

ATLAS

C A R B O N S T O R A G E H U B

POWERING CCS



ATCO

SUNCOR

SUMMER 2023

PROJECT OVERVIEW

The Atlas Carbon Storage Hub proposed by Shell, Suncor, and ATCO would store CO₂ emissions generated in the Alberta Industrial Heartland region.

If built, the storage hub would store CO₂ emissions captured by Shell's proposed Polaris Carbon Capture project, as well as potential carbon emissions from Suncor and ATCO's proposed Heartland Hydrogen Hub. Atlas would also serve as an open-access hub to store CO₂ from other third-party industrial sources.

The Atlas project will build on the success of Quest CCS, which is currently operating at Shell Scotford. Atlas would permanently store CO₂ in a porous rock formation called the Basal Cambrian Sands – located about 2 km underground.

If approved to be built by the three partners, the proposed project would be developed in multiple phases, and is contingent on acquiring carbon sequestration leases from the Alberta government.

The first phase would permanently store 800,000 tonnes of CO₂ per year captured by the Polaris carbon capture project from the Shell Scotford Refinery and Chemicals plant near Fort Saskatchewan.

Partners

Shell, Suncor, and ATCO reached an agreement in 2022 to partner on the development of the Atlas Carbon Storage Hub. In the spring of 2022, the Government of Alberta selected Atlas as one of the hubs to enable sequestration of carbon emissions from Alberta's industrial heartland region. Atlas entered into an evaluation agreement with the province to further explore the project area's suitability for safely storing CO₂ emissions.



Upcoming Open House Events

Please join us for an informal, come-and-go open house to learn more about the project, meet the team, ask us questions, and provide us with feedback as we develop the project.

Ryley

- Tuesday, June 20, 2023
- 4:00 p.m. – 7:00 p.m.
- Ryley Community Hall – 5103-49 Street, Ryley, AB.

Round Hill

- Wednesday, June 21, 2023
- 4:00 p.m. – 7:00 p.m.
- Round Hill & District Community Centre – 9 Township Road 484, Round Hill AB.

Dinner will be provided.

WHAT'S NEXT?

3D seismic survey and water well testing

Shell is planning to conduct seismic operations of areas within Beaver County and Camrose County beginning in late 2023. This is a process of mapping the layers of rock beneath the surface to support safe CO₂ storage.

This specific exploration technique, called a 3D seismic survey, involves the use of vibroseis buggies to send sound wave energy into the subsurface of the earth. The returning seismic waves are then recorded using geophones that are laid out on the surface. There is no soil disturbance when conducting a vibroseis seismic survey.

Beginning July 2023, representatives acting on behalf of Shell will begin reaching out to local area landowners to acquire permits to access the land covered by the seismic survey. They will also discuss details of the program and gather feedback or concerns regarding the planned seismic activity. A water well testing program is being offered to landowners in proximity of the seismic survey location, prior to and after the seismic survey.



Timeline of activities

1. Landowner permitting and water well testing - July 2023 to October 2023

- A representative acting on behalf of Shell will seek permission from landowners to access land that is needed to conduct the 3D seismic survey.
- You will be **contacted directly** if access to your land is required for the work and/or if you have a water well within the range for pre-and post-seismic testing.

2. Surveying - November 2023 to December 2023

- Using snowmobiles, survey teams will travel across permitted land within the 3D seismic boundary. They will map the coordinates for the vibroseis source points and the locations for the geophones. They will also map any existing pipelines, objects or areas that need to be avoided or set back from the seismic operation.

3. 3D seismic recording - January 2024 to late-February 2024

- At the beginning of the recording phase, geophones are laid out at predetermined points within the survey area, and operations with the vibroseis buggies begin within 3-4 days.
- The 3D seismic recording is conducted during the winter when the ground is frozen and covered in snow, to minimize impact to the environment and farming operations. These dates may change, but every effort will be made to inform permitted stakeholders in the event of significant schedule changes.

4. Post-seismic water well testing - February 2024 to end-April 2024

- Water wells tested prior to the seismic operations will be re-tested.
- You will be **contacted directly** if you have a water well within the range for pre-and-post seismic testing.

WHAT IS CARBON CAPTURE AND STORAGE?

How It Works:

