

WILLIAMS ECHO SPRINGS CARBONSAFE

Developer / Lead: University of Wyoming – School of Energy Resources (SER), with Williams

Location: Carbon County, WY

Status Category: CarbonSAFE Phase II – Storage Complex Feasibility / Field Characterization

Prepared By: Carbon Solutions

OVERVIEW

The Williams Echo Springs CarbonSAFE project is part of the U.S. DOE CarbonSAFE program, led by the University of Wyoming School of Energy Resources in partnership with Williams. The study is evaluating the feasibility of developing a large-scale saline storage hub in the Echo Springs area, with an initial CO₂ source identified from a Williams facility. Activities include site characterization, subsurface modeling, risk assessment, and development of transport concepts to inform a potential future Class VI permit application.

OBJECTIVES

- Demonstrate the technical feasibility of securely storing more than 50 million metric tons of CO₂ in deep saline reservoirs, in line with DOE CarbonSAFE program goals.
- Characterize geologic storage formations through a dedicated deep characterization well, seismic data, and legacy subsurface datasets, with a focus on formation thickness, injectivity, and confining units.
- Assess long-term containment through geochemical modeling, pressure management evaluations, and identification of multiple sealing formations.
- Define capture and transport options beginning with the identified Williams CO₂ source, while outlining pathways for future integration with regional pipeline infrastructure.
- Develop risk assessments and community engagement strategies to prepare for potential Class VI permitting and commercial-scale operations.

GEOLOGY & DESIGN

The project is located on the eastern margin of the Greater Green River Basin. The study is focused on evaluating multiple deep saline reservoirs within Upper Cretaceous formations. Reservoir intervals are present at depths greater than 15,000 feet, with high temperatures exceeding 330°F recorded in the new well. Characterization includes seismic interpretation, well log analysis, and reservoir modeling to determine injectivity and containment potential across multiple stacked formations.

TIMELINE / MILESTONES

Nov 2023: Project selected for CarbonSAFE Phase II funding.

Early 2024: Wyoming Energy Authority grant awarded to Williams for Echo Springs CO₂ feasibility.

Jun 2025: DOE issued a categorical exclusion under NEPA for field activities on private land near Wamsutter.

Sep 2025: Deep characterization well completed to a total depth of approximately 19,100 feet, with reservoir data collection underway.

KEY FACTS

- **DOE Award:** Selected as a CarbonSAFE Phase II project under award number FE0032448.
- **State Support:** Wyoming Energy Authority funding provided to Williams to support CO₂ storage feasibility work.
- **Federal Funding to UW:** More than \$11 million awarded to UW SER to lead storage complex feasibility activities.
- **Initial Source:** Williams identified a facility near Echo Springs capable of supplying over 100,000 tonnes of CO₂ per year.
- **New Characterization Well:** In September 2025, the project completed drilling a deep characterization well to approximately 19,100 feet. The well is collecting core, log, and fluid data to define reservoir properties, temperature and pressure conditions, and sealing capacity of confining units.

TRANSPORT & SOURCE CONCEPT

Initial transport concepts focus on linking the identified Williams facility in the Echo Springs area to the proposed storage site through short, dedicated pipeline infrastructure. This direct connection is designed to establish a reliable initial CO₂ supply for early injection volumes. As the project advances, expansion scenarios under evaluation include tie-ins to existing regional gathering systems and potential integration with larger interstate pipeline corridors. These configurations would allow the hub to accommodate additional CO₂ sources from natural gas processing, industrial facilities, and power generation in Wyoming and surrounding states. The phased approach enables near-term demonstration of capture and storage while maintaining flexibility for future regional scale-up.

