

Residential energy efficiency and home construction and renovation: how much progress?

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Abstract

This paper addresses the current market performance of residential energy consumption in Canada, using information collected from a literature review as well as a survey of Southern Ontario homebuilders. It begins by addressing energy consumption within the housing stock, and the related environmental impacts. This discussion is followed by an analysis of energy efficient upgrades and the related savings. The paper then addresses market activity using a homebuilder market survey. Finally the paper concludes by discussing tools and methods that might encourage investments in residential energy efficiency.

The paper found there are two opposing trends that will influence residential energy consumption over the next 20 years. There will be fewer new homes built due to a decline in population growth, an aging population, and growth in non-family households, resulting in less demand for residential energy. However this will be offset by the demand for larger homes, more time spent in the home, and the number of new homes to house the increased population.

In terms of fuels, fossil fuel sources will retain their importance over the next 20 years. However oil and natural gas reserves are expected to peak by 2010 with supply no longer meeting demand by 2020. There will also be a slow shift from fossil fuels to renewable forms of energy such as hydro, wind, solar, and biomass.

Despite major efficiency improvement in the 1970s and early 1980s, significant savings can be achieved in both new and used housing. However, homes built since the late 1980s are relatively energy efficient, making upgrades not as effective per dollar spent, whereas homes built prior to the late 1980s have great potential for cost effective efficiency improvements. Furthermore, it is possible to meet Kyoto commitments for the residential sector by improving both new and existing housing, however new programs and policies are required in order to meet these targets.

In its survey of 50 firms, the paper found that while less than one percent of homes built by these builders are R-2000 homes, 28% were energy efficient; which means they incorporated one or more energy efficient upgrades and exceeded the Ontario building code requirement in terms of energy efficiency. The builders also state that 40% of suppliers are interested in efficiency and 63% of homebuyers are interested in efficiency, indicating substantial market demand for efficiency. However, despite interest, actions do not indicate investment in energy efficiency.

Therefore, to encourage efficiency investments and meet the Kyoto Protocol commitments, the Government of Canada and the provinces along with industry and public utilities, must work together to educate consumers, provide services to consumers, and provide financial incentives to consumers in an attempt to encourage investments in efficiency, and reduce the greenhouse gas emissions from the housing stock.