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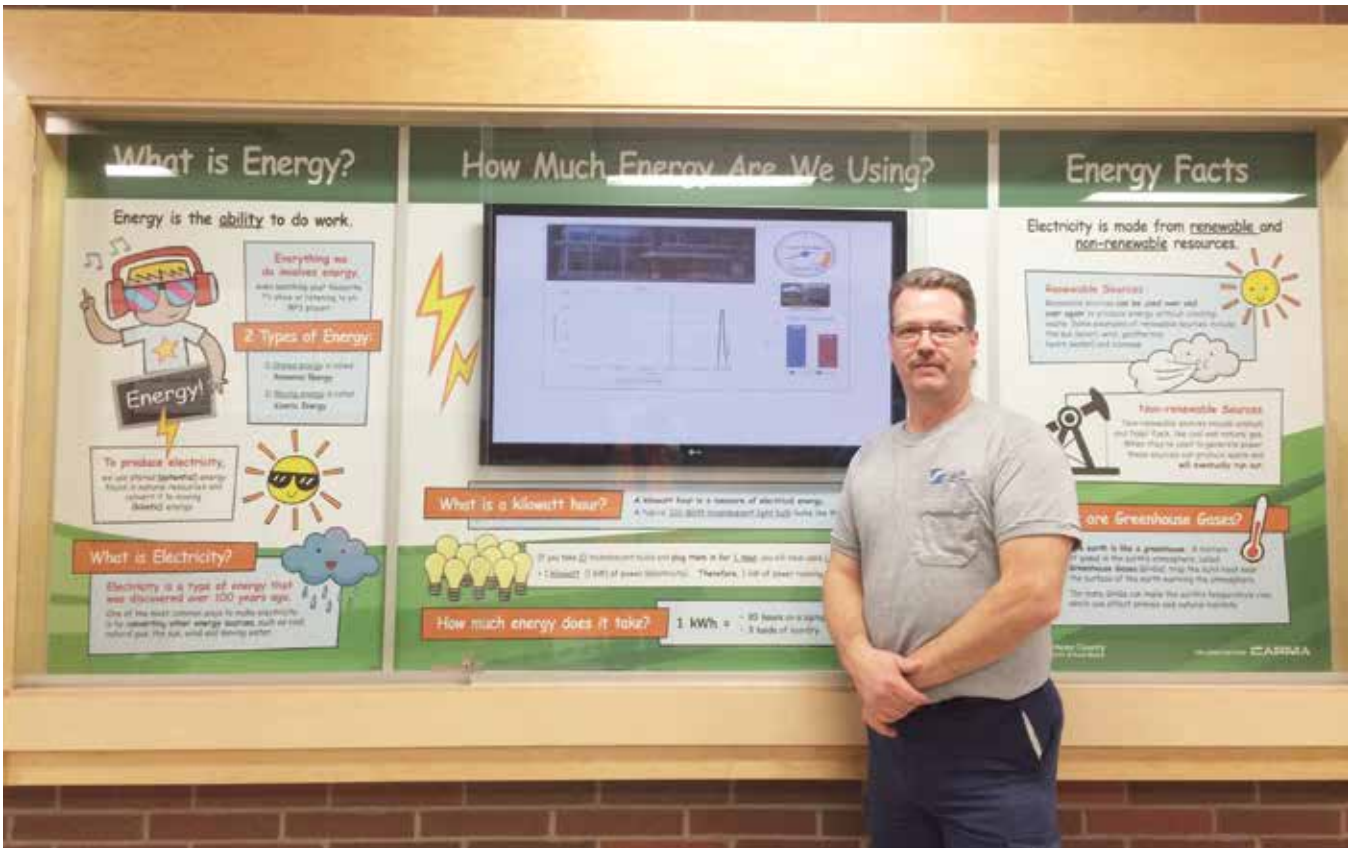
Green with Envy

SIMCOE COUNTY DSB UTILIZES METERING DATA FOR ENERGY CONSERVATION

By Margaret Manetta, Marketing Coordinator, CARMA Industries Inc.



