A detailed description of each proposed change and the rationale behind the change are provided below.

1 Remove Well Density Controls for Lower Quality Reservoirs

1.1 Proposed Change

Amend Part 4 of the *Oil and Gas Conservation Regulations (OGCR)* by removing the well density controls for CBM (including coal seams with interbedded thin sands) and shale gas reservoirs throughout the province and for all gas zones to the base of the Colorado Group in the area outlined in Schedule 13A of the *OGCR*.

Well spacing for development in the above-noted areas would be limited only by target area, established as 150 m from all boundaries of a standard gas DSU or multiple contiguous DSUs of common ownership.

Multiple contiguous DSUs of common ownership may be developed limited only by a central target area on the external boundaries of that block of land. Well spacing applications will no longer be required for the production of CBM (including coal seams with interbedded thin sands) and shale gas reservoirs throughout the province and for all gas zones to the base of the Colorado Group in the area outlined in Schedule 13A. The exception to this would be where an existing holding has been established, in which case a spacing application would be required to rescind the current approved spacing in favor of the new spacing regulations.

1.2 Rationale

In the SE Alberta regional area (Schedule 13A), the productivity of reservoirs to the base of the Colorado Group are known to be very low, and typically gas production from coals, sands, and shale from this stratigraphic column is commingled to allow for economic production. CBM and shale reservoirs in Alberta are known to have low sustained productivity and limited drainage areas, and increased well densities are necessary to recover the resource in place.

Removing the well density controls for these lower-quality reservoirs would allow operators the flexibility to determine the optimal well density based on the resource in place, along with the drilling and completion costs. It would also promote conservation due to improved drainage and increased opportunity to capture smaller, discontinuous reserves from zones that would not be targeted under current spacing regulations.

2 Increase Baseline Well Densities Province-Wide for Conventional Gas Reservoirs

2.1 Proposed Change

Amend Part 4 of the *OGCR* to increase the baseline well densities from one well per pool per standard DSU (1 section) to two wells per pool per standard DSU for the production of gas reservoirs from all areas of the province. It should be noted that there will be no change to baseline well densities for gas in the areas and strata outlined in Schedule 13B, where the baseline well densities have previously been increased and will remain at four wells per pool per section.

The increased baseline well density will apply only to those lands that are not subject to previous spacing approvals.

2.2 Rationale

Through special well spacing applications, many gas reservoirs in Alberta have been approved for increased well densities of two or more wells per DSU. Maturing and developed basins where most of the sizeable good-quality pools are already substantially depleted and increased recovery can be achieved with minimal equity impact represent the current situation in the province. Existing developments, coupled with ERCB mapping of resource potential and review of geological information and production data, demonstrate the need for greater well densities to provide optimum gas resource recovery. This proposed change will significantly reduce the number of applications that pose little resource conservation or reservoir equity risk.

Lower-quality gas reservoirs now being exploited will require at least two wells to achieve reasonable recovery. Implementation of this proposed change would not preclude the requirement for concurrent production (CCP) to produce associated gas; operators would still be required to adhere to the terms of their CCP approvals.

The standard DSU entity will be retained as one section for gas. Consequently, the provincial Department of Energy (DOE) rules for royalty calculations and tenure administration will not be affected.

3 Standardize Province-Wide Target Areas for Standard DSUs

3.1 Proposed Change

Amend Part 4 of the *OGCR* to standardize target areas for all strata in all areas of the province, including those prescribed in Section 4.030(2.1)(a) and (b) and set out in Schedules 13A and 13B for the production of oil and gas.

Standard buffer zones for holdings will also be consistent with the central target area concept for oil and gas reservoirs throughout the province and will greatly enhance equity, support orderly and efficient development, and maximize resource conservation.

Gas Wells

Sections 4.030(1)(a) and 4.030(2)(a) would be amended such that the target area for the production of gas would be 150 m from all boundaries of the section. All references to target areas would be removed from 4.030(2.1)(b) of the *OGCR* and Schedules 13A and 13B.

