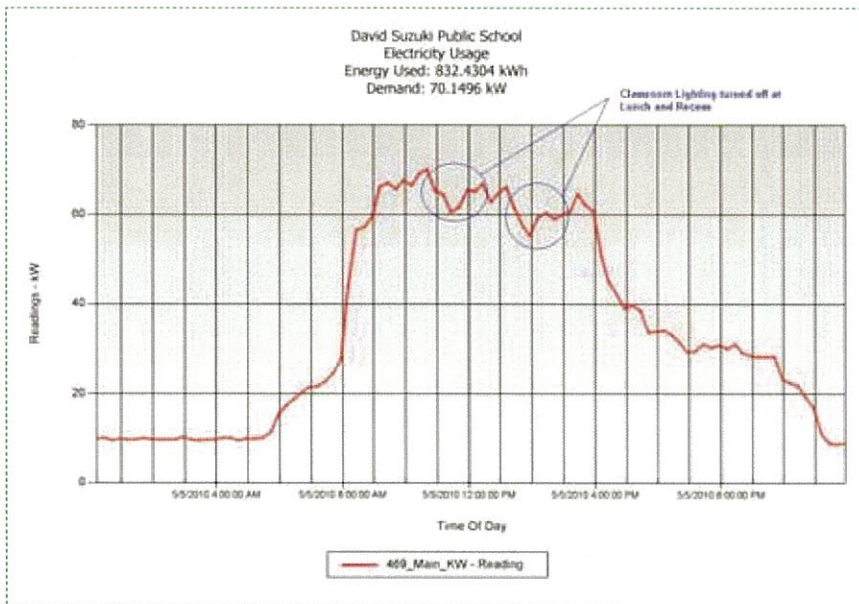


# CARMA Industries and York Region District School Board Partnering for a Greener Future



A graphic profile showing the affects of the "lights out" initiative at David Suzuki PS, displaying a decrease in energy demand at recess and lunch.

For over 20 years, CARMA Industries, the leader in the electronic submetering industry, has been providing solutions for customers looking for answers to rising energy costs and reducing their carbon footprint. York Region District School Board, the third largest school board in Ontario, was one client concerned about the onset of the open electricity market in 2002 and was looking for ways to address the impact this would have on their energy budget. With this concern in mind – and the possibility of buying bulk power – YRDSB wanted to know more about their buildings' electrical profiles.

In 2000, YRDSB's Energy and Environmental Services team took the lead and partnered with CARMA to establish a pilot program to measure and evaluate electrical demand and consumption by profiling the main electricity use for one school. Quickly seeing the value in the data the CARMA system provided to the E&E team, they initially expanded the program to 27 schools. Installing systems at additional sites each year thereafter, today 170 facilities out of 200 are being monitored by a CARMA system. In 2008, the Board also piloted 18 schools for gas metering.

## The CARMA System in Action

The CARMA system allows for the immediate access of school consumption information measured in Real Time 15-minute intervals. Between the measurement grade hardware and software that CARMA provides and the custom-built in-house software written by the Board's Plant Services department, the Board has been able to collect, view and archive energy consumption data in real time and historical profiles.

York Region District School Board selected a CARMA Energy Monitoring Pod (EMP) as their preferred solution for full electricity me-