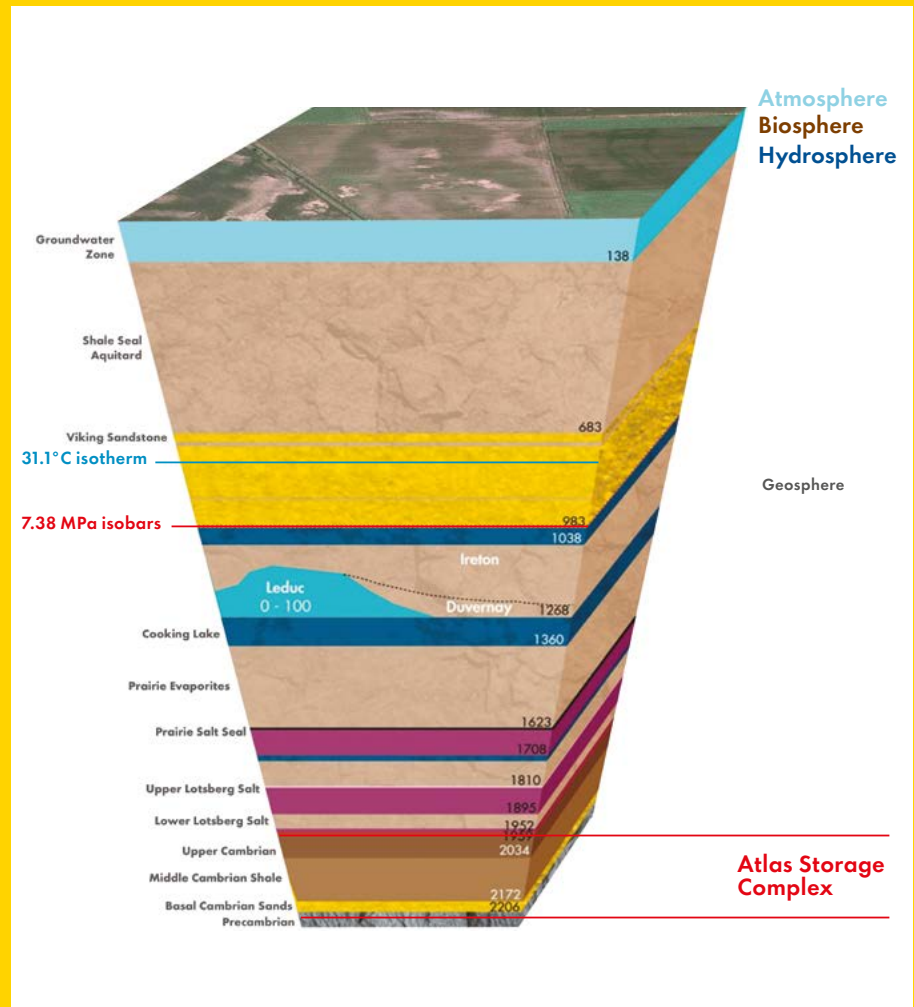
Carbon Capture and Storage

Carbon capture and storage (CCS) involves the capture of CO₂ from industrial sources that would otherwise be emitted to the atmosphere. Once captured, the CO₂ is purified and then sent via pipeline to a storage well where it is then permanently stored in a suitable and safe reservoir underground. CCS has sometimes been referred to as a new technology; however, all the technologies used in CCS have been used in varying forms in the oil and gas industry for many decades.

Scan QR code to view video



Atlas is very similar to our Quest CCS project explained in this video.



Atmosphere
Biosphere
Hydrosphere

Geosphere

Atlas Storage
Complex

CO₂ Capture and Transport

Once CO₂ source points are identified, a system to capture the CO₂ is built into the existing plant. This system uses a chemical called amine to absorb CO₂. The absorbed CO₂ is then sent to a facility to be separated from the amine. The amine is recycled and sent back into the system and the CO₂ is then compressed. The compression reduces the CO₂ volume by about 400 times – turning it into a very dense fluid. The “liquid” CO₂ is put into a pipeline to be sent to an injection well for safe permanent storage underground.

CO₂ Storage

The captured carbon dioxide sent to the Atlas Carbon Storage Hub would be stored over 2 kilometers underground in the Basal Cambrian Sands (BCS), which is the saline aquifer at the very bottom of the Western Canadian Sedimentary Basin. This BCS sandstone is the deepest sedimentary layer in this region, deposited right on top of the Precambrian basement (which in this area is made of granite and gneiss). The CO₂ is stored within the small, porous spaces within the sandstone rock. If you imagine the hard, round sand grains like the balls in a ball

pit or gumball machine, they can only pack so close together, there is always space left between them – those spaces also exist on a smaller scale between the grains of sand in the rock. There is already saline (salt water) that sits within the spaces between the sand grains. These spaces allow for the flow of a liquid within the rock and make up the storage reservoir.



MEET NICOLE TERNES PROJECT LEAD FOR ATLAS

Nicole Ternes is the Business Opportunity Manager [Project Lead] for the Atlas Carbon Storage Hub proposed by Shell, Suncor, and ATCO.

Nicole is known for integrating technical and non-technical elements across Shell businesses, grounded by a Bachelor of Science (Chemical Engineering) degree and a Bachelor of Arts (Sociology) degree.

Nicole has over 18 years' experience at Shell, starting as a process engineer at the Scotford Refinery. Nicole has held a variety of other roles including coordinating major regulatory approvals and managing several projects with complex technical and commercial elements. For the past several years she has helped evolve the Polaris carbon capture and Atlas carbon storage opportunities at Scotford, in addition to leading opportunities to market customer-facing lower-carbon products. Nicole is passionate about sustainable energy development – caring very much about the environment and people she works with.

Nicole was born and raised in Calgary, Alberta. She is married and has two children, plus a wonderful family dog. Nicole loves spending time in the mountains, travelling the world, yoga, meditation, and especially watching her kids play hockey.

As we shape and refine this project, we want to hear your feedback. Please join us at an open house event or reach out directly to one of the contacts listed in this newsletter. Nicole looks forward to meeting some of you in our upcoming engagements and continuing to share more details as the project evolves.



CONTACT US

Communicating with Neighbours

As we progress the Atlas project, we will share information with neighbours through a variety of means, including newsletters and in-person open house events. We are committed to listening to your feedback and answering any questions that you have.

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Media Inquiries

https://www.shell.ca/en_ca/media/submit-an-inquiry.html