CCUS PART I: Carbon Capture, Utilization, And Storage In Alberta

Climate change has been referred to by the Supreme Court of Canada as an "existential challenge" to Canada and to the world.[1] Canada and its provinces are exploring a number of scientific and technological innovations to combat climate change, and in particular, to reduce the impact of carbon emissions from Canadian energy and industrial processes. One such innovation that is beginning to show promise is Carbon Capture, Utilization, and Storage ("CCUS")/Carbon Capture and Storage ("CCS"). CCUS/CCS are two regulated processes in Alberta aimed at reducing emissions and mitigating the effects of

climate change.

These processes are actively being pursued by the Alberta industry in 2024. Media coverage indicates that some of the leading projects in Alberta are Shell Canada's Quest CCS facility, one of the first commercial-scale CCS projects, which reported 7.7 million tonnes of carbon dioxide ("**CO2**") captured (as at the end of 2022),[2] and Heidelberg Materials' Edmonton cement plant's CCS project, which will commission the world's first net-zero cement plant by capturing and storing an estimated 1 million tons of CO2 each year.[3]

This article is the first in a two-part series. In this article, we will provide a summary of CCUS/CCS processes in Alberta, including the surrounding regulatory framework. In the second article, we will outline the potential liability of CCUS/CCS projects and the possibility of future litigation.

Introduction

CCUS/CCSare two regulated processes in Alberta aimed at reducing emissions and mitigating the effects of climate change.[4] CCS refers to CO2 sequestration – the permanent storage of CO2 in an approved subsurface formation – whereas the 'U' in CCUS refers to *Utilization*. Utilization of CO2 is showing promise for various technologies and can include the utilization of CO2 in the production of a product or fuel. In Alberta CCUS can also refer to CO2 used for enhanced oil recovery and storage.[5]

Both processes are technologies that capture CO2 from industry and energy-related emissions, and transport that captured CO2 by pipeline. CCUS encompasses *utilization* and storage, where CO2 is used both as an input to create further products, and storage (such as CCS), which encompasses the injection of CO2 into underground reservoirs or formations for permanent

storage.[6]

Alberta has been a leader in CCUS/CCS technologies by reducing industrial/energy generated emissions from oil and gas extraction. According to the Government of Alberta, Alberta has a competitive advantage to attract CCUS/CCS innovation and investment from the province's large-scale energy development experience, extensive energy infrastructure, subsurface geologic storage capacity,[7] and an established market for CO2 as a result of existing emission regulations. Investment in the sector has also been fueled by the Alberta Carbon Capture Incentive Program, which provides a grant of 12% for new eligible capital costs in CCUS projects, and the Alberta Innovates and Emissions Reduction Alberta programs, which have invested over $200 million in more than 100 CCUS projects.[8] In addition, the *Carbon Capture and Storage Funding Act*[9] was implemented to "encourage and expedite the design, construction and operation of carbon capture and storage projects in Alberta,"[10] and provides authority for the Minister of Energy and Minerals to make payments to "develop or refine a regulatory system for carbon capture and storage projects in Alberta".[11]

Regulatory Framework

To support the growth in CCUS/CCS projects, Alberta has put a regulatory framework in place. As a starting point, the *Mines and Minerals Act*[12] dictates that the Crown owns the pore space with respect to CO2 sequestration, and may enter into lease agreements to grant the right to inject captured CO2 into a subsurface reservoir.[13] Lessees are required to comply with approved monitoring, measurement, and closure plans,[14] and are also required to obtain a well license and approval from the Alberta Energy Regulator (the "**Regulator**") under the *Oil and*

Gas Conservation Act (“***OGCA***”)[15] prior to drilling or using a well for CO2 sequestration.[16] Specifically, the *OGCA* provides as follows:

39 (1.1) The Regulator may not approve a scheme for the disposal of captured carbon dioxide to an underground formation … that is pursuant to an agreement under … the *Mines and Minerals Act* unless the lessee of that agreement satisfies the Regulator that the injection of the captured carbon dioxide will not interfere with

(a) the recovery or conservation of oil or gas, or

(b) an existing use of the underground formation for the storage of oil or gas.[17]