Oil Wells

Sections 4.030(1)(b) and 4.030(2)(b) would be amended such that the target area for the production of oil would be 100 m from the boundaries of the quarter section. All references to target areas for oil would be removed from Section 4.030(2.1)(a) and Schedule 13A.

3.2 Rationale

The proposed target area changes include increasing the size of both oil and gas target areas and eliminating corner target areas in favour of central target areas across the province.

Alberta target area requirements were created early on in the development of oil and gas in the province and have been amended periodically over time to address specific issues and to reflect changing development patterns in different areas. The resulting target area framework has become quite complex and contains changes made in the past that are less relevant today.

Corner target areas were introduced for agricultural areas in the 1970s to facilitate the location of surface well sites near quarter section boundaries to reduce the impact of well sites on farming operations. Vertical wells were typical and the surface well site and bottomhole target locations corresponded closely to one another. Central well sites were maintained for the forested area of the province, which led to different target areas for Area 1 and Area 2, as outlined in Schedule 13. In recent years, directional drilling has become more common, and in most cases, bottomhole target location no longer needs to dictate the surface well site location. Therefore, to simplify Alberta's target area rules, the ERCB proposes to eliminate corner target areas. In doing so, the ERCB is in no way suggesting that potential impacts of a surface well site on farming operations is of reduced importance. The ERCB believes that today's drilling technology and the proposed increase in target area size will provide ample flexibility to locate surface well sites that minimize impacts on farming. As always, surface well sites should be determined in discussions with the landowner. The ERCB well licence application process provides the opportunity for landowners that are not satisfied with a proposed well site location to express their concern to the ERCB.

In addition to simplifying the target area rules, a common central target area potentially enhances equity among mineral rights holders, especially for Freehold owners or other owners holding only a small interest in a given area.

The proposed increase in target area size is intended to provide operators with increased flexibility in setting bottomhole location(s) in a DSU. The ERCB believes that the increased target area size will pose little equity concern between different owners and may result in some increased recovery, especially where an operator intends to drill more than one well in the DSU.

4 Streamline the Regulations

4.1 Proposed Change

Enact the following regulatory amendment, which would reduce the number of unnecessary well spacing applications, resulting in a decrease in the complexity of the current well spacing framework.

- Rescind Sections 4.040(1), 4.040(2), and 4.040(3) of the *OGCR* that allow the Board to grant an application to reduce the size of a DSU.
- Rescind Sections 4.040(1) and 4.040(2) of the *OGCR* that allow the Board to grant an application to change the target area of a DSU.
- Amend Sections 4.050(1) of the *OGCR*, which states “that any person proposing to drill a well in a fractional section shall apply to the Board for a special drilling spacing unit if the proposed drilling spacing unit differs in area from a normal drilling spacing unit by more than 5 per cent.”
- Eliminate the approval holder designation on holdings established by application.

4.2 Rationale

The establishment of a holding allows for increased well density and provides larger target areas compared to the prescribed target area of a DSU. Therefore, legislation and related applications regarding the reduction in the size of a DSU and change in target area are no longer necessary. By establishing a holding, which suspends the DSU and target areas, an operator is afforded the greatest

flexibility to locate wells, access seismic features outside standard target areas, accommodate horizontal drilling, increase well density, and avoid surface obstructions. Applications to reduce the size of a DSU are typically filed to avoid the requirement to pool interests in a standard DSU or to avoid acquiring a Crown lease, both of which do not meet criteria for special spacing applications. These applications are not approved.

Fractional tract of land applications are administrative and are always approved if the fractional tract meets the criteria outlined in the *OGCR* to be established as a DSU. Therefore, any tract of land meeting these criteria should be established as a DSU through the *OGCR* and not by application.

The approval holder on a well spacing application has been maintained on record as the applicant of the approved holding. The licensee of a well rather than the approval holder of a holding is responsible for any noncompliance with spacing regulations within a DSU or holding. Therefore, the approval holder provision on a holding has no value and creates unnecessary administrative well spacing applications.

