Testimony of Kevin Connors, Assistant Director for Regulatory Compliance and Energy Policy
University of North Dakota Energy & Environmental Research Center
Before the Senate Committee on Environment and Public Works
February 12, 2025

Good morning, Chairman Capito, Ranking Member Whitehouse, and members of the committee. My name is Kevin Connors, and I am the Assistant Director for Regulatory Compliance and Energy Policy at the University of North Dakota's (UND's) Energy & Environmental Research Center (EERC). Thank you for the invitation to provide testimony concerning the implementation of the Utilizing Significant Emissions with Innovative Technologies (USE IT) Act, the Class VI well-permitting process, and related efforts to advance carbon capture, utilization, and storage (CCUS).

For the purpose of my testimony, I started my career in the oil and gas industry in western North Dakota as a wellsite geologist. I worked for the North Dakota Department of Mineral Resources from 2010 to 2018, during which I was given the opportunity to lead North Dakota efforts to become the first state to receive Class VI primacy. In 2019, I began working at the EERC, where I manage the Plains CO_2 Reduction (PCOR) Partnership and work closely with EERC clients to support CCUS project development. The EERC has been the technical lead tasked with the development of all nine Class VI projects approved in North Dakota.

The EERC is a business unit of UND focused on practical solutions to our world's energy and environmental challenges. The EERC was initially founded in 1951 as the Robertson Lignite Research Laboratory under the U.S. Bureau of Mines. With the creation of the U.S. Department of Energy (DOE) in 1977, we became one of the nation's five energy technology centers and have been part of

UND since 1983. The EERC's mission has evolved considerably since that time, from a mission focused exclusively on the utilization of low-rank lignite coals to a mission that focuses on all fossil, renewable, and alternative fuels and addressing environmental challenges associated with energy development.

As a leading developer of technologies that improve production efficiency and optimization of our energy resources and address critical environmental challenges, the EERC has spent decades performing applied research on CCUS. The EERC leads the PCOR Partnership, an industry–government partnership with more than 250 member organizations across a ten-state and four-Canadian province region in the upper Great Plains and northwestern North America. Beginning in 2003, DOE released a solicitation to establish Regional Carbon Sequestration Partnerships (RCSPs) intended to develop an inventory of our nation's major stationary CO_2 emission sources as well as strengthen the technical understanding of regional geology by characterizing subsurface reservoirs with CO_2 storage potential. The EERC was selected as one of the original seven regional partnerships under the first phase (Phase I), performing regional characterization. Three subsequent RCSP funding phases include Phase II field validation, Phase III commercial demonstration, and most recently the initiative phase (Phase IV). Phase IV funding was awarded by DOE in 2019 to continue the work of the PCOR Partnership, with the goal of using the knowledge and experience gained over the previous phases to address current challenges and accelerate commercial CCUS deployment.

The PCOR Partnership region is home to multiple deep sedimentary basins with favorable geology conducive to large-scale CO_2 storage. The major industrial CO_2 emissions sources across the region are interwoven with the regional

economy, acting as economic pillars for the states or local regions, for example, the mining, manufacturing, and industrial centers around the Great Lakes and Mississippi River Valley; the agriculture processing and biofuels businesses of Iowa, Minnesota, Nebraska, and the Dakotas; and the oil-, gas-, and coal-producing regions of North Dakota, Wyoming, Montana, Alaska, and the Canadian provinces. The local, state, and regional economies, and the industrial tax base that supports these communities, represent the primary emissions sources of CO_2. This is where we encounter the dual challenge of reducing the carbon intensity of our major industrial sectors while simultaneously ensuring continued economic growth and prosperity for the local economies tied to these industries. The deployment of CCUS technologies offers a unique solution to meet this dual challenge.

Today, the 45Q tax credit and low-carbon fuels markets have created a business case for CCUS, with ethanol, biofuels, fertilizer manufacturing, and hydrogen production being the first movers to deploy these technologies. Carbon capture technology has been commercially demonstrated but not economically deployed across the full spectrum of major industrial emissions sources. The opportunity to advance this technology and produce low-carbon energy, fuels, or other marketable products has proven to create a competitive advantage in the marketplace. In addition, wide-scale carbon capture deployment across the full spectrum of these industries will make readily available and abundant CO_2, creating new economic opportunities for technology innovation and CO_2 utilization.

