

Canada's Commercial Building Incentive Program: Impact on Energy Consumption

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1. INTRODUCTION

Following the adoption of the Kyoto Protocol in December 1997 by 160 participating nations, Canada set in place a national process to examine the implications of Kyoto and possible implementation options to meet the objectives of the agreement. Canada agreed to reduce its greenhouse gas (GHG) emissions by 6% from 1990 levels within the period of 2008-2012. One of Canada's initial commitments to addressing climate change and reducing GHG emissions was reflected in the Government's 1998 allocation of \$150 million over three years to a Climate Change Action Fund. The Commercial Building Incentive Program (CBIP) was one of many programs that was initiated in 1998 as a direct response to the Kyoto Protocol.

This paper will examine the energy simulation data of CBIP projects from phase I of the program which spanned from April 1, 1998 to March 31, 2001. Energy consumption and GHG savings data for CBIP buildings will be compared to conventional buildings and buildings built to the Model National Energy Code for Buildings (MNECB) standard in order to assess CBIP's impact on energy consumption and its contribution to reducing GHG emissions.

2. COMMERCIAL BUILDING INCENTIVE PROGRAM

The objective of CBIP is to encourage the incorporation of energy efficient measures into the design and construction of new commercial, institutional and multi-unit residential buildings in order to contribute to the reduction of GHG emissions in the commercial sector. Building owners are eligible for a financial incentive if their building design is at least 25% more energy efficient than a similar building built to the level of the MNECB, which specifies minimum energy performance standards for the construction of new buildings in Canada. The CBIP incentive is based on the annual energy savings calculated as the difference between the owner's proposed building and the MNECB reference building. The energy consumption for both buildings is calculated using EE4-CBIP which is an energy analysis software tool developed by the Department of Natural Resources Canada to demonstrate CBIP compliance. The EE4-CBIP software uses the United States Department of Energy's DOE-2.1 software as the calculation engine to generate the energy performance results.

3. OVERVIEW OF RESULTS

3.1 Projects from 1998-2001

At the end of phase I of CBIP 101 projects had received a financial incentive from the program ranging from \$1,300 to \$80,000 for a total amount of \$4.1 million. CBIP buildings realized an average energy savings of 32.2%¹ better than the MNECB standard which exceeds the required 25% level set out by CBIP. Below are some of the statistics you will find in Figures 1 to 3:

- The average energy intensity of a CBIP building is 233 kWh/m² which is 32.1% lower than

- the MNECB building and 53.6% lower than a conventional building.
- The average energy intensity of an MNECB building is 31.6% lower than a conventional building.
 - A total energy savings of 60,053 MWh was saved between 1998-2001 which amounts to a \$2 million cost savings.

¹ All CBIP and MNECB average data are weighted values against floor space.

- A total GHG reduction of 14,044 tonnes was saved between 1998-2001 which is equivalent to the emissions saved by removing 4,681 cars from the road.
- CBIP Phase I achieved a cumulative energy savings of 84,194 MWh and a cumulative GHG savings of 18,928 tonnes which is equivalent to the emissions saved by removing 6,309 cars from the road.