Attachment 2 Current Well Spacing Framework

- Six baseline well densities and six standard target areas
- Spacing is determined by area of province, produced substance, and producing formation

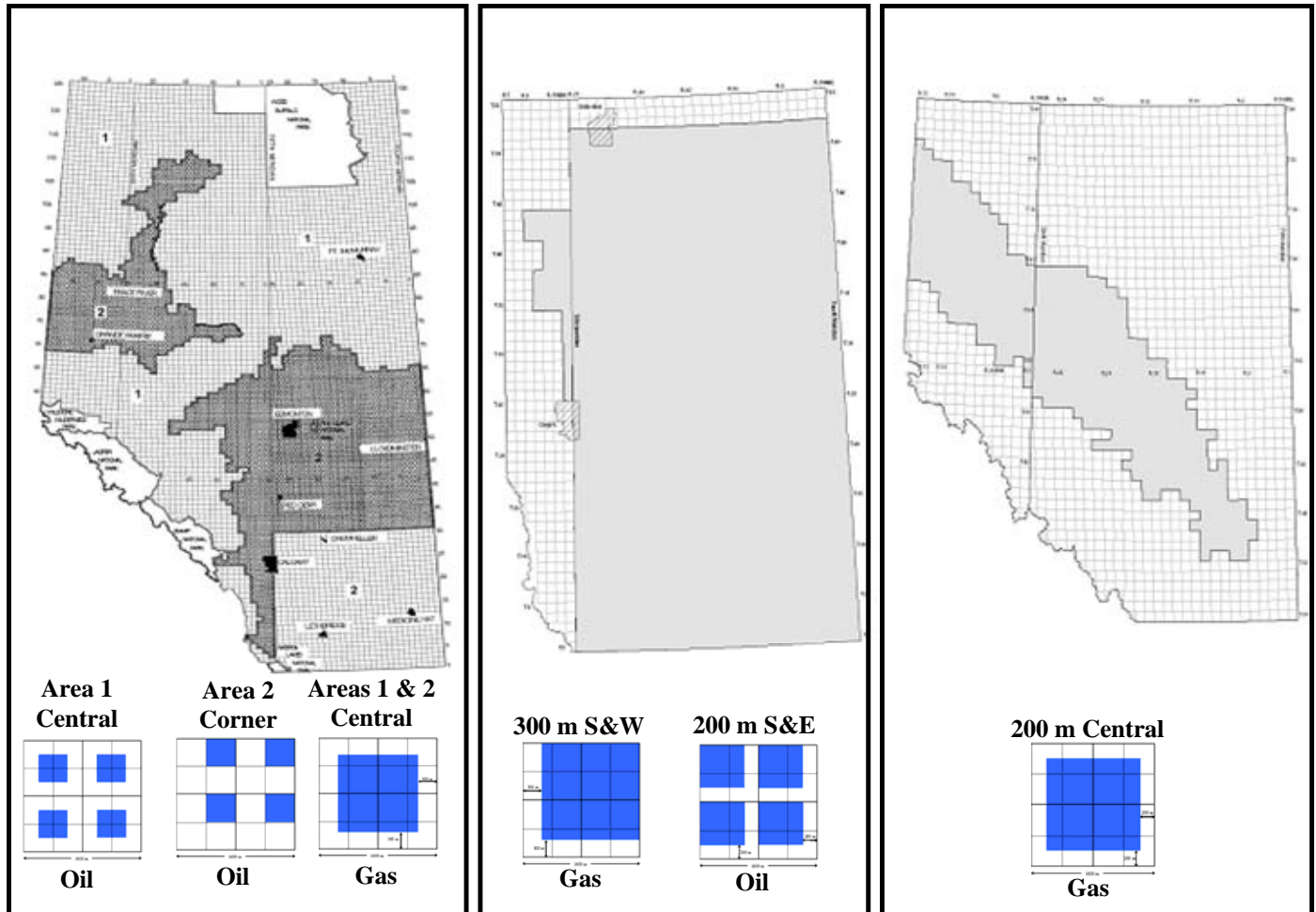


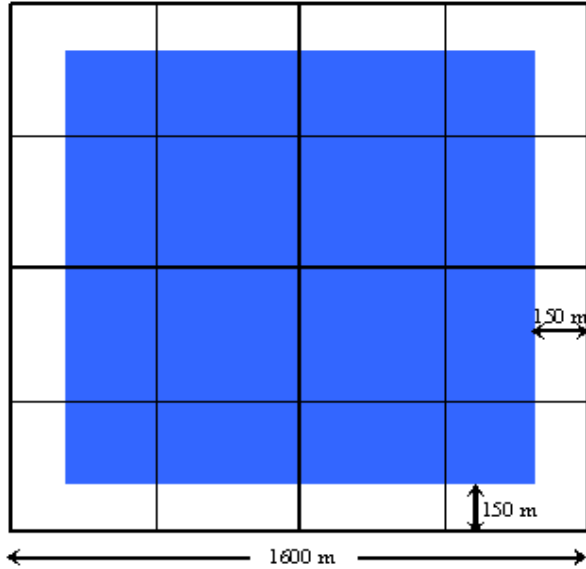
Figure 1A. Schedule 13—1 well per pool per DSU (except for certain formations in Schedules 13A & B)

Figure 1B. Schedule 13A—2 wells per pool per section for Mannville gas; 4 wells per pool per section for gas above the Mannville; 2 wells per pool per quarter section for Mannville oil

Figure 1C. Schedule 13B—4 wells per pool per section for gas in designated strata and stratigraphic equivalents between the top of Smoky Group and the base of Rock Creek

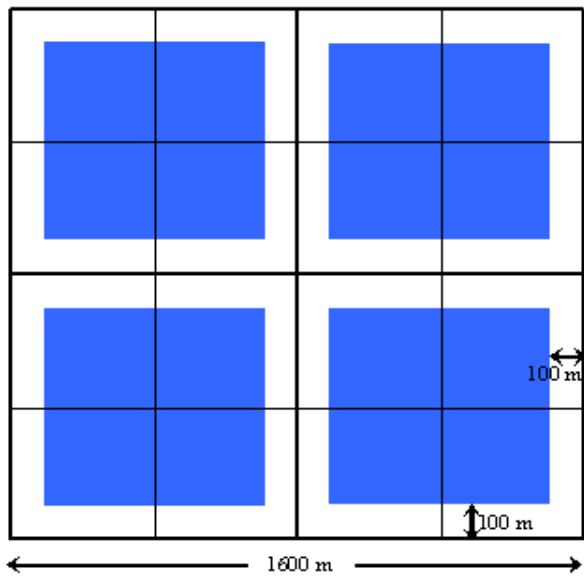
Attachment 3 Proposed Well Spacing Framework

Gas standard target area



One section DSU
Target area 150 m all boundaries of the DSU

Oil standard target area



One quarter section DSU
Target area 100 m all boundaries of the DSU

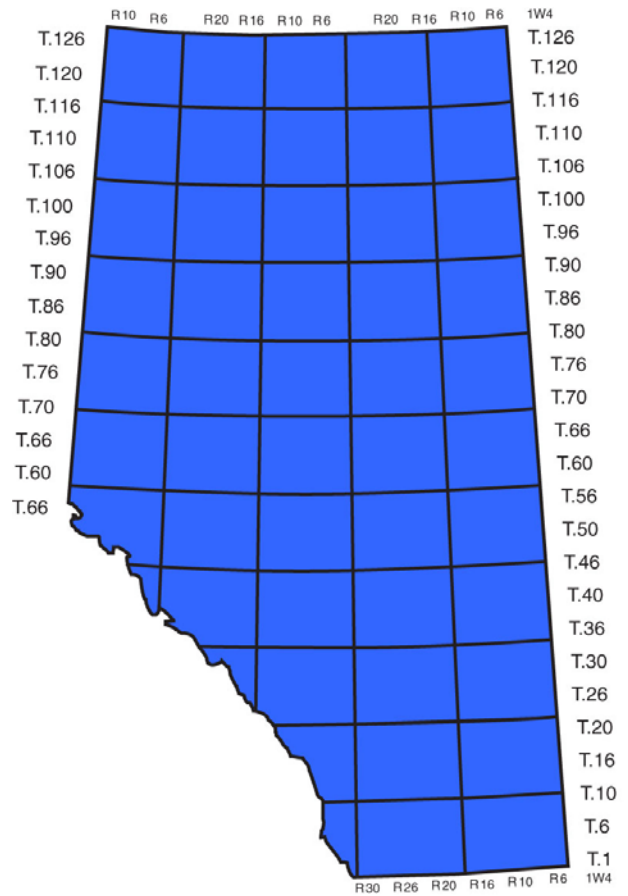


Figure 2. Provincial standardized target areas

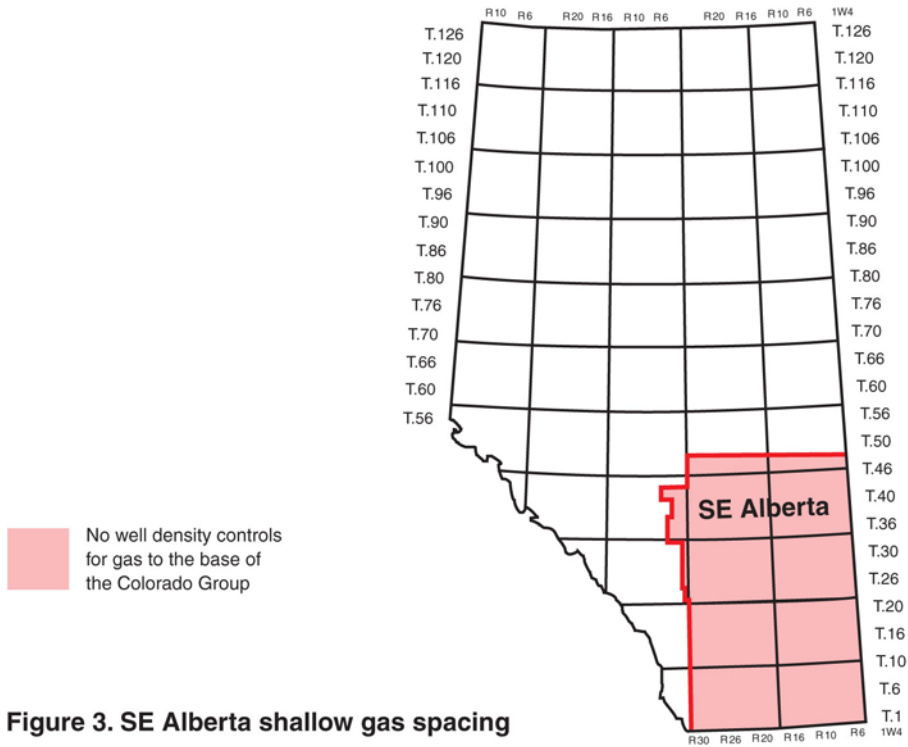


