

# ENERGY STAR<sup>®</sup> -- Fact Sheet



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## Green Means Go Energy Efficient LED Traffic Signals in Winnipeg



Manitoba Hydro and the City of Winnipeg are conducting a pilot study to monitor the feasibility of a Light Emitting Diode (LED) traffic signal retrofit scheme for the whole city. With help from Natural Resources Canada's Office of Energy Efficiency and the City of Winnipeg, Manitoba Hydro began their field operation in the fall of 2003. In the spring of 2004 they installed sets of full ENERGY STAR traffic signals at 15 intersections at various locations in the City of Winnipeg.

### Rationale of the Pilot

This pilot study will provide the City of Winnipeg with a detailed analysis of the costs and savings associated with the retrofitting and installation of LED traffic signals, and will also provide advice to other municipalities on how to achieve the benefits of LED traffic signals in the most cost effective manner. The study will also provide information about the useful life of the LED lamp and other technical features in a real-life situation. Another objective is to examine any user acceptance barriers for this proven technology.

### Advantages of LED Traffic Signal Technology

LED traffic signals are a practical option for many municipalities because they have:

- Extremely long operating lives, 7 to 10 years compared with 12 to 15 months for traditional technology
- High energy efficiency and low power consumption, LEDs consume 9-25 watts while traditional signals consume between 75-150 watts
- Low heat dissipation
- Tremendous resistance to shock and vibration
- Produce vivid and bright colours

### About ENERGY STAR

The international ENERGY STAR symbol is a simple way for consumers to identify products that are among the most energy-efficient on the market. Only manufacturers and retailers whose products meet the ENERGY STAR criteria can label their products with this symbol. In Canada, Natural Resources Canada's Office of Energy Efficiency administers and promotes the international ENERGY STAR symbol for a wide range of energy-using products sold in Canada.

Look for the ENERGY STAR symbol on product packaging, in product literature and advertising and, of course, on the products themselves. Ask your local retailer to help you identify products that qualify for the ENERGY STAR mark so you can begin saving energy and money. For more information visit the ENERGY STAR website at: [energystar.gc.ca](http://energystar.gc.ca).

These characteristics make the use of LED traffic signals an attractive option for municipalities because they can provide the following:

- Increased safety to motorists and signal personnel due to fewer outages and greater visibility in fog, sun and rain
- Less maintenance and lower routine and emergency costs
- Reduced greenhouse gas emissions due to lower energy consumption (BC Hydro recorded an energy saving of 2.7 GW.h in 2002 with the use of LED traffic signals at 2,684 intersections)
- Less manufacturing and storage of products due to the longer life of LEDs
- Greatly reduced disposal of lamps
- Increased reliability because of their long life
- Easy to retrofit because they are designed to fit into existing incandescent signal heads

Natural Resources Canada estimates that the potential savings in Canada from an LED traffic signal retrofit across the country would be 285 million kW.h/year or \$14 million/year (at an energy cost of five cents/kW.h)

## It's Already Happening in Winnipeg

The testing and environmental, economic and social monitoring involved in this three-year study is rigorous. Manitoba Hydro wants to be sure that field performance of LED traffic signals is just as good as the reports from laboratory tests and manufacturers' claims. The primary areas of focus are signal performance, maintenance, life expectancy, cost to retrofit and maintenance cost savings.

### Activities of the Pilot Study

Extensive **research and review** went into the initial phase of this pilot. Apart from the secondary information gathered, Manitoba Hydro performed their own product **evaluation tests** and designed their field **testing methodology** to ensure accurate data recording. Monitoring of the signal **installation** was done to acquire data on the process.

The retrofit process was a good opportunity for Manitoba Hydro and the City of Winnipeg to examine their traffic signal protocols and collect meaningful insights into the real cost of converting existing incandescent traffic signal indicators to LED indicators. For example, observations about the process demonstrate that when reconfiguring pedestrian heads from two signal head sections to one, doing as much reconfiguration and preparation in the shop as possible will significantly reduce the field conversion time.

### What to Expect

Over the course of the next three years there will be **ongoing measurements and monitoring** by Manitoba Hydro and City of Winnipeg. Testing will include signal resilience to climatic extremes, light failure and fade out, effects of high density and high speed traffic vibrations and optical performance. Manitoba Hydro will document energy and maintenance cost savings.

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