Backgrounder

Carbon Dioxide (CO_2) Capture and Storage

- Over half of Saskatchewan's greenhouse gas (GHG) emissions are attributable to electricity generation and oil and gas activities. In order to reduce GHG emissions while still accessing coal, it is essential that Saskatchewan utilize technology such as carbon capture and storage (CCS).

- CO_2 can be injected into oilfields as part of an enhanced oil recovery project, as now occurs at two southeastern Saskatchewan oilfields. CO_2 can also be injected into saline reservoirs for storage, or into deep coal seams either for storage or to stimulate production of natural gas

- Saskatchewan is taking a leading world role in applying this technology at the Petroleum Technology Research Centre (PTRC) and the International Test Centre (ITC) for CO_2 Capture in Regina.

- **The PTRC** was established by the federal and provincial governments to work with industry to develop the next generation of oil production technology.

- One of the major initiatives of the PTRC is the **International Energy Agency (IEA) GHG Weyburn-Midale CO_2 Monitoring and Storage Project** which is studying the storage of CO_2 associated with CO_2 enhanced oil recovery projects.

- The Weyburn-Midale project is improving understanding of geological sequestration of CO_2, the mechanisms of sequestration, and the degree to which CO_2 can be permanently sequestered or stored in geological formations. The information provided by the project will assist in selecting other appropriate CO_2 storage sites and in designing and implementing successful CO_2 sequestration or storage projects throughout the world. The project will provide a credible assessment of the permanent containment of injected CO_2.

- The results of the initial phase of the IEA GHG Weyburn-Midale CO_2 Monitoring and Storage Project indicate that the injected CO_2 likely will remain in the Weyburn and Midale reservoirs for several thousand years at a minimum.

- Saskatchewan has recently announced a $1.4 billion **SaskPower Clean Coal Project** to demonstrate CO_2 capture for use in enhanced oil recovery in southeast Saskatchewan. The first phase of this Project involves a front end engineering and design (FEED) study, selecting technology partnerships and issuing equipment orders, leading to a decision to go ahead with the Project by 2011.

- The large volume of CO_2 required for injection into oil reservoirs in Saskatchewan could be obtained from nearby coal-fired electricity generation stations using CO_2 separation technology being developed by the **International Test Centre (ITC) for CO_2 Capture** at the U of R. The ITC is developing technologies to capture CO_2 from flue gases (primarily amine-based) from large industrial facilities such as refineries or coal-fired electrical generating stations.

- CCS technology is attracting significant attention nationally and internationally. It is likely that coal will remain a major contributor to electrical generation for decades due to its distribution, abundance, and low, stable prices. This means it is particularly important to develop new technologies to address the emissions from coal-fired electricity generation facilities.