

# Energy Management

## AT DURHAM DISTRICT SCHOOL BOARD PUTS STUDENTS FIRST



Judy Gould, Waste and Energy Officer with the Durham District School Board, shows students the Carma energy display in the lobby of Brooklin Village Public School. The LCD monitor is showing the school's electricity consumption.

In 2007, the Durham District School Board (DDSB) embarked on an energy-conservation strategy to monitor and track energy consumption within the board and its 128 schools. The goal was simple: to find anomalies and better understand how and when energy was being used in the schools, and to provide a means for students to be engaged on the conservation of energy.

Understanding the need for a more comprehensive system for monitoring and targeting, they implemented a Carma submetering program as a pilot project in Brooklin Village Public School in Brooklin. The school was metered for the main electricity use, plus a number of subme-

ters were installed that isolated the lighting and mechanical systems within the school. "The Carma system was a tried and tested method for energy monitoring. A big plus was the Measurement Canada accredited meters. We knew we would be getting true energy numbers to monitor," says Shawn O'Brien, Manager of Energy and Mechanical Design.

Within two weeks of implementing the Carma system, Facilities Services staff were able to identify faulty controls for equipment. Without the use of an energy monitoring program, equipment running outside of scheduled periods cannot be tracked. In addition, energy investments, such as lighting upgrades, can be verified

using the system. For example, at Brooklin Village, the gym's lighting was separately metered in order to establish a baseline. The Carma system assisted in verifying the T5 high-output lighting was more efficient and upgraded to a three-tiered system with increased efficiency without sacrificing comfort and performance. "It was a no-brainer," says Mr. O'Brien on the capabilities of the Carma system. "It paid for itself within the first year."

Currently, 60 schools use a Carma system as a tool for energy monitoring and targeting. The Facilities Services department has been able to use the information to help test new technologies before they are implemented board-wide. For example, facilities installed variable frequency drives on pumps for off-peak periods. The real-time energy data verifies the upgrade was a viable energy investment and is producing cost savings.

The board currently utilizes real-time monitoring for electricity, gas and water to discover mechanical and usage failures that can result in wasteful costs. The board has been using the Faser system since 1980 to help monitor utility bills. The introduction of the Carma system allows them to control costs earlier, rather than waiting for monthly utility bills to retrieve billing information.

By utilizing energy monitoring, DDSB has been able to run schools to their best operational efficiency, and while utility prices have increased, the board has been able to maintain energy costs for the last six years. Durham District School Board currently ranks fourth on the province's Utility Consumption Database, an initiative of the Ministry of Education to promote energy management within the school boards.



Brooklin Village Public School, the first school at Durham District School Board to implement a Carma submetering pilot program to identify savings opportunities.

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For school boards, energy conservation requires a multi-stakeholder approach, with students and teachers playing a key role in helping to lower energy usage. Currently, there are 32 schools in the DDSB that have in-school LCD energy displays in their lobbies. Energy information from the Carma system is fed to the monitors, which shows real-time usage graphs to

the students and teachers. The teachers and students also have direct access to the data through a board-implemented energy portal.

At Whitby Shores Public School, the display has an energy speedometer and the students attempt to get the speedometer into the green, indicating less energy is being used by the school. "The kids be-

come watch dogs in the schools, telling us when energy is being wasted - for example, portable heaters running when they shouldn't be," says O'Brien. "The displays become a real energy conservation and education tool."

In tandem with facility management practices, the EcoSchools program has been widely adopted by the school board to help reinforce the energy conservation message. Currently there are 59 certified EcoSchools in the DDSB. The EcoSchools Program emphasizes simple measures that engage students such as turning off lights and computer monitors to conserve energy.

Building on the Carma system, Facilities is moving in the direction of implementing web-based student engagement tools that can be integrated into school curriculum. Creating the best learning environments while operating the most efficient buildings is the ultimate goal for the Facilities Services team. "At the end of the day, it's all about the students. They will be the ones to carry the environmental message throughout their lives," notes O'Brien. "We are building the future environmental leaders." ▀

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