

Enbridge: GHG Reduction Activities

Context

- Enbridge's core business is energy delivery through pipelines
- Enbridge recognises the importance of taking action to reduce GHG emissions and adapt to our changing climate. This is reflected in the 27% reduction of our direct GHG emissions in Canada since 1990
- Direct GHG emissions from Enbridge's operations in Alberta are only 3555 tonnes CO₂e
- Climate change and the environment remain the number one issue for Canadians according to the most recent polls

Operations

- Some of Enbridge's initiatives include:
 - ✓ The use of high efficiency pumps using variable drive motors
 - ✓ Application of energy efficiency technologies and measures in facilities (i.e. High efficiency boilers, HVAC upgrades)
 - ✓ 600 vehicles in Enbridge Gas Distribution's (Ontario) fleet operate on natural gas
 - ✓ Pipe replacement to prevent leaks
 - ✓ Flaring rather than venting at storage facilities

Renewable and Alternative Energy

- Enbridge continues to expand its investments in renewable and alternative energy generation (solar, wind turbines, turbo-expanders, fuel cells)
 - ✓ Solar panels were installed at remote valve locations and gate stations along Enbridge's pipeline systems
 - ✓ Enbridge has ownership in four wind energy projects having a combined capacity of more than 250 MW, enough electricity to supply the needs of 90,000 homes. The Alberta-based wind farms are in Magrath and Chin Chute, west of Taber
 - ✓ Natural gas in high pressure lines has to be de-pressurised for consumer use. Usually this pressure is wasted. At its North York facility, Enbridge Gas Distribution is installing a turbo expander that generates almost 1 MW of electricity from the pressure drop. This technology is being integrated with a 1.2 MW fuel cell, which will generate both heat and power. This heat will fulfill the requirements of the turbo-expander and the electricity from both technologies will go the grid. The low-impact electricity produced from this pilot project will supply the needs of 1,750 homes
 - ✓ Waste heat recovery at compressor stations to generate environmentally low-impact electricity with no GHG or other emissions. The first such project has been installed at the Kerrobert, SK compressor station. Three additional facilities have been approved and are under construction with the

total capacity expected to be approximately 20MW, enough electricity to supply the needs of 20,000 homes

Demand-Side Management

- Enbridge Gas Distribution (ON) offers its customers more than 40 demand-side management programs. Since 1995 these programs have avoided the release of 5.5 million tonnes of CO₂e and saved enough energy to serve a million homes for a year

Carbon Capture and Storage (CCS)

- Enbridge is active in two of the three the first carbon capture and storage projects in Canada, one in Alberta and the other in Saskatchewan. The Alberta initiative is a joint venture with Epcor, and will involve CO₂ storage in a saline aquifer (storage space available from enhanced oil recovery (EOR) alone is not sufficient to address long term emission reduction requirements). Since being announced, on November 27th, twenty-five organisations have expressed interest in the Project which will identify and prioritize three or more suitable deep saline aquifer locations for a pilot program to demonstrate the feasibility of CO₂ sequestration. In addition to industry participants, the project will involve government agencies, academic organizations and consultants in an effort to design and demonstrate safe and reliable long term sequestration utilizing 1,000 to 3,000 tonnes of CO₂ per day. The project will address environmental and public safety issues and serve to clarify and establish a template for pore volume ownership and regulatory requirements of injecting CO₂ into a saline aquifer. A successful demonstration will enable saline aquifer sequestration to play a pivotal role in reducing CO₂ emissions in Alberta