However, with the opportunity to advance these technologies there are complex challenges that require practical solutions. There are three main barriers

preventing accelerated CCUS deployment. First, the cost of retrofitting an existing coal-fired electricity generation facility with postcombustion capture technology continues to be a major hurdle. Second, CO_2 pipeline permitting and public opposition concerned with pipeline safety and eminent domain laws have created challenges for deploying carbon capture technology on industrial facilities that are not in close proximity to favorable geology and require long distance, multistate pipeline infrastructure. Third, long lead times and delays in permitting Class VI storage projects at the federal level persist.

The solutions to these barriers are all actively underway. Industry continues to advocate for increases to the 45Q tax credit to strengthen the incentive to pursue carbon capture deployment while attempting to offset record inflation on materials (e.g., steel) and increased labor costs. The Pipeline and Hazardous Materials Safety Administration (PHMSA) has proposed new regulations to enhance CO_2 pipeline safety, and there are policy solutions being proposed at the federal level to improve CO_2 pipeline permitting and Class VI permitting.

In 2023, the White House Council on Environmental Quality (CEQ) finalized appointments for two task forces charged with providing input for the deployment of CCUS. The task forces are established under the USE IT Act and are focused on CCUS with regard to permitting on private and federal lands. On October 31, 2023, CEQ and DOE finalized a memorandum of understanding (MOU) to promote cooperative efforts between CEQ and DOE to establish, maintain, and manage the two proposed regional permitting task forces and clarify the agencies' respective roles. Upon signing the MOU, DOE began the process of formally chartering the two task forces. The task forces are tasked with preparing guidance for this Senate Committee, the Senate Energy and Commerce

Committee, and the House of Representatives Committees on Natural Resources and Transportation and Infrastructure. The guidance being prepared by the task forces will identify permitting and other challenges that regulatory authorities and project developers face in permitting. In addition, the task forces will be making recommendations to improve the permitting process and regional coordination for the purpose of promoting the efficient, orderly, and responsible development of CCUS projects and CO_2 pipelines.

The solution to alleviating the significant backlog in Class VI permit applications at the U.S. Environmental Protection Agency (EPA) regional offices begins with improvements to the Class VI primacy process. Currently, four states have received Class VI primacy: North Dakota (2018), Wyoming (2020), Louisiana (2023), and most recently West Virginia (2025). The primacy process is a 2–5-year process that begins when EPA determines the state application to be complete. For a state to apply for primacy, it also has an approximately 2-year preapplication phase that includes working with EPA to demonstrate that the state's Class VI underground injection control (UIC) program is "at least as stringent as" the EPA Class VI UIC program in protecting underground sources of drinking water (USDWs). That said, the Class VI primacy process can take states between 4 and 7 years. I hope we can agree that this process is inefficient and must be improved. Once the state and EPA agree that the "as stringent as" standard has been achieved, the state begins the rulemaking process to codify Class VI regulations in the state administrative code. Once state regulations are codified, the state can move forward and apply for Class VI primacy. Based on my experience, the preapplication phase and the demonstration of equivalent program protections should be the most time-consuming part of the Class VI

primacy process. As soon as a state applies for primacy, EPA should move expeditiously to approve the already demonstrated state program.

States are best positioned to regulate and permit Class VI injection well activities. States have a broader framework to consider in addition to the technical criteria and environmental protections of the Class VI regulations, such as promoting the development of geologic CO_2 storage and maximizing the use of the pore space of storage reservoirs. For this reason, in the 2010 preamble to the Class VI rules, EPA recognized the added value, flexibility, and better positioning of states to regulate CO_2 storage at the time the Class VI regulations were being contemplated:

> *EPA believes that States are in the best position to implement UIC–GS (geologic sequestration) programs, and by allowing for independent Class VI primacy, EPA encourages States to take responsibility for implementation of Class VI regulations. The Agency's UIC program believes that this may, in turn, help provide for a more comprehensive approach to managing GS projects by promoting the integration of GS activities under the SDWA (Safe Drinking Water Act) into a broader framework for States managing issues related to CCS (carbon capture and storage) that may lie outside the scope of the UIC program or other EPA programs. This would harness the unique efficiencies States can offer to promote adoption of GS technology that incorporates issues in the broader scope of CCS while ensuring that USDWs are protected through the UIC regulatory framework. Allowing States to apply only for Class VI primacy will also shorten the primacy approval process. EPA's willingness to accept independent [primacy] applications for Class VI wells applies only to Class VI well primacy and does not apply to any other well class under SDWA Section 1422 (i.e., I, III, IV, and V)* (U.S. Environmental Protection Agency, 2010).

