

Peace River Site C Hydro Project

Stage 2 - Environmental Studies

Study Outline: Preliminary Greenhouse Gas Emissions Study

Introduction

Since the original conception of the Site C project over twenty-five years ago, climate change has emerged as a new topic for environmental assessment. As part of Stage 2 evaluation of the potential Site C Project, BC Hydro has initiated a study to develop a model to be used to estimate potential GHG emissions from Site C, and to develop an approach for comparing Site C to other electricity resource options.

A literature review conducted for BC Hydro in 2001 indicated that the rate of emissions from a reservoir generally depends on the carbon content of the inundated land area, the area of land flooded, and the age and characteristics of the reservoir. The literature indicates that reservoirs in boreal regions emit substantially less GHG than those in tropical regions.

For general planning purposes during the 2005 Integrated Electricity Planning process, emissions from the potential Site C reservoir were estimated using a generic emissions rate developed from measurements of Canadian reservoirs, including some British Columbia reservoirs. Using conservative assumptions the greenhouse gas emission estimate for the Site C reservoir was between 15 to 30 tonnes CO₂eq per GWh, or between 70,000 and 140,000 tonnes of CO₂eq per year for approximately the first 10 years after reservoir creation. After 10 years emissions would likely decline to low levels. For comparison expected greenhouse gas emissions for a similar amount of energy from a combined cycle natural gas plant was estimated to be 1,600,000 tonnes per year throughout the life of the project.

In the Stage 1 Site C Report, BC Hydro committed to development of a project-specific GHG estimate.

Study Objectives

The purpose of the Stage 2 study is to refine previous estimates using the historic Site C design and Peace River land use information to provide a preliminary net estimate of greenhouse gases. The study components include:

- Develop a model that can be used to estimate potential net greenhouse gas emissions from Site C.

- Using a model, estimate the multi-year GHG emissions profile associated with ongoing operations of the potential Site C project.
- Develop a construction emissions model for ongoing use in considering GHG emissions in project design and planning options.
- On a preliminary basis, based on the historic design, estimate the net change in emissions from pre-project conditions.
- Develop an approach for comparing the GHG profile of the potential Site C project with other electricity supply options.

Reporting

The preliminary greenhouse gas study report will be available at the end of Stage 2 of the potential Site C project.