

Madison Metropolitan School District fulfills commitment to saving energy

Schools today recognize the importance of building strong partnerships. Many of these collaborations are directly related to academics and the achievement of educational standards; others address budgetary issues. The Madison Metropolitan School District (MMSD) partnered with Focus on Energy in 2003 to find ways to operate its buildings more efficiently and cost effectively. MMSD, with assistance from Focus, completed multiple energy-efficiency improvements at many of its 45 total facilities.

One of MMSD's challenges is to maintain a quality educational system with limited funding. Maintenance funding is an area being hit particularly hard. It is important to the district to make every effort to reduce energy consumption, so limited funds can go directly to the classroom. Focus on Energy is helping MMSD achieve this goal.

This ongoing partnership with Focus, Wisconsin's statewide program for energy efficiency and renewable energy, offers MMSD the opportunity to fulfill its commitment to invest in high quality facilities. Approximately sixty projects have been completed that will improve the district's operating efficiency, make the buildings more energy efficient and comfortable, and reduce energy costs each year.

"The district took a comprehensive approach with this effort," said Lisa Pederson, a Focus energy advisor. Lisa worked with MMSD's director of building services, and staff to complete the efficiency projects. "We examined dozens of different energy saving measures," she noