

BEFORE THE INDUSTRIAL COMMISSION
OF THE STATE OF NORTH DAKOTA

CASE NO. 29033
ORDER NO. 31587

IN THE MATTER OF A HEARING CALLED ON A MOTION OF THE COMMISSION TO CONSIDER THE APPLICATION OF MINNKOTA POWER COOPERATIVE, INC. TO CONSIDER THE AMALGAMATION OF THE STORAGE RESERVOIR PORE SPACE, IN WHICH THE COMMISSION MAY REQUIRE THAT THE PORE SPACE OWNED BY NONCONSENTING OWNERS BE INCLUDED IN THE GEOLOGIC STORAGE FACILITY AND SUBJECT TO GEOLOGIC STORAGE, AS REQUIRED TO OPERATE THE MINNKOTA POWER COOPERATIVE, INC. STORAGE FACILITY LOCATED IN SECTIONS 35 AND 36, T.142N., R.84W., SECTIONS 19, 20, 21, 22, 26, 27, 28, 29, 30, 31, 32, 33, 34 AND 35, T.142N., R.83W., SECTIONS 1, 2, 12 AND 13, T.141N., R.84W., SECTIONS 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20 AND 21, T.141N., R.83W., OLIVER COUNTY, ND IN THE DEADWOOD FORMATION, PURSUANT TO NDCC SECTION 38-22-10.

ORDER OF THE COMMISSION

THE COMMISSION FINDS:

- (1) This cause came on for hearing at 9:00 a.m. on the 2nd day of November, 2021.
- (2) Case No. 29033 is an application by Minnkota Power Cooperative, Inc. (Minnkota) for an order of the Commission determining the amalgamation of storage reservoir pore space, pursuant to a Geologic Storage Agreement for use of pore space falling within portions of Sections 35 and 36, Township 142 North, Range 84 West, Sections 19, 20, 21, 22, 26, 27, 28, 29, 30, 31, 32, 33, 34, and 35, Township 142 North, Range 83 West, Sections 1, 2, 12, and 13, Township 141 North, Range 84 West, Sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20, and 21, Township 141 North, Range 83 West, Oliver County, North Dakota in the Deadwood Formation, has been signed, ratified, or approved by owners of interest owning at least sixty percent of the pore space interest within said lands, pursuant to North Dakota Century Code (NDCC) 38-22-10.
- (3) Case Nos. 29029, 29030, 29031, 29032, 29033, and 29034 were combined for the purposes of hearing.

(4) Case No. 29029, also on today's docket, is an application by Minnkota for an order authorizing geologic storage of carbon dioxide from the Milton R. Young Station in the amalgamated pore space of the Broom Creek Formation in portions of Sections 35 and 36, Township 142 North, Range 84 West, Sections 19, 20, 21, 22, 26, 27, 28, 29, 30, 31, 32, 33, 34, and 35, Township 142 North, Range 83 West, Sections 1, 2, 12, and 13, Township 141 North, Range 84 West, Sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20, and 21, Township 141 North, Range 83 West, Oliver County, North Dakota, pursuant to North Dakota Administrative Code (NDAC) Chapter 43-05-01.

(5) Case No. 29030, also on today's docket, is an application filed with the Commission by Minnkota for an order of the Commission determining the amalgamation of storage reservoir pore space, pursuant to a Geologic Storage Agreement for use of pore space falling within portions of Sections 35 and 36, Township 142 North, Range 84 West, Sections 19, 20, 21, 22, 26, 27, 28, 29, 30, 31, 32, 33, 34, and 35, Township 142 North, Range 83 West, Sections 1, 2, 12, and 13, Township 141 North, Range 84 West, Sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20, and 21, Township 141 North, Range 83 West, Oliver County, North Dakota in the Broom Creek Formation, has been signed, ratified, or approved by owners of interest owning at least sixty percent of the pore space interest within said lands pursuant to NDCC 38-22-10.

(6) Case No. 29031, also on today's docket, is a motion of the Commission to determine the amount of financial responsibility for the geologic storage of carbon dioxide from the Milton R. Young Station located in portions of Sections 35 and 36, Township 142 North, Range 84 West, Sections 19, 20, 21, 22, 26, 27, 28, 29, 30, 31, 32, 33, 34, and 35, Township 142 North, Range 83 West, Sections 1, 2, 12, and 13, Township 141 North, Range 84 West, Sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20, and 21, Township 141 North, Range 83 West, Oliver County, North Dakota in the Broom Creek Formation, pursuant to NDAC Section 43-05-01-09.1.