EPA recognizes the limitations of its regulatory program implementation under the Safe Drinking Water Act and the Class VI UIC program and

acknowledges the ability of the states to broaden the scope of a well-centric regulatory program (i.e., the federal Class VI UIC program) to create a regulatory framework that spans all aspects, from cradle-to-grave, of a dedicated CO_2 storage project. Several states, including North Dakota, have adopted a resource management framework for regulating all aspects of CO_2 storage, including project permitting and pore space amalgamation.

The current regulatory landscape clearly demonstrates the difference in state Class VI UIC program implementation, including permitting, compared to that of EPA. States that have adopted a resource management framework combined with Class VI primacy are able to efficiently permit Class VI projects. EPA implements the Class VI UIC program under a waste disposal framework and has experienced significant backlog of Class VI permit applications with long lead times and permitting delays. As of January 2025, there are 161 Class VI well applications that have been submitted to seven different EPA regional offices; the 161 well applications make up 54 projects across 13 states. To date, EPA has issued two Class VI permits for the currently operating Archer Daniels Midland (ADM) project in Illinois (permits issued April 15, 2014), two Class VI permits to construct for the Wabash Carbon Services project in Indiana (permits issued on January 24, 2024), and four Class VI permits to construct for the Carbon TarraVault project in California (permits issued on December 31, 2024). When factoring in agency review time and subtracting out the time the agency was waiting on the applicant to address permit deficiencies, each of these EPA Class VI permit approvals took between 2 and 4 years for a final permit decision. It is important to note the Wabash Carbon Services and Carbon TarraVault projects received “permits to construct”; under the EPA permitting process, these

applicants are required to resubmit their Class VI permits with updated data and information from the drilling, testing, sampling, and construction of these wells for EPA to make a final determination for "authorization to inject," the timing of which is unknown. In contrast, North Dakota and Wyoming both have issued multiple Class VI project approvals. North Dakota has permitted nine storage projects, with an average of 8 months for the final permit decision, and Wyoming has permitted three projects, with an average of 12 months to final permit decision. The distribution of Class VI well and project applications at the EPA regional offices includes several states that are pursuing Class VI primacy or have announced their intent to apply for Class VI primacy. Of the 13 states with Class VI well and project applications submitted to EPA regional offices, ten of those states have either announced or begun the preapplication phase for Class VI primacy.

When Louisiana received Class VI primacy in 2023, 31% of the well applications that were submitted at the EPA regional office transferred to Louisianna, significantly reducing the EPA backlog. If EPA granted primacy to the ten states that are either pursuing primacy or have announced their intent to pursue primacy, the Class VI well-permitting backlog at EPA would be reduced by 39%.

An important technical challenge facing the CCUS industry has to do with the prohibition of new aquifer exemptions for Class VI injection. There are many examples of geologic formations that meet federal regulatory criteria of a USDW, but there are extenuating circumstances that make these particular formations unsuitable as a source of drinking water for human consumption or other freshwater supply. EPA has a process for exempting these types of geologic

formations and allowing for underground injection other than for Class VI. Currently, federal regulations do not allow new aquifer exemptions to be issued for Class VI injection and are unclear regarding the use of existing aquifer exemptions for Class VI injection. The inability of project operators to receive aquifer exemptions for Class VI wells unnecessarily condemns billions of tons of CO_2 storage potential within the state of North Dakota and throughout the United States. The use of aquifer exemptions for Class VI projects is necessary for continued progress in deploying CCUS across the United States.

None of the outstanding research and development work performed by the EERC would have been possible without the foresight of this key committee, your counterparts on the Energy and Natural Resources and Appropriations Committees, and DOE. With your direction and leadership, I believe that we are poised to continue our nation's progress toward broad, economically viable carbon management.

Thank you, again, Chairman Capito, Ranking Member Whitehouse, and members of the committee for your invitation to provide these remarks. I would be happy to answer any questions you might have regarding my testimony and my views on carbon management.