

Carbon Capture, Utilization and Storage

Developing Storage Hubs to Meet Growing Demand

Growing Carbon Capture, Utilization and Storage (CCUS) in Alberta

Carbon Capture, Utilization and Storage (CCUS) is proven, safe and effective. It is also critical to meeting Canada and the world's long-term energy needs and climate goals.

Alberta is among the global leaders in developing CCUS technology, having taken considerable steps on commercial-scale funding, regulatory enhancements, and knowledge sharing.

Continuing to advance this technology will help Alberta diversify the energy sectors and reduce emissions in many different industries, including concrete and fertilizer, along with hydrogen development.

Industry and stakeholders across Alberta and Canada are increasingly interested in CCUS and many have already taken significant steps to advance this technology.

In Alberta, the Quest and ACTL projects have safely captured and stored a total of more than 10.5 million tonnes of CO₂ since 2015.

Other examples include:

- The oil sands producers' [Pathways Alliance](#) has committed to carbon neutrality by 2050. The alliance is focusing on innovation and technology – such as CCUS – to reach its goal.
- [Capital Power's plan](#) to apply CCS technology at the Genesee 1 and 2 plants.
- [Dow's plan](#) to use CCUS and build the world's first net-zero carbon emissions integrated ethylene cracker at its site in Fort Saskatchewan.
- Air Products [net zero hydrogen complex](#).
- Heidelberg materials plan to use CCUS to develop the [world's first carbon neutral cement plant](#) in Edmonton.

Carbon Storage Hubs

To help meet the growing demand, the Alberta government is issuing carbon sequestration rights through a series of competitions to enable the development of carbon storage hubs across the province.

In 2022, the Alberta government selected proposals to begin exploring how to develop carbon sequestration hubs.

The first competition sought proposals that would explore the development of hubs to service emissions from Alberta's industrial heartland. A second competition was held to explore hub services in other areas of the province not covered under the first competition.

A carbon sequestration hub will be an area of pore space deep underground overseen by a successful private industry proponent who can effectively plan and operate these hubs to store carbon dioxide captured from various emissions sources as a service to industrial clients. Any approved project will need to pass rigorous standards for safety.

Along with storage hubs, government will continue to explore other carbon sequestration scenarios, including small scale and remote opportunities.

Taking this approach will ensure that carbon capture and sequestration will be deployed responsibly and strategically over the long term in the best interest of Albertans.

Process to Develop Storage Hubs

Companies selected to explore how to safely develop these storage hubs work with government to further evaluate the suitability of their locations for storing carbon from industrial emissions.

Once the evaluation demonstrates that the proposed project can provide safe and permanent storage, companies can then work with government to develop an agreement that provides them with the right to inject captured carbon dioxide. This agreement will also ensure that they will provide open access and affordable use of the hub.

Throughout this process, the proponents are also undertaking various regulatory approvals, consultation, and business development.

Regulatory Process

Granting rights to evaluate potential carbon sequestration locations is only one step in a robust regulatory pathway for potential hub projects. Other regulatory obligations for proponents include:

- Evaluation of the formation to ensure it's suitable for carbon sequestration.
- Engagement with land owners, municipalities and other stakeholders.
- Compliance with all legal requirements.
- Follow applicable procedures associated with Government of Alberta consultation policies on land and natural resource management.
- Ongoing monitoring, measurement and verification activities.

In addition, for a proposal to move forward, the operator will need to obtain regulatory approvals from the Alberta Energy Regulator and potentially from Alberta Environment and Protected Areas.

Roles and Responsibilities

Alberta Government

The Alberta government provides the oversight for the development of storage hubs. This includes:

- Coordinating the competitions.
- Evaluating proposals for their suitability.
- Granting the rights for the hub to sequester carbon.
- Ensuring that the terms of the agreements are met as it relates to the safe, efficient and effective storage of industrial carbon emissions.

Proposed Projects

The responsibilities of hub operators include:

- Private industry will be responsible for the development, management, and operation of any carbon sequestration storage hub.
- Successful proponents are expected to work to identify and address potential subsurface interactions and conflicts.
- Hub operators will be expected to obtain all necessary regulatory approvals, and ensure the safe and effective operation of the hub.
- Successful proponents will provide open access to all emitters and fair service rates as well as have the technical, financial, and operational capacity to undertake the operation.
- An agreement holder will be subject to future regulatory structures and mechanisms as they evolve that will ensure fair service rates and open access to the hub with a just and reasonable cost recovery.

Alberta Energy Regulator

The Alberta Energy Regulator (AER) provides regulatory approvals to ensure that the activity is safe and environmentally responsible.

More Information

More information about carbon sequestration tenure management and the competitions to develop storage hubs can be found at: <https://www.alberta.ca/carbon-capture-utilization-and-storage-hub-development-process.aspx>

More information about the role of the Alberta Energy Regulator can be found at: <https://www.aer.ca/providing-information/by-topic/carbon-capture>