(7) Case No. 29032, also on today's docket, is an application by Minnkota for an order authorizing geologic storage of carbon dioxide from the Milton R. Young Station in the amalgamated pore space of the Deadwood Formation in portions of Sections 35 and 36, Township 142 North, Range 84 West, Sections 19, 20, 21, 22, 26, 27, 28, 29, 30, 31, 32, 33, 34, and 35, Township 142 North, Range 83 West, Sections 1, 2, 12, and 13, Township 141 North, Range 84 West, Sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20, and 21, Township 141 North, Range 83 West, Oliver County, North Dakota, pursuant to NDAC Chapter 43-05-01.

(8) Case No. 29034, also on today's docket, is a motion of the Commission to determine the amount of financial responsibility for the geologic storage of carbon dioxide from the Milton R. Young Station located in portions of Sections 35 and 36, Township 142 North, Range 84 West, Sections 19, 20, 21, 22, 26, 27, 28, 29, 30, 31, 32, 33, 34, and 35, Township 142 North, Range 83 West, Sections 1, 2, 12, and 13, Township 141 North, Range 84 West, Sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20, and 21, Township 141 North, Range 83 West, Oliver County, North Dakota in the Deadwood Formation, pursuant to NDAC Section 43-05-01-09.1.

(9) The record in these matters was left open to receive additional information from Minnkota. Such information was received on November 16, December 8 and December 10, 2021, and the record was closed.

(10) Pursuant to NDCC Section 38-22-06 and NDAC Section 43-05-01-08: The notice of filing of the application and petition and the time and place of hearing thereof was given, and that at least 45 days prior to the hearing, Minnkota, as the applicant, did give notice of the time and place of said hearing and the Commission has accepted the notice as adequate, and that the applicant did, at least 45 days prior to the hearing, file with the Commission engineering, geological and other technical exhibits to be used and which were used at said hearing, and that the notice so given did specify that such material was filed with the Commission; that due public notice having been given, as required by law, the Commission has jurisdiction of this cause and the subject matter.

(11) The Commission gave at least a thirty-day public notice and comment period for the draft storage facility permit and issued all notices using methods required to all entities under NDCC Section 38-22-06 and NDAC Section 43-05-01-08. Publication was made September 29, 2021, and the comment period for written comments ended at 5:00 PM CDT November 1, 2021. The hearing was open to the public to appear and provide comments.

(12) Order No. 31586 entered in Case No. 29032 created the Minnkota Center MRYS Deadwood Storage Facility #1.

(13) The plan for amalgamation proposed by Minnkota includes a Geologic Storage Agreement for the Deadwood Formation for certain lands in Oliver County, North Dakota.

(14) The area proposed to be included within the amalgamation area of the storage facility is as follows:

TOWNSHIP 142 NORTH, RANGE 84 WEST

THE S/2 SE/4 OF SECTION 35, AND THE S/2 OF SECTION 36,

TOWNSHIP 142 NORTH, RANGE 83 WEST

ALL OF SECTIONS 28, 29, 31, 32, 33 AND 34, THE SE/4 SE/4 OF SECTION 19, THE SE/4 AND S/2 SW/4 OF SECTION 20, THE S/2 AND S/2 N/2 OF SECTION 21, THE SW/4 NW/4, W/2 SW/4, AND SE/4 SW/4 OF SECTION 22, THE SW/4 AND SW/4 SE/4 OF SECTION 26, THE W/2, SE/4, AND W/2 NE/4 OF SECTION 27, THE E/2, E/2 SW/4, AND SE/4 NW/4 OF SECTION 30, AND THE W/2, NE/4, AND W/2 SE/4 OF SECTION 35,

TOWNSHIP 141 NORTH, RANGE 84 WEST

ALL OF SECTIONS 1 AND 12, THE E/2, E/2 SW/4, AND E/2 E/2 NW/4 OF SECTION 2, AND THE NE/4, E/2 NW/4, AND NE/4 SE/4 OF SECTION 13,

TOWNSHIP 141 NORTH, RANGE 83 WEST

ALL OF SECTIONS 2, 3, 4, 5, 6, 7, 8, 9, 10, 16, 17 AND 18, THE W/2 SW/4 OF SECTION 1, THE W/2, NE/4, W/2 SE/4, AND NE/4 SE/4 OF SECTION 11, THE W/2 NW/4, NE/4 NW/4, AND NW/4 SW/4 OF SECTION 12, THE N/2 NW/4, SE/4 NW/4, NW/4 NE/4, W/2 SW/4 NW/4, AND NE/4 SW/4 NW/4 OF SECTION 14, THE N/2 N/2, SE/4 NE/4, AND SW/4 NW/4 OF SECTION 15, THE N/2 N/2, SE/4 NW/4, AND SE/4 NE/4 OF SECTION 19, THE N/2 OF SECTION 20, AND THE W/2, W/2 NE/4, AND NW/4 SE/4 OF SECTION 21.

(15) Minnkota is proposing a one-phase formula for the calculation of tract participation, allocating 100% to surface acres.

