Carbon Capture and Storage Potential for Nova Scotia

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Carbon Capture and Storage Research Consortium of Nova Scotia (CCS Nova Scotia) is a non-profit corporation whose purpose is to support research and development in the areas of carbon capture and storage within the province of Nova Scotia. CCS Nova Scotia is a joint venture of the Province of Nova Scotia, Nova Scotia Power Inc. and Dalhousie University. The goal is to direct research into all issues associated with capture, transport, and geological storage of stationary sourced carbon dioxide emissions in a safe and environmentally acceptable manner.

In a world where economic growth will depend on fossil fuels for the next several decades, the capture and geological storage of CO_2 provides a significant option to mitigate CO_2 emissions, contributing to the achievement of greenhouse gas emission targets. According to the International Energy Agency (IEA) CCS could provide 8% of the world's greenhouse gas reduction targets by 2050. From a local perspective, Nova Scotia is particularly susceptible to climate change due its unique geography and extensive coastline. The mandate of CCS Nova Scotia is to advance research into the use of carbon capture and storage technology in Nova Scotia, to determine the economic and technical feasibility of such technology, and to develop related research capacity and expertise in Nova Scotia to potentially assist Nova Scotia in meeting these targets. CCS may provide options to work in concert with the renewable energy strategy established by the Province of Nova Scotia.

The initial phase, which is conducted between 2009 and 2012, is being conducted in parallel activities that will merge in the final year with the design of a suitably sized pilot project. The activities included in these phases are:

- Storage – geoscientific evaluations of onshore and offshore receptors;
- Capture – Assessment studies at NS coal-fired power plants; and
- Transport – Options for the transport of compressed CO_2, onshore and offshore
- Supporting Activities – risk management, public awareness, monitoring/verification tools, regulatory/legal issues, and environmental.

CCS Nova Scotia will provide an update and current status of the program to its delegates of Geology Matters 2011 with emphasis on findings and next steps required to complete the mandate of the corporation. The update will include a geological perspective. The onshore areas of interest for CCS will be the sedimentary basins of Nova Scotia. Areas must include requirements for the appropriate storage capacity, containment and injectivity. Nova Scotia has unique and complex geology, combined with limited data available at the depths required. Determining a site suitable for geological storage of CO_2 is challenging. CCS Nova Scotia has applied CCS criteria to 22 sedimentary sub-basins, narrowing the focus to 3 sub-basins for further assessment. A parallel assessment offshore is also part of the program.

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