

CSPG GeoConvention Abstract

Alberta Energy Regulator *Directive 065* Requirements for Carbon Capture, Utilization, and Storage Applications

Kari Czirjak, P.Geol. Senior Geologist,

Vladimir Vdovin, P.Geol. Geologist

Faisal Khan, P.Eng, Senior Reservoir Engineer

Alberta Energy Regulator (AER)

Summary

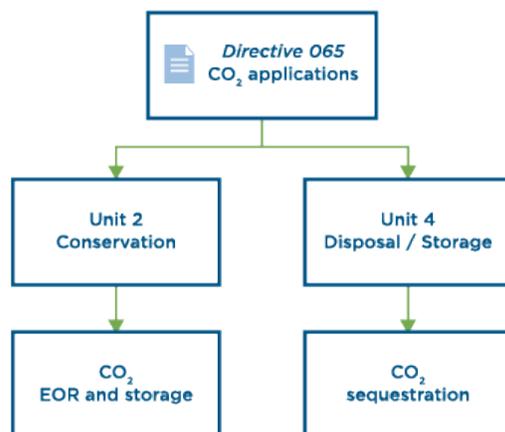
Carbon Capture, Utilization, and Storage (CCUS)

CCUS refers to a range of technologies and processes that capture carbon dioxide (CO₂) from sources such as industrial facilities, transport the CO₂ through pipelines, then inject it into deep subsurface geological formations (e.g., saline aquifers or depleted oil and gas reservoirs) for permanent storage. CCUS technologies are recognized by the Government of Alberta as effective tools for reducing emissions and mitigating the effects of climate change.

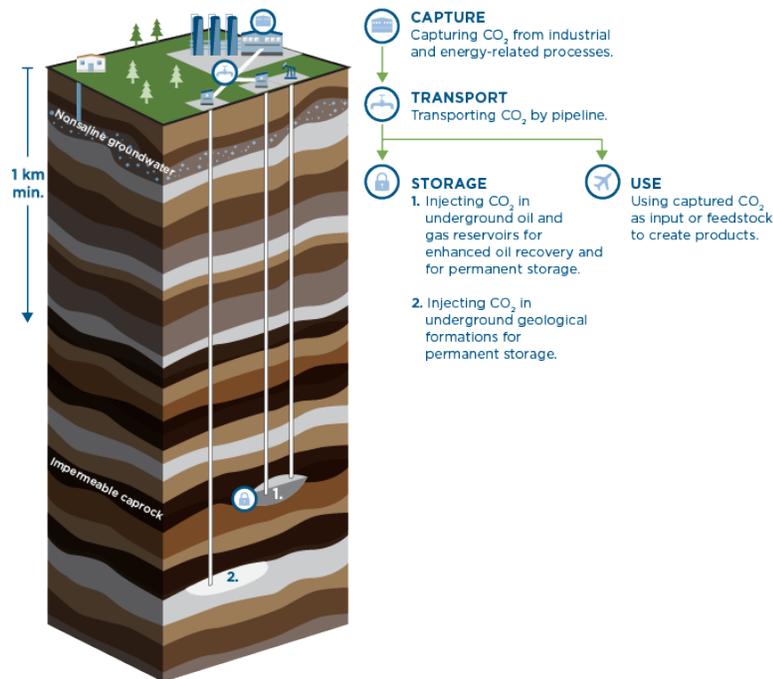
The AER regulates two types of CCUS applications in the province:

1. Carbon Capture and Storage (CCS) are referred to as CO₂ sequestration schemes. CO₂ sequestration scheme is the permanent storage and trapping of carbon dioxide in an approved subsurface formation.
2. CCUS are referred to as CO₂ enhanced oil recovery (EOR) and storage schemes. The use of CO₂ for EOR results in improved production of residual oil and the net geological sequestration of CO₂.

Our subsurface requirements for CO₂ schemes will be set out in [Directive 065: Resources Applications for Oil and Gas Reservoirs](#), Units 2 and 4, as illustrated below.



Carbon Capture, Utilization, and Storage Process



Alberta Energy Regulator

Our Requirements

The ability to store CO₂ securely and permanently is fundamental to the containment component of new CCS and CCUS projects throughout the province.

The geological containment assurance requirements in the updated Conservation unit of *Directive 65* are designed to ensure CO₂ is safely contained within the applied for CO₂ EOR-Storage reservoir. Containment is evaluated through a geological review of the confining intervals, assessment of known faulting and an offset well integrity risk review. If there is a risk of CO₂ leakage from the CO₂ EOR-Storage reservoir, then above zone containment monitoring will be required. Above zone containment monitoring wells may be subject to additional requirements to monitor and confirm containment of CO₂ within the storage reservoir.

We regulate the energy-related facilities that capture CO₂, the pipelines that transport the CO₂, and the subsurface injection activities. We have several directives, that set out the requirements for CO₂ schemes across their life cycle. These requirements range from how wells are to be used to inject CO₂ into subsurface formations to where CO₂ can be safely stored subsurface.

Compliance and Enforcement

We conduct regular [inspections and audits](#) to make sure that companies are following our requirements. If we find that a company is noncompliant, we will take the appropriate compliance and enforcement actions.