

# Green Economic Development in Toronto

## A Review of Environmental Initiatives in Toronto: *Health, Education and Manufacturing Sectors*

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Research by Ashley Gough  
For  
Toronto & York Region Labour Council

February 2006

## **THE ENVIRONMENTAL INITIATIVES OF TORONTO: *Health, Education and Manufacturing***

As environmental concerns become a high priority in the world, many sectors of the economy have had to rethink and revise their ecological footprint. With the emergence of many environmental regulations in the past three decades, many organizations and companies have revamped their production processes and outputs to meet compliance standards. Some have even gone further by facilitating innovative environmental initiatives as they have come to recognize that improving their environmental record is good for business too.

Throughout the City of Toronto organizations and companies have been developing and implementing wonderful environmental initiatives. It is important to celebrate these initiatives, as they are crucial in the investment and promotion of Toronto's green economic development.

Different industry sectors have been working hard with great success on greening up their environmental record. In this article, three sectors of the economy: manufacturing, education and health have been chosen to celebrate within each industry the great environmental initiatives a select number of institutions, organizations and companies have embarked on throughout the City of Toronto.

These initiatives will aid in developing and nurturing a common front between workers and environmentalists in the path towards a sustainable future. Research has indicated some important examples of how public and private sector entities can help transform what we do. These show us how an integrated green economic strategy for Toronto can benefit the environment and reduce costs.

In searching for Toronto area organizations and companies that have been developing great environmental initiatives a set of criteria was used. The U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) standards, as well as a number of my own insights and impressions, to come up with criteria by which I measured in highlighting key organizations and companies that have been working to green up their environmental record and serve as environmental innovators.

The following criteria have been acting as a guide in the decision process:

- Internal Green Initiatives
- LEEDs
- Organizations company policy
- Past Awards
- Accountability and transparency in environmental information
- Employee health and safety

## **EDUCATION**

*Throughout the region there have been great efforts to make schools healthier and more ecologically sustainable while integrating environmental awareness and education for students and educators.*

- **Toronto District School Board (TDSB)**

The Toronto District School Board launched its Environmental Policy in June of 2000. Throughout the subsequent years, the board has developed a framework to improve the environmental performance of its schools through a variety of strategies. It acts as a portal in highlighting the work of TDSB staff and outlines challenges the TDSB are tackling. The role of transparency in the recent years of TDSB displaying their environmental record has been illustrated through their annual Environmental Reports. The report encourages and honours environmental initiatives undertaken by schools. In addition, the board has launched an Ecoschools Certification Guide and Energy Conservation Standards to minimize energy consumption and reduce financial costs. Though, due to the cash-strapped board, there is a challenge in making sustainability mandatory for schools. Presently, it is on a volunteer basis. However, less than three months after, Eco-schools program was introduced, almost a third of school principals had included an Eco-schools initiative in their annual school improvement plans.

In the last couple years, the board and its partnership with the City of Toronto has developed and released literature for public use such as the 2005 Energy Report and the 20/20 Planner guide. These act as tools for teachers, students, and parents to take action to build a more sustainable future.

- **Thomas L. Wells High School**

Formerly known as Morningside Heights Public School, the school opened in September 2005 and is regarded a TDSB's first high performance green school built by Baird Sampson Nevert Architects. The building anticipates receiving LEEDs Silver certification. In fact, it is recognized to be the blueprint for future school designs for the TDSB. The school has many features illustrating its environmental innovative initiatives. Classrooms are laid out to maximize solar exposure and their facades are designed for daylighting effectiveness and sun control. Light shelves shade high summer sun and reflect low winter sun deep into the building. A combination of high and low window vents provides effective passive ventilation as an alternative to mechanical cooling and sensors turn off unneeded classroom lights. The layouts of classrooms are grouped around courtyards, a central library, and multipurpose room, maximizes green space on the compact site. These features act as a stimulating place of growth for young learners as well as supporting civic community for surrounding residents. Conceived as a 'system of systems,' the building integrates architectural design with environmental performance. The pre-cast concrete floor and masonry structure provide thermal mass to harvest winter solar energy and retard summer heat build-up and are an integral part of the

unique displacement air ventilation and radiant floor heating system. These will reduce the spread of airborne dust and respiratory viral infections. Heat in the return air stream is recovered in the central plant along with free heat from bathroom and service room exhaust. Durable materials used throughout the process to promote long-term sustainability as well as indoor air quality. It is anticipated the school will earn a premium of over \$ 2 million dollars.