“Surface acres” means the number of acres within each respective tract.

(16) Pursuant to NDCC Section 47-31-03, title to pore space in all strata underlying surface lands and waters is vested in the owner of the overlying surface estate.

No pore space has been leased out by pore space owners prior to this agreement. Minnkota did not find instances of pore space being severed from the surface estate that was allowed prior to April 9, 2009.

(17) A one-phase formula based on surface acres will fairly compensate owners farther away from the injection well that will eventually have pore space occupied by carbon dioxide. Minnkota testified to a lack of history matched data for carbon dioxide saturation rates in the Deadwood Formation for a pore volume allocation methodology that would fairly apportion use of pore space. Minnkota owns the pore space where the injection wells are to be located. Minnkota indicates that the majority of carbon dioxide stored will remain in close proximity to the well bores for an extensive period of time, making Minnkota the primary beneficiary of a pore volume formula. Computational modeling performed by Minnkota and the Commission supports Minnkota’s assessment.

The Commission believes capillary trapping, relative permeability hysteresis, and a lack of local area history matching data from injection of carbon dioxide into the saline Deadwood Formation reservoir provides reasonable doubt for the utility of a pore volume formula. The Commission believes the 100% weighting on surface acreage is acceptable and that the one-phase formula is protective of correlative rights and should not be modified.

(18) Minnkota delineated the tracts to be utilized through computational modeling based on site characterization as required by NDAC Section 43-05-01-05.1. The data acquired during site characterization as well as the reservoir model and all inputs were provided to the Commission. The Commission evaluated the storage reservoir utilizing data acquired during site characterization and other publicly available data before performing computational simulation. The Commission concludes that Minnkota’s inclusion of pore space that will be affected by the project has been adequately delineated.

Minnkota proposes amalgamating the same reservoir pore space for the Deadwood reservoir as proposed in Case No. 29030 for the Broom Creek reservoir. A total of 4 million metric tons per year for 15 years, followed by 3.5 million metric tons per year for the final 5 years are planned to

be injected into the Deadwood and Broom Creek reservoirs. Simulation inputs considered a maximum injection of 4 million metric tons per year for 15 years and 3.5 million metric tons for the final 5 years into the Broom Creek, and 1.17 million metric tons per year into the Deadwood for the life of the storage facility. Simulation outputs for the Deadwood utilize less pore space than the Broom Creek and fall within the same defined storage facility boundary. There is significant overlap in surface ownership if the Deadwood were to be fully utilized. There is the potential that the Deadwood will be utilized to a lesser extent than proposed or not at all, making an alternate land proposal from the Broom Creek not feasible at this time. This finding is to be re-evaluated at the 5-year review.

(19) The Geologic Storage Agreement contains fair, reasonable, and equitable provisions for:

- (a) The amalgamation of pore space interests for the storage of carbon dioxide within said pore spaces of the storage reservoir.
- (b) The division of interest or formula for the apportionment and allocation of carbon dioxide to be stored.
- (c) The measurement of quantity of carbon dioxide injected into the pore spaces underlying the delineated storage facility.
- (d) The enlargement or reduction of the delineation of pore space utilized for geologic storage of carbon dioxide which may be warranted by review pursuant to NDAC Section 43-05-01-05.1(4).
- (e) The time when the Geologic Storage Agreement shall become effective.
- (f) The time when, conditions under, and the method by which the Geologic Storage Agreement shall be or may be terminated and its affairs wound up.

(20) Such amalgamation of the storage reservoir's pore space and the Geologic Storage Agreement are in the public interest, and require procedures that promote, in a manner fair to all interested, cooperative management, thereby ensuring the maximum use of natural resources, and that said Geologic Storage Agreement, as contained therein, appears to conform and comply with the provisions and requirements of NDCC Section 38-22-08.

(21) NDCC Section 38-22-10 provides that the Commission may require that the pore space owned by nonconsenting owners be included in a storage facility and subject to geological storage, if a storage operator does not obtain the consent of all persons who own the storage reservoir's pore space.

(22) Pursuant to NDAC Section 43-05-01-08(2)(e), the required notice given by Minnkota included a statement that amalgamation of the storage reservoir's pore space is required to operate the storage facility, that the Commission may require that the pore space owned by nonconsenting owners be included in the storage facility and subject to geologic storage, and that the amalgamation of pore space will be considered at the hearing.

(23) The approval of this application is in the public interest by promoting the policy stated in NDCC Section 38-22-01.

IT IS THEREFORE ORDERED:

(1) The amalgamation of pore space in the Minnkota Center MRYS Deadwood Storage Facility #1 in Oliver County, North Dakota, is hereby approved.