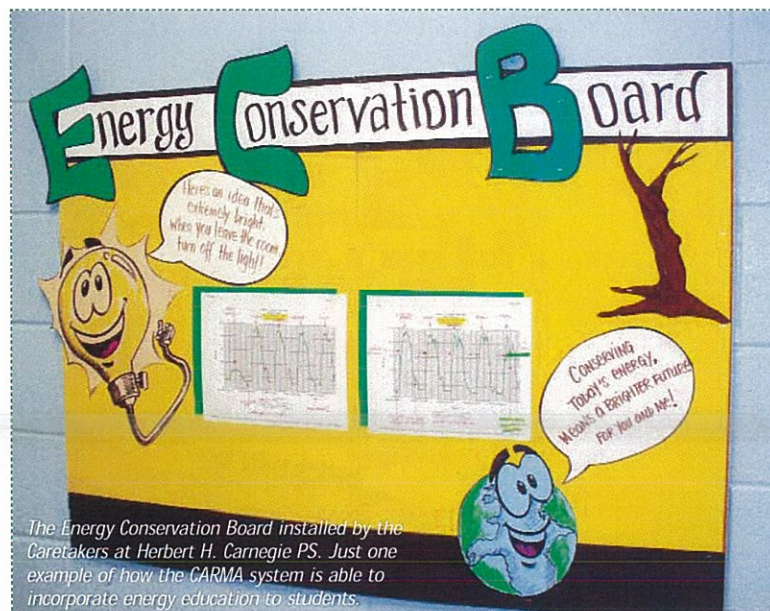
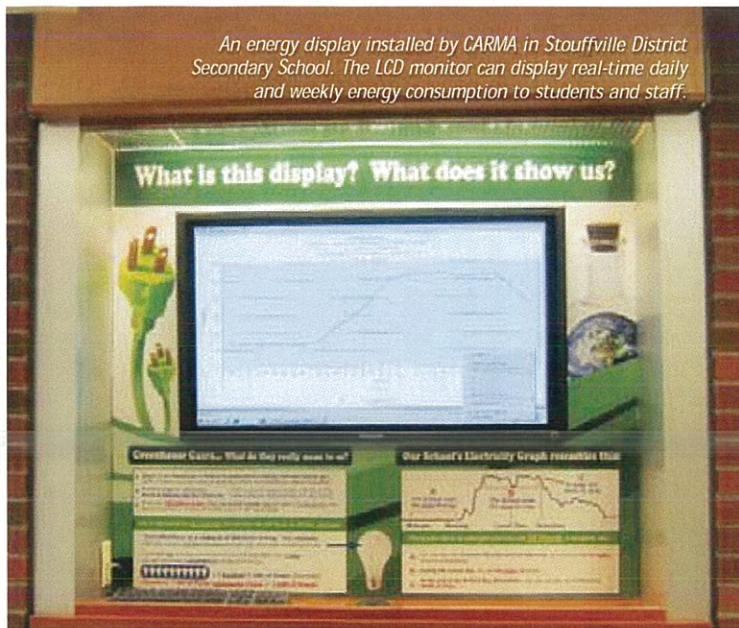
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An energy display installed by CARMA in Stouffville District Secondary School. The LCD monitor can display real-time daily and weekly energy consumption to students and staff.



The Energy Conservation Board installed by the Caretakers at Herbert H. Carnegie PS. Just one example of how the CARMA system is able to incorporate energy education to students.

tering of the main building, chiller, main mechanical, lighting and receptacle loads. This independent third party verification allows the E&E team to confirm what systems are working, collect data, address problems and catch any mechanical failures. "It's a tool we use every day for trouble-shooting," says Mike Roberts, Assistant Manager Environmental and Energy Services. "For example, we can identify loads running at night, make changes to seasonal operations and adjust how vigorously we run mechanical systems based on the data from the CARMA system."

### Triangle of Conservation

These facility and operational changes

are one part of the Board's larger "triangle of conservation" philosophy, which also includes efficient facility design. Information from the metering system influences the design of the Board's prototypical elementary school. "Looking at best school performances, we are able to establish benchmarks, design mechanical systems and upgrades to maximize energy savings", says Robert Selvazzo, Manager of Energy and Environmental Services.

While the Board is seeing significant savings from operational changes, one advantage of the CARMA system is its ability to engage building occupants in energy conservation and learning. A prime example is the "Lights Out" initiative where stu-

dents turn off lights at lunch and recess. In an elementary school, this can generate a typical reduction in consumption from 15 to 35 kW. The next evolution for the Board has been the development of their Student Energy Website, which allows users to engage more directly with the monitoring system. Students and staff can view current and historical consumption readings and graphs specific to their own school, manipulate the data and learn about their role in energy conservation. This has become a powerful educational tool that reaches into the classroom and unites all three facets of the triangle of conservation.

By the end of 2011, all schools in the Board will have a CARMA monitoring system, including submetering for electricity consumption, along with all schools being equipped for gas monitoring by the end of 2014. From 2003 to 2007, the Board was able to reduce their electricity consumption from 8 kWh/sq ft to just under 6.5 kWh/sq ft. Based on operational adjustments, the payback period for a CARMA system can be achieved within three years.

The 11-year partnership between CARMA and YRDSB is creating a greener future for generations to come. As Greg Argue, Assistant Manager Caretaking Services, says: "Staff have commented on how their understanding of consumption data has motivated them to look for further efficiencies and opportunities to reduce energy usage – both at school and at home." ▀

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