



Oil and Gas Division

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Produced Gas Storage Facility Permit Application Guideline

North Dakota Century Code (NDCC) 38-08-04-01(b)(6)

I. Definition

“Produced gas” means natural gas that is produced from a pool classified by the North Dakota Industrial Commission’s Oil and Gas Division (Commission).

II. Scope

The following guidelines pertain to the geologic storage of produced gas (produced gas) with little to no processing involved. This guideline does not apply to transportation-related gas storage regulated under federal authority and associated with gas that has been processed at a gas processing facility and stored for the purpose of further transport. Applications filed with the Commission proposing to inject gas for the purposes of enhanced oil or gas recovery will be processed under North Dakota Century Code (NDCC) Chapter 38-08 and North Dakota Administrative Code (NDAC) Chapter 43-02-05.

III. Application of Rules

In addition to the provisions outlined herein, injection wells, monitoring wells, and facilities utilized for geologic storage of produced gas are subject to the provisions of NDAC Chapters 43-02-03 and 43-02-05 when applicable.

Note a \$100,000 Gas Storage bond will be required.

IV. Petition for Hearing

An application for a produced gas storage facility will be considered by the Commission only after due notice and hearing. Such application is subject to the following and requires the following attachments:

1. Notification—At least forty-five days prior to the scheduled hearing, the applicant shall give notice of the hearing to the following:
 - a. Each operator of mineral extraction activities within the outside boundary of the produced gas storage facility area;
 - b. Each owner and each lessee of record of minerals within the outside boundary of produced gas storage facility area;
 - c. Each owner of the pore space (surface owner) and each lessee of record of the pore space within outside boundary of the produced gas storage facility area; and
 - d. Any other persons as required by the Commission.
2. Notice—The notice given by the applicant must contain:
 - a. A legal description of the land within the produced gas storage facility area;
 - b. The date, time, and place the Commission will hold a hearing on the permit application;
 - c. A statement of purpose of the application;
 - d. A statement that a digital copy (.pdf format) of the permit may be obtained from the Commission;
 - e. A statement that all comments regarding the produced gas storage facility permit application must be in writing and submitted to the Commission by 5:00 pm on the last business day prior to the hearing date or presented at the hearing; and
 - f. A statement that amalgamation of the pore space within the produced gas storage reservoir is required to operate the produced gas storage facility, which requires consent of persons who own at least sixty percent of the pore space, and a statement that the Commission may require the pore space owned by nonconsenting owners be included in the produced gas storage facility.

3. Well Permit—Applicant must request a permit for all produced gas injection wells, monitoring wells, and surface facilities by filing the following:
 - a. Permit to Drill (Form 1) pursuant to NDAC Chapter 43-02-03; and
 - b. Application for Injection (Form 14) pursuant to NDAC Section 43-02-05-04.

4. Pore Space—Applicant must address pore space by filing the following:
 - a. An affidavit of mailing certifying that all pore space owners and lessees within the outside boundary of produced gas storage facility area have been notified of the proposed produced gas storage project;
 - b. A map showing the outside boundary of the produced gas storage facility area and the description of all pore space ownership within the outside boundary of produced gas storage facility area; and
 - c. A map showing the extent of the pore space that will be occupied by the injection and geologic storage of produced gas over the life of the project.

5. Geologic Exhibits—Applicant must include the following geologic exhibits:
 - a. Structural and stratigraphic cross sections that describe the geologic conditions of the produced gas storage reservoir;
 - b. A structure map of the top and base of the produced gas storage reservoir;
 - c. An isopach map of the produced gas storage reservoir;
 - d. An isopach map of the confining zones for the produced gas storage reservoir;
 - e. Identification of all structural spill points or stratigraphic discontinuities controlling the isolation of stored produced gas and associated fluids within the produced gas storage reservoir;
 - f. Geomechanical information sufficient to demonstrate that the confining zone is free of transmissive faults or fractures and of sufficient areal extent and integrity to contain the injected produced gas stream; and
 - g. Any known regional or local faulting.

6. Area of Review Determination—The produced gas storage facility area of review includes the areal extent of the produced gas storage reservoir and within one-half mile of the outside boundary. The area of review delineation must include the following:
 - a. A map of all wells, including all injection wells, producing wells, plugged wells, abandoned wells, drilling wells, dry holes, and water wells and other subsurface structures within the produced gas storage facility area and within one-half mile [1.61 kilometers] of its outside boundary;
 - b. A map showing the outside boundary of the produced gas storage reservoir and the location of all proposed wells, proposed cathodic protection boreholes, and proposed surface facilities within the produced gas storage facility area;
 - c. Cross sections showing all existing and proposed penetrations of the storage reservoir, including the area of review;
 - d. A map showing all occupied dwellings within the produced gas storage facility area;
 - e. Quantitative analysis from a state-certified laboratory of freshwater from all freshwater wells within the produced gas storage facility and within one-half mile [.80 kilometer] of the outside boundary of the storage facility. The location of all wells by quarter-quarter, section, township, and range must also be submitted. This requirement may be waived by the Director in certain instances;
 - f. Quantitative analysis from a state-certified laboratory of a representative sample of produced gas to be injected. A compatibility analysis with the receiving formation may also be required;
 - g. A determination that all abandoned wells have been properly plugged and all operating wells have been constructed in a manner that prevents the produced gas or associated fluids from escaping from the produced gas storage reservoir;
 - h. A description of each well's type, construction, date drilled, location, depth, record of plugging, and completion;

- i. Identify the need for corrective action on wells penetrating the confining zones or the produced gas storage reservoir in the area of review; and
 - j. Identify whether the area of review extends across state jurisdiction boundary lines.
7. Plans—The following items must accompany the application:
- a. The stimulation plan for all produced gas storage facility wells, if any, including a description of stimulation fluids to be used, and a determination that stimulation will not interfere with containment;
 - b. An emergency and remedial response plan;
 - c. A corrosion monitoring and prevention plan for all wells and surface facilities;
 - d. A leak detection and monitoring plan for all surface facilities;
 - e. A leak detection and monitoring plan to monitor any movement of the produced gas outside of the produced gas storage reservoir. This may include monitoring wells and the collection of baseline information of produced gas background concentrations in ground water, surface soils, and chemical composition of in situ waters within the produced gas facility area and storage reservoir; and
 - f. A well integrity monitoring plan, a schedule for integrity testing, and a description of integrity testing methods.
8. Any additional information the Commission may require.