Michael Strilchuk, chief custodian at Fred C. Cook, stands in front of the CARMA energy lobby display at the recently built elementary school.

Looking to improve on their existing energy-efficiency program, and in response to the introduction of the Green Energy Act, in 2011, Simcoe County District School Board (SCDSB) was seeking partners who could support this ambitious energy management program.

Maintenance and Environmental Services selected Carma Industries for the implementation of electricity, gas and water submetering for five schools within the board. Carma was also asked to meter alternative energy sources in one of their high schools, solar hot water, photovoltaic and geothermal heating. With the success of the initial pilot, the board once again turned to Carma to meter two additional schools within the next year.

"We are always striving to be more energy efficient," says Kayla Kalalian, Environmental Systems Coordinator at SCDSB. "You have to know what you're using to make an effective change; that's why energy monitoring is a large part of our energy conservation and demand management plan for the board."

The data from the Carma submetering system helps them to identify any performance issues, how equipment is working and ensures their schools are running optimally. This means determining if equipment is running on weekends or tightening up the building automation system for scheduling errors. As an example, the Carma system was able to pinpoint unusually high electricity usage at one of their elementary schools. After investigating, it

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was found the outside lights were staying on, the real-time data allowed maintenance staff to immediately resolve the issue. Facilities are able to attribute the lost kilowatt hours to an actual monetary value.

"We were impressed with Carma's school board experience and they understand the process involved," says Kalalian. "The post installation support and care we receive from Carma is phenomenal. They don't just install equipment and walk away."

In addition to analyzing building performance, the board uses the submetering data to bill back to leased spaces at one of their secondary schools. The two tenant spaces are submetered; without this information they would have to rely on square-footage numbers, which can be an inaccurate way of calculating utility bills. The Carma system has also been used to help cross-reference the board's historical utility bills against invoices from the local utility company. The local utility has agreed to use the Carma system as the basis for the board's demand billing to ensure its accuracy.

SCDSB has been introducing new heating and cooling technologies at some of their secondary and elementary schools, such as ground source heating. Utilizing metering data, they will be able to conduct a comparison analysis to determine how efficiently this new technology is working.

Using the submetering data from their existing schools can be valuable information when it comes time to design and build new facilities. While equipment efficiency is important, the goal is to reach total building and envelope efficiency. This is achieved through examining how energy is currently being used in existing buildings and applying that knowledge to new construction, both for architectural and mechanical design. Metering data can be provided to designers to illustrate how it is possible to replicate energy efficiencies in existing schools.

Energy intensity goals can also be set using metering information. SCDSB aims for a total ekWh/sf of 10 for new elementary schools and 12 for new secondary schools. While these are aggressive numbers, they can be achieved by helping to engage occupants in behavioural change.

When students, teachers and guests walk into Fred C. Cook elementary school, not only are they entering a recently constructed facility, they are also greeted by a Carma energy-monitoring display in the main lobby. The built-in television monitor displays real-time electricity, gas and water usage that helps to reinforce energy conservation messages within the school. "We really liked the visually appealing graphics of the posters, the energy content is age appropriate and we can put our own branding on the displays, including school announcements on the TV carousel if we want to," explains Kalalian.

"There is definitely a lot of curiosity when it comes to the lobby energy displays. The students and teachers want to know more," says Jessica Kukac, Environmental Systems Coordinator at SCDSB. The appetite to have access to the energy information is high and can also be used to help drive curriculum and reinforce classroom assignments.

Maintenance and Environmental Services is moving forward implementing the board's first phase of its Energy Conservation and Demand Management Plan, which includes auditing and retrofitting nine schools. The facilities were selected with the assistance of data derived from the Carma system to help determine what, if any, lighting, mechanical or building automation system upgrades could be implemented to maximize energy efficiencies.

SCDSB is progressing with their environmental and energy initiatives with understanding actual building performance. "We have the ability to suggest and implement new programs because we have data to back up our proposals," Kukac explains. "Our success on energy efficiencies comes from data." ◗

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