- **Upper Canada College (UCC)**

Upper Canada College has been undergoing big plans in greening up their record through an ambitious list of environmental initiatives. In the goals to composting all food scraps, installing solar panels and abolishing herbicides, the private school has been working hard in achieving environmentally friendly standards. UCC has a waste diversion target of 90 percent and installed low flow faucets. Even more so, there are sensors that calculate the amount of ambient and natural light in classrooms and hallways and adjust artificial lighting accordingly, which saves a significant amount of energy. In the year 2005, the school decreased their water consumption by 20% and energy bill by a quarter.

UCC's Green School initiative will further be carried out within the next five years as the school undergoes a multi-million dollar expansion plan, environmental sustainability and innovation will be a focal point. Furthermore, to engineer the initiatives, the school has hired two full-time sustainability staff. As well, the Green School Master Plan Team is directed by an architectural joint venture composed of Zeidler Partnership Architects and Architects and Planning Alliance. There is a long-term development plan for 2012. The development plan will be carried out in three main areas: greening up facilities, the curriculum, and behaviour.

## **HEALTH**

- **Hospital for Sick Children**

As one of the largest pediatric teaching and research in the world, the Hospital for Sick Children (HSC) holds a status as a world class pediatric health sciences centre.

With 4500 employees and thousands of visitors throughout the day, HSC felt the need to undergo a rigorous environmental management program. Key motivators were to improve the hospital's environmental health and reduce volumes of waste, while reducing monetary costs.

Efforts were given assistance by the Canadian Coalition for Green Health Care, in partnership with the Toronto Environmental Alliance and the Canadian Association of Physicians for the environmental health of the hospital. The hospital developed a multimedia pollution prevention program, which has reduced wastes and pollutant at the source. It has reduced biomedical waste volumes by 50% with a savings of \$2500/month. HSC increased recycling by over 78%. The hospital has saved around \$452,903 by implementing the Waste Management program. It has signed onto Health Care Without Harm's Mercury-Free Medicine Pledge, while significantly reducing mercury-containing products such as lamps and medical equipment.

Mercury is a highly acutely toxic chemical that poses a serious threat to humans and the environment

Moreover, the Hospital for Sick Children developed an Environmental Purchasing Statement of Principle, which requires high standards to be met for product purchases. This forces suppliers to be more environmentally responsible, if they want to remain competitive. As an illustration of HSC's efforts, the hospital has received the Institutional Award at the 7<sup>th</sup> Annual Pollution Prevention Awards and is the Winner of the Ontario Hospital Association in the 2004 Green Health Care Awards.

- **South Riverdale Community Health Centre**

The South Riverdale Community Health Centre was designed as an energy efficient building with the key interest in a commitment to healthy indoor air quality. To ensure this objective, a number of environmental design mechanisms were implemented in meeting indoor air quality initiatives. Low toxicity and low emission products and processes were constructed including: zero or low solvent content paints and finishes; low emission glues, tile mortars, grouts and caulking materials; biodegradable, natural source based cleaning and maintenance materials with low emissions, low toxicity and no perfumes. Further, the centre has developed a protocol for safe and environmentally friendly cleaning to maintain indoor air quality and to provide a healthier environment for workers and clients.

The centre has been instrumental in working with the community around local pollution and environmental issues and in promoting participation in developing new plans for community development. In addition, the centre has served as an environmental educator in raising awareness in the connection between indoor air quality and health via workshops and resource guides.

- **University Health Network**

The University Health Network (UHN) comprises of three hospitals: Toronto Western Hospital, Princess Margaret Hospital and Toronto Medical Laboratories. The commitment to improving UHN's environmental practices is stated in its environmental policy and the launching of a sustainable environmentally sensitive culture. Managed by a full-time Environmental Coordinator, successful initiatives have taken place. In four sectors of the hospital operations, UHN has initiated successful programs. The Network has been working on a BioMedical Waste Program, a Mercury Management Program, a Waste Reduction and Recycling Program, a chemical handling and disposal program, and an Energy and Water Conservation program. In the BioMedical Waste Program, a task force has been established to reduce volumes, while ensuring safe and proper disposal. As the primary concern for the UHN is cross contamination, this program will mitigate these issues. The Mercury Management Program will severely limit mercury containing items such as recycling old fluorescent bulbs and ensuring mercury spills are cleaned up in an environmentally safe manner. In fact, over 1,100 fluorescent bulbs were recycled in the first two months of launching the program. The recycling of bluebox materials and take-back/refill programs for items such as batteries, ultrasound gel bottles, and

cartridges are significantly reducing diversion rates. Through recycling, UHN has saved around \$61,725.

The UHN is a member of the Canadian Coalition for Green Healthcare.

- **St. Michael's Hospital**

As energy costs continue to rise, public institutions are beginning to feel the pinch in their budgets. One method of reducing utility costs works hand in hand with improving the environment, that is, reducing energy consumption. In order to do exactly this, Toronto's St. Michael's Hospital hired Ecosystem (specialists in energy efficiency) to facilitate an action plan reducing the overall energy costs and pollution consumption of the hospital. A mandate to save nearly two million dollars per year for the hospital in effect will be by decreasing the energy bill by one third. The hospital has implemented a high-pressure humidity system including reverse osmosis water treatment and enhancing the building's automation system for maximum operation efficiency in all seasons. It is designed for new equipment and networks enabling the hospital operations to improve. Through energy efficient practices the hospital has achieved a 30 percent savings on both water and energy, in effect reducing the hospital's green house gas emissions by 36 percent. Though the project costs amounting up to \$7,90,00, it'll payback in less than 5 years, as the annual savings has amounted up to \$1,90, 000.

## **MANUFACTURING**

- **Unilever Canada**

As a company that specializes in consumer goods from food to personal care products, Unilever is a world leader with brands such as Bece, Ponds, Axe, Dove, and Sunsilk, among many more. The Unilever Rexdale, Ontario plant consumes huge quantities of energy in which energy expenditures constitute 15 percent of operating costs. In the last decade, the company has been pressured into reducing costs especially as energy prices have risen globally. Along with that, there has been the emergence of the corporate citizenship concept, where by global environmental and social concerns are addressed through local actions in partnership with local governments and organisations contributing to sustainable development. At Unilever's Rexdale Plant, an Energy Team was developed in efforts to reduce energy consumption. Unilever created an organizational structure to facilitate energy management activities, implementing information systems to fuel monitoring and control functions.

An initiative called Watt Watchers was launched to reduce energy costs and informing employees about energy costs and consumption patterns. Through encouraging employees to share ideas on how to save energy, actions have been taken such as insulating steam pipes and switching off lights. In addition, others as complex as installing condensing economizers to recoup heat energy from boiler exhaust have undergone.

An important feature to mention is that millions of pounds of waste vegetable oil are used to fuel some of the plants boilers. Unilever Canada has invested approximately \$1.5 million in the

initiative with the estimated value of energy savings exceeding \$3.2 million. By 2003, natural-gas consumption had fallen by 46 percent, and electricity by 24 percent. The company has reduced its water use by 48%, air use by 26%, and steam use by 50%. Through regular environmental performance reporting, Unilever has polished up its environmental record. Unilever is now applying elements of the Watt Watch program at other plants.

Unilever's Rexdale plant received the 2002 CCME Pollution Prevention Awards and the National Resources Canada Energy Efficiency Award. As well in 2005 Unilever was awarded for the seventh year running, in the food industry category of the Dow Jones Sustainability World Indexes (DJSI World). The annual review of the DJSI is based on a thorough assessment of a company's corporate economic, environmental and social performance.

- **Owens Corning - Scarborough**

Owens Corning is a technology based enterprise that develops, manufactures, and markets for materials for consumers, business and industrial customers. More specifically, it is a world leader in the science of glass fiberization and in building materials systems and composite systems. The products are used in construction, marine, transportation, aerospace, energy, appliance, packaging, and electronic. Owens Corning designs and manufactures products focused on conserving energy and extending product durability. The company applies the life-cycle approach to its manufacturing processes in efforts in protecting the environment. This begins from the selection of raw materials through packaging the end-product. In essence, Owens Corning looks for ways to protect the environment while maintaining product quality.

Fiber glass insulation keeps houses warm in the winter, cool in summer and quiet all year long. It helps cut energy use which saves money and reduces pollution. Fiber glass insulation is made from natural ingredients such as sand and at least 30 percent recycled products, such as bottles and window glass. It also helps reduce carbon dioxide emissions in the atmosphere - for every pound of carbon dioxide emitted in the production of fiber glass insulation, 330 pounds of carbon dioxide emissions are avoided by the use of that insulation. Therefore, fiber glass insulation conserves nonrenewable fuel resources by reducing heating and cooling demands.