(2) The Geologic Storage Agreement for the Deadwood Formation is hereby incorporated in this order by reference, and shall apply to the same extent and with the same force and effect as if actually set forth herein; that said Geologic Storage Agreement for the amalgamated pore space therein is approved, all to the same extent and with the same force and effect as if set forth herein in its entirety; that if said Geologic Storage Agreement does not in all respects conform to and comply with the provisions and requirements under NDCC Chapter 38-22, the statute shall prevail.

(3) The amalgamated pore space is hereby defined as the following described tracts of land in Oliver County, North Dakota:

TOWNSHIP 142 NORTH, RANGE 84 WEST

THE S/2 SE/4 OF SECTION 35, AND THE S/2 OF SECTION 36,

TOWNSHIP 142 NORTH, RANGE 83 WEST

ALL OF SECTIONS 28, 29, 31, 32, 33 AND 34, THE SE/4 SE/4 OF SECTION 19, THE SE/4 AND S/2 SW/4 OF SECTION 20, THE S/2 AND S/2 N/2 OF SECTION 21, THE SW/4 NW/4, W/2 SW/4, AND SE/4 SW/4 OF SECTION 22, THE SW/4 AND SW/4 SE/4 OF SECTION 26, THE W/2, SE/4, AND W/2 NE/4 OF SECTION 27, THE E/2, E/2 SW/4, AND SE/4 NW/4 OF SECTION 30, AND THE W/2, NE/4, AND W/2 SE/4 OF SECTION 35,

TOWNSHIP 141 NORTH, RANGE 84 WEST

ALL OF SECTIONS 1 AND 12, THE E/2, E/2 SW/4, AND E/2 E/2 NW/4 OF SECTION 2, AND THE NE/4, E/2 NW/4, AND NE/4 SE/4 OF SECTION 13,

TOWNSHIP 141 NORTH, RANGE 83 WEST

ALL OF SECTIONS 2, 3, 4, 5, 6, 7, 8, 9, 10, 16, 17 AND 18, THE W/2 SW/4 OF SECTION 1, THE W/2, NE/4, W/2 SE/4, AND NE/4 SE/4 OF SECTION 11, THE W/2 NW/4, NE/4 NW/4, AND NW/4 SW/4 OF SECTION 12, THE N/2 NW/4, SE/4 NW/4, NW/4 NE/4, W/2 SW/4 NW/4, AND NE/4 SW/4 NW/4 OF SECTION 14, THE N/2 N/2, SE/4 NE/4, AND SW/4 NW/4 OF SECTION 15, THE N/2 N/2, SE/4 NW/4, AND SE/4 NE/4 OF SECTION 19, THE N/2 OF SECTION 20, AND THE W/2, W/2 NE/4, AND NW/4 SE/4 OF SECTION 21.

(4) The storage reservoir containing the amalgamated pore space is hereby defined as the stratigraphic interval from below the top of the Icebox Formation, found at a depth of 9,161 feet below the Kelly Bushing, to above the base of the Deadwood B Member, found at a depth of 9,655 feet below the Kelly Bushing, as identified by the Array Induction Gamma log run in the J-ROC1 #1 well (File No. 37672), located in the SW/4 NW/4 of Section 4, Township 141 North, Range 83 West, Oliver County, North Dakota.

(5) The injection of carbon dioxide into the amalgamated pore space by the operator for the purpose of storage of carbon dioxide is authorized through the proposed McCall #1 well, to be located 1,978 feet from the north line and 257 feet from the west line of Section 4, Township 141 North, Range 83 West, Oliver County, North Dakota; provided, however, that prior to the commencement of such injection the operator shall obtain such permits as are required under NDAC Chapter 43-05-01.

(6) The termination of the amalgamation of lands hereinbefore described in paragraph (3) above shall be as prescribed in the Geologic Storage Agreement or at project completion as provided by NDCC Section 38-22-17; and that notwithstanding any provisions to the contrary, in the event that the operator fails to commence or ceases storage operations, the Commission, upon its own motion, after notice and hearing, may consider rescinding this order, or any portion thereof, so that this order of amalgamation will terminate and cease to exist.

(7) The effective date of the amalgamation of pore space in the lands hereinbefore described in paragraph (3) above shall be at 7:00 a.m. on the first day of February, 2021.

(8) No well, other than those proposed in Order No. 31586, shall be hereafter drilled and completed in or injected into in the amalgamated pore space, as defined herein, without order of the Commission after due notice and hearing.

(9) This order shall be reviewed when a review of Order No. 31586 is conducted.

(10) This order shall cover all of the amalgamated pore space, as defined herein, and continues in full force and effect until further order of the Commission.

Dated this 21st day of January, 2022.

INDUSTRIAL COMMISSION
STATE OF NORTH DAKOTA

/s/ Doug Burgum, Governor

/s/ Wayne Stenehjem, Attorney General

/s/ Doug Goehring, Agriculture Commissioner