400, 407 – 8th Avenue S.W. Calgary, Alberta, Canada T2P 1E5
www.swanhills-synfuels.com

BACKGROUNDER – CLEAN GAS FOR CLEAN POWER

December, 2009

Swan Hills Synfuels is a Calgary-based clean energy project company.

Project

- Swan Hills Synfuels is using an innovative combination of proven processes in a project that will use **in-situ coal gasification (ISCG)** to manufacture synthetic gas from deep, unmineable coal seams, 1400 m beneath the surface in the Swan Hills, Alberta area. This clean synthetic gas will be used to fuel a new high efficiency power generation plant to produce electricity for the Alberta market.
- **300 MW of clean, reliable electricity** will be generated from this project - enough power for about a quarter of the City of Calgary.
- **1.3 million tonnes/year of CO_2** will be captured by this project - rather than going into the atmosphere, the CO_2 will be used for enhanced oil recovery use and sequestration.
- **$1.5 billion** estimated overall cost for the ISCG/carbon capture and storage system and power generation, with a **2015** planned commercial in-service date.

Process

- **Synthetic gas** is manufactured by ISCG and then processed in a conventional gas plant to efficiently remove CO_2, producing clean synthetic gas, rich in hydrogen and lower in carbon than natural gas.
- This gas is then transported by pipeline to fuel **a new combined cycle power generation plant** located in the Whitecourt area. The CO_2 captured in the gas processing is sold to Swan Hills area **enhanced oil recovery** customers.

Environmentally Conscious

- **75% lower greenhouse gas intensity** than that of existing coal-fired power generators current in Alberta today, and just over 50% of the greenhouse gas intensity of natural gas-fired combined cycle generation.

Alberta Benefits

- Albertans will benefit from this project through the delivery of reliable, stable-cost coal-based electricity, with environmental performance better than that of natural gas-fired generation.
- The use of CO_2 for enhanced oil recovery will lead to **increased royalties** being generated for the Province on the incremental oil production. Enhanced oil recovery in deep oil reservoirs is a proven way to permanently store CO_2.

Model for Tomorrow

- This process provides a major new clean energy source for Canada.
- The project provides a model for new clean power development from Alberta's vast deep, stranded coal resources.
- Replication potential elsewhere in Alberta to provide reliable baseload electricity supply is significant.

Features – In-Situ Coal Gasification Power Generation System

- **Abundant, Secure, Low Value Energy Resource:** The ISCG process makes use of the abundant supply of very deep (**1400 m**), low-value coal resources for feedstock.
    - The ISCG-recoverable energy content in the deep Mannville coals in Alberta is more than the **energy content** of all of the oil sands and all of the conventional oil and gas remaining in Alberta
- **ISCG is an Environmentally Attractive Gasification Process**:
    - **Low Air Emissions** - Greatly reduced due to the incorporation of carbon capture.
    - **Non-fresh water use**- virtually eliminating fresh water requirements.
    - **Small Footprint** - Very compact development with minimal land impact –less than 5% of the land impact compared to conventional coal fired power generation and coal mine.
    - **Coal remains in the ground** - No mining, solids handling, or solid wastes requiring disposal.
- **Proven Process:** The ISCG process is well proven, with applications dating back to the **1930's.** It is only recently that technical factors (deep drilling accuracy/capability) and economic aspects (ability to obtain value for CO_2 sequestration, energy pricing) have aligned to make ISCG attractive for commercial development.
- **Simpler, Cheaper Coal Gasification:** ISCG is considerably simpler and less costly than conventional coal gasification, due to the elimination of the coal mining and handling, and gasification plant equipment.
- **Major Greenhouse Gas Reduction Potential**: 6000 MW of ISCG-fueled power, replacing the same amount of conventional pulverized coal generation in Alberta, would reduce atmospheric greenhouse gas emissions by 40 million tonnes/year.
- **Optimal Siting Levering Existing Infrastructure:** The ISCG-power generation pairing does not require that the power generation be sited at the ISCG location – thus the power production can be sited where advantageous for generation (access to existing transmission infrastructure, proximity to customers). This distributed generation approach is aligned with "smart grid" development objectives, increasing local area transmission reliability, reducing line losses, and bringing increased customer choice of power generation supply to Albertans
- **Successful Initial Operation of Swan Hills ISCG Demonstration Project**: During the summer of 2009 the Swan Hills Synfuels ISCG Demonstration Project became operational and completed a planned initial run, demonstrating key control functions while manufacturing a synthesis gas of high quality. The deep Mannville coals at Swan Hills have been shown to have excellent characteristics for gasification.

For further information regarding Swan Hills Synfuels please refer to our website at
www.swanhills-synfuels.com

Media Inquiries may be directed to:
Doug Shaigec, President
Swan Hills Synfuels
403-294-6885