

# Manitoba Hydro Place

## 360 Portage Avenue and 360° thinking

Courtesy of Manitoba Hydro

360 Portage Avenue is not only the address for Manitoba Hydro's new corporate headquarters in downtown Winnipeg. The 360 metaphor was serendipitously invoked to represent a new way of thinking when it came to the planning, design, and construction of the state-of-the-art building. It meant looking at the whole picture – the full 360° – and perfectly illustrated Manitoba Hydro's desire to develop a new corporate headquarters that is as energy efficient as possible, helping to conserve the clean, renewable energy so abundant in the province.

Deconstruction of the existing buildings at the site in 2005 was undertaken with a commitment to avoid unnecessary waste. The buildings that were removed to make room for the new building were taken down piece-by-piece, with 95% of the materials salvaged for re-use or recycling. Manitoba Hydro Place makes use of many of these materials, including recycled wood.

The operation of individual building systems, including lighting, ventilation, heating and cooling, and solar shading, are coordinated to ensure that the entire structure operates as a single entity, actively responding to changes in weather, environment, and operational requirements.

### Solar chimney

One of Manitoba Hydro Place's most recognizable and prominent architectural features is the solar chimney at the building's north end. But like many of the elements at 360 Portage, form follows function. The 115-metre-high column rises above the top of the building and is critical to the passive ventilation system. It relies on the natural "stack effect" of a chimney to create a draw of air out of the building. In winter, exhaust air is drawn to the bottom of the solar chimney by fans. Heat recovered from this exhaust air is used to warm the parkade and to preheat the incoming cold air in the south winter gardens. In summer months, warm air is exhausted directly out the top of the solar chimney.

### Sunlight

Taking advantage of Winnipeg's abundant solar energy, the building's striking triangular shape maximizes exposure to the south, while minimizing exposure to cold north winds. The narrow floor plate allows sunlight to penetrate into the heart of the building, providing natural daylight.

### Passive versus active

To achieve such a high level of energy efficiency while maintaining occupant comfort, Manitoba Hydro Place maximizes the use of passive energy technologies while it minimizes the use of active energy. Passive systems, such as the south-facing winter gardens and the solar chimney, take advantage of natural processes to reduce energy consumption. In addition, the building's high floor-to-ceiling spaces make good use of Winnipeg's abundant natural daylight. Active systems, such as energy-efficient T5 fluorescent lighting, are only used as required.

### Double curtain-wall

The building's windows on the east and west facades consist of a double curtain-wall that creates energy efficient buffer zones between the building interior and the elements. The system is made of a single-glazed inner wall spaced one meter inside a double-glazed outer wall, helping to insulate the building against heat or cold. The windows use low-iron glass – meaning higher visibility – to maximize the advantages of sunlight.

### Geothermal system

The building boasts the largest geothermal system ever built in Manitoba and uses the constant temperature underground to heat or cool the structure. A total of 280 geothermal wells carry conducting liquid throughout the building's concrete slabs and 122 metres into the ground. Heat is drawn away from the building in the summer and stored for use in the winter. It's expected that



Construction takes place on a variety of fronts in April, July, August and October 2007

whatever heat energy is extracted from the ground during the winter months will be replaced during the summer making the system fully sustainable over the long term.

### Heating, ventilating and cooling

To maintain a productive workspace while achieving maximum energy efficiency, the design of Manitoba Hydro Place splits heating, ventilating, and cooling into two distinct functions: heating and cooling provided primarily by the geothermal system; and ventilating, provided by a combination of the solar chimney, winter gardens and overall building design.

### Natural ventilation

Fresh air is drawn into one of three six-storey or the single two-storey atria (winter gardens) on the south side of the building. Water features in each winter garden provide humidification and dehumidification of the fresh air, while waste heat recovered from the exhaust air and natural solar energy warm the fresh air. Two smaller water features in the main floor gallery regulate humidity and feature water cascading down a granite surface, also providing a pleasing and decorative element.

The south winter gardens act as the building's lungs, providing pre-conditioned fresh air via the raised floor system. The air enters workspaces through vents in the raised floors, which supplies the office space with 100% fresh air, 24-hours a day, seven days a week, unlike a conventional building where air is recirculated.

### Leadership in Energy and Environmental Design™

The corporation is seeking the gold level of Leadership in Energy and Environmental Design (LEED™) certification. The LEED™ system is the North American standard for assessing green building design and considers all aspects of a structure's design – sustainability, construction, and energy efficiency as part of the rating process.

### Working environment

The design of Manitoba Hydro Place is proof that an extremely energy efficient and sustainable building can also be one that provides a pleasing and comfortable work environment for its occupants. State-of-the-art workstations and meeting spaces ensure that employees can work effectively, both individually and collaboratively.

Broad stairwells linking floors together in the winter gardens provide a degree of vertical connectivity, providing “neighbourhoods” of work that contribute to productivity. And the natural synergies of bringing people together from several locations into one reduces travel time for meetings and helps to lower greenhouse gas emissions.

Employees working at 360 Portage Avenue will enjoy one of the healthiest, vibrant, and productive workspaces in the world, while their presence also contributes to a renewed energy in downtown Winnipeg. 🌱



An aerial view of the new downtown office revealing its dramatic design and shape.

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