Other laws regulate CCUS to lesser degrees, including the *Water Act,*[18] which regulates water diversion or use approvals for surface and groundwater, and the *Environmental Protection and Enhancement Act*,[19] which regulates the drilling, construction, operation or reclamation of wells created for injection into an underground formation.[20]

The reduction of emissions from CCUS/CCS processes is also regulated in the Province under the *Emissions Management and Climate Resilience Act*.[21] Pursuant to this *Act*, the *Technology Innovation and Emissions Reduction Regulation* (“***TIER***”), [22] implements a CO2 pricing and emissions trading system to reduce industrial emissions and support investment in clean technology.[23] At its core, *TIER* creates compliance obligations for industrial and energy-related facilities by establishing allowable emission limits. As it relates to CCUS/CCS, *TIER* prescribes specific requirements for CO2 sequestration through CCS (an approved quantification protocol under the Alberta Emission Offset System) to be recognized by an emission offset.[24] Emission performance credits in turn enable regulated facilities to meet further

emission compliance obligations under *TIER*.

Future Considerations

Despite the regulatory framework in place in Alberta, several issues have yet to be fully evaluated, including environmental and financial liability. While economic systems are in place to fuel the adoption of CCUS/CCS technologies, several CCUS/CCS projects await final investment decisions.[25] In addition, the transportation of CO2 and the storage of it underground creates a myriad of potential liability issues, including pipeline leaks or spills, reservoir leakage or blowouts, groundwater and drinking water contamination, and the stimulation of seismic activity. These liability concerns have yet to be explored in-depth.

Stay tuned for the next article where we will discuss the potential liability of CCUS/CCS projects and the possibility of future litigation.

Footnotes

1. *References re Greenhouse Gas Pollution Pricing Act*, 2021 SCC 11 at para 167.

2. https://natural-resources.canada.ca/science-and-data/funding-partnerships/opportunities/current-investments/shell-canada-energy-quest-project/18168;

https://www.shell.ca/en_ca/about-us/projects-and-sites/quest-carbon-capture-and-storage-project.html

3. https://www.heidelbergmaterials.us/home/edmonton; https://www.heidelbergmaterials.com/en/pr-2023-04-06

4. Alberta Energy Regulator, "Carbon Capture, Utilization, and Storage", online: https://www.aer.ca/providing-information/by-topic/carbon-capture AER CCUS..

5. AER CCUS.

6. AER CCUS.

7. Government of Alberta, “Carbon capture, utilization and storage – Development and innovation”, online: https://www.alberta.ca/carbon-capture-utilization-and-storage-development-and-innovation GOA CCUS..

8. GOA CCUS.

9. SA 2009, c C-2.5.

10. *Carbon Capture and Storage Funding Act*, SA 2009, c C-2.5, s 1.1.

11. *Carbon Capture and Storage Funding Regulation*, Alta Reg 64/2010, s 2.

12. *Mines and Minerals Act*, RSA 2000, c M-17 *MMA*..

13. *MMA*, ss 15.1, 116.

14. *MMA*, s 116(3).

15. *Oil and Gas Conservation Act*, RSA 2000, c O-6 *OGCA*..

16. *MMA*, s 116(2).

17. *OGCA*, s 39(1.1).

18. *Water Act*, RSA 2000, c W-3.

19. *Environmental Protection and Enhancement Act*, RSA 2000, c E-12 *EPEA*..

20. *EPEA*, s 1(aaaa), Schedule of Activities, s 3.

21. *Emissions Management and Climate Resilience Act*, SA 2003, c E-7.8.

22. *Technology Innovation and Emissions Reduction Regulation*, Alta Reg 133/2019 *TIER*..

23. Government of Alberta, “Technology Innovation and Emissions Reduction Regulation”, online: https://www.alberta.ca/technology-innovation-and-emissions-reduction-regulation

24. *TIER*, s 19.

25. https://edmontonjournal.com/news/politics/carbon-capture-rollout-lags-as-industry-ottawa-at-odds-over-who-shou

lders-risk

The content of this article is intended to provide a general guide to the subject matter. Specialist advice should be sought about your specific circumstances.

Authors: Stuart W. Chambers, Aaron Mann

McLennan Ross LLP