Figure 3. SE Alberta shallow gas spacing

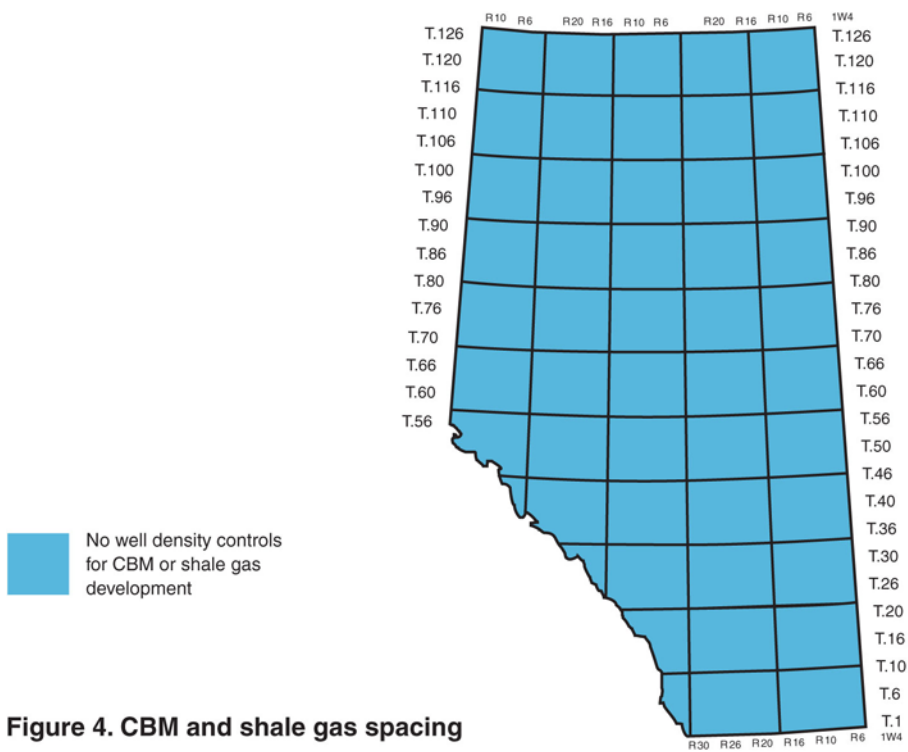


Figure 4. CBM and shale gas spacing

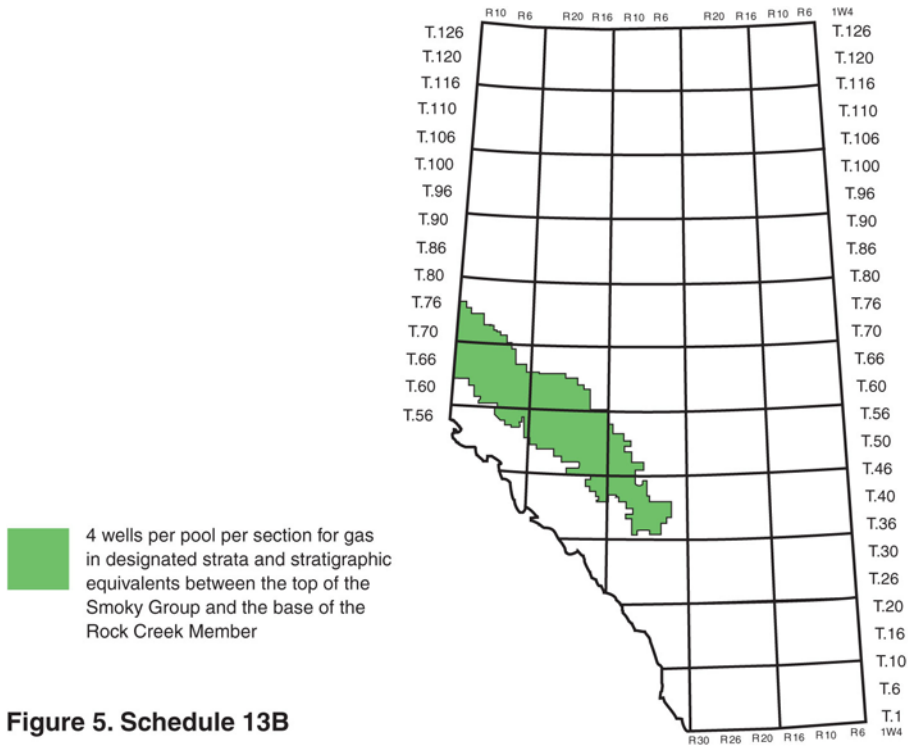


Figure 5. Schedule 13B

All gas reservoirs not covered by Figures 3, 4, and 5 are subject to two wells per pool per standard DSU.