Owens Corning is committed to the use of waste recovery in production processes. It currently averages more than 35 percent recycled glass in the manufacture of fiber glass insulation. This glass comes from a variety of post-industrial and post-consumer sources that was historically disposed of in landfills.

In June 2003, the company was awarded GREENGUARD Certification by the GREENGUARD Environmental Institute for Owens Corning insulating products.

The Packard Foundation has also honored Owens Corning as a Cool Company for its energy efficiency efforts.

- **Global Contract**

As a lead manufacturer in office furniture, Global Contract Inc. presents the EcoLogo on their products. The company has initiated an ambitious environmental program, which promotes the implementation of the ISO 14001; 2000, which specifies actual requirements for an environmental management system. Therefore, the system requires organizations to continually improve quality and environmental management systems. As well, both the Environmental Management System and the Environmental Choice Program will permit Global Contract to display the EcoLogo, indicating high standards of environmental performance for products and services. This allows Global Contract to achieve market advantage through independent third-party verification.

Global Contract was granted a GREENGUARD certification enabling building occupants to experience a level of comfort and good indoor air quality resulting in a productive indoor environment. The certification motivates Global Contract to meet indoor air quality requirements of LEED (Leadership for Energy and Environmental Design). Global Contract moved to a newly built facility in October 2001 designed with the environment in mind. The heating and air conditioning systems are equipped with a central programming system that controls the temperature throughout the building, helping to conserve energy during working hours. The newly designed paint line uses powdered paint, which contains no harmful VOC's or lead. The company also reduce paint usage by recirculating paint over spray. All of the paint line wash cycles are also monitored and filtered to ensure clean wastewater. The majority of products can be recycled at the end of their use, beginning the process of recycling all over again.

Global Contract is building offices with quality of health in mind, investing in R&D and newer technologies, which can have a significant impact on the quality of life. Global Contract's Environmental Programs have reduced electricity and gas consumption, and prevented pollution via diminishing Volatile Organic Compounds (VOC) emissions to the air. Global Contract recycles their printer cartridges and applies water-based adhesives in the manufacturing process. Moreover, the company offers fabric options made of 100% recycled material from post consumer waste, and uses plastic and wood waste from other Global divisions in the manufacturing process. The company packages materials that contain 80% recycled cardboard, and replaces particleboard cores with formaldehyde-free WOODSTALK, which is an agrifiber based product made from wheat.

- **DeCaro Manufacturing**

DeCaro Manufacturing metal plating facility demonstrates that a small to medium sized company can green up its operation and consumption practices, despite the challenges many face. The Toronto based manufacturer of fireplaces, fireplace accessories, airport weight scales and other metal products demand a huge amount of metal in conducting business. With a mandate to incorporate environmental considerations on to its daily operations, the company believed pollution prevention had to be the point of focus. In efforts, to reduce pollution the

company hired a consulting firm, Cotter Associates Ltd in order to facilitate a pollution prevention assessment. The end result led to pollution prevention opportunities in three main processes: degreasing, plating, and painting. In the degreasing process, an overall reduction in the use of trichloroethylene was focused upon; thus, modifying the tank configuration. In efforts, to minimize evaporation losses a cooling system will be installed. It will result in a reduction of losses by 35%. A way to eliminate trichloroethylene, a slow switch to non-chlorinated and water-based cleaners will be utilized. A transition to caustic cleaning will prove to reduce 50% usage in trichloroethylene. By training the company's 15 staff (especially its operators) on the importance of conserving chemicals and proper care of equipment, it emphasizes DeCaro is focused on playing their role in pollution prevention matters. As well the switch from spray painting to the use of a dip paint process will provide an annual savings of \$1,300. Reducing the usage of chemicals and metals such as toluene, xylene, trichloroethylene, copper, zinc, and cyanide, along with the replacement of other safer modes of manufacturing processes. It is hoped that it will inspire other small to medium sized manufacturing companies to follow suit.

The reliance on hazardous chemicals and solvents are slowly reducing its presence in manufacturing as the company begins to move towards an environmentally responsible position.

An overall estimated annual savings of \$5790 in all three processes to mitigate the company's pollution. These savings only encompass a fraction of the possibilities a small to medium sized companies can save while improving the working environment for employees and preventing pollution.

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