

CASE STUDY

Rogers Centre

One Blue Jays Way, Toronto, Ontario



PROJECT OVERVIEW

Rogers Centre is one of the world's premier sports and entertainment centers. Since its opening in June 1989 it has hosted more than 2000 events with more than 50 million visitors. Formerly known as Skydome it was renamed the Rogers Centre in February 2005. The Rogers Centre is home to two of Toronto's professional sports teams - The Toronto Blue Jays Baseball Club and The Toronto Argonauts Football Team of the Canadian Football League. The Rogers Centre facility's versatility allows it to accommodate a variety of events with capacities from 5,000 to 60,000 spectators. As an arena, a domed stadium and an open air facility it has hosted sports events, concerts, family shows, trade shows and conventions. The complex contains approximately 7000 light fixtures distributed over a total area of 1.4 million square feet.

CHALLENGE

The Rogers Centre facility management tasked Encelium's engineering group with several priorities:

- To reduce overall lighting energy consumption by 50% and deliver a simple payback from energy savings of less than five years
- To provide computerized control of lighting from a central software application
- To provide office staff with personal control of lighting from their desktop PC
- To improve light levels and provide control in all stairways, luxury boxes, walkways, concourses and parking garage areas
- To provide global control of lighting loads in order to manage peak demand



DESIGN APPROACH

Parking Garage: In the parking garage the design provided for occupancy sensor based switching control on a zone basis. (The lights had previously not been switched off in 18 years) Additionally the 8 foot T 12 96 watt lamps were changed out with two 4 foot T8 32 watt lamps and electronic ballasts.







Concourses: In the concourse and stairway areas a combination of occupancy sensing and time-scheduled switching (based on building events) was employed. The existing 175 watt metal halide fixtures were retrofitted with two 32 watt T8 lamps and standard electronic ballasts.

Office / Media Lounges: All office areas and lounges use personal lighting control, time scheduling, daylight harvesting and occupancy sensing technologies. Additionally all existing fluorescent fixtures were retrofitted with new dimming electronic ballasts.

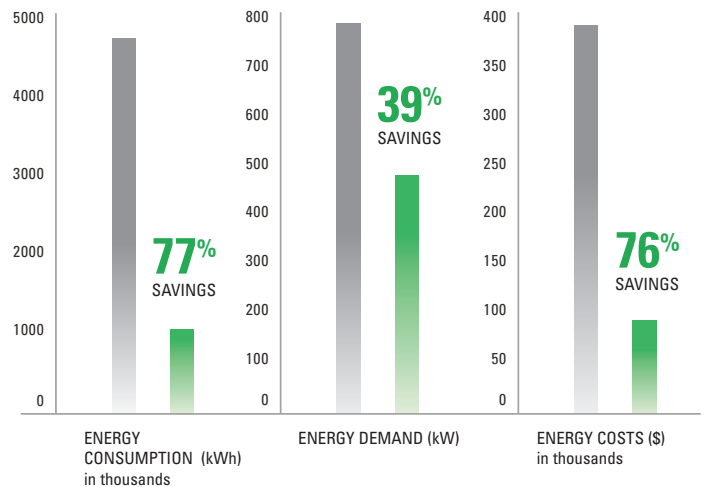
Luxury Boxes: The approach in the luxury boxes involved control of lighting and television circuits by time schedule based on the scheduled events in the facility.

SOLUTIONS AND RESULTS DELIVERED

ECS delivered energy savings exceeding customer expectations through the deployment of the following energy management strategies:

-  **Personal control** - Control of personal lighting space from the desktop PC
-  **Task Tuning** - Tuning light levels to suit the particular task or use in a workspace
-  **Daylight Harvesting** - Adjusting artificial light based on ambient natural light contribution
-  **Smart Time-scheduling** - Time scheduled switching based on zones as small as an individual workspace
-  **Occupancy Sensing** - Switching or dimming lighting based on occupancy
-  **Load shedding** - Intelligent management of peak/non peak lighting energy demand from a central control software application

Energy savings ranged from 56% to 79% throughout the building resulting in energy cost savings of approximately \$303,000 annually. With energy reductions of 3,731,000 kWh annually, enough energy will be taken off the grid to power over 400 homes in Toronto!



MEASUREMENT AND VERIFICATION

Toronto Hydro Energy Services was contracted by Rogers Centre to undertake a Measurement and Verification (M&V) program to verify energy savings resulting from Encelium's lighting retrofit program. Pre- and post- construction measurements of energy use and power draw (demand) were taken and compared. Current data loggers were used to provide a means of verifying all lighting control strategies. Spot measurements of power, voltage, current and power factor were taken using an Elcontrol NanoVip Plus Power and Harmonic Analyzer. Trending data was logged using ACR Systems Smart Reader 3 Current data loggers.

Note: At time of print, the concourses, stairways and media lounges were completing construction and therefore the energy savings for these areas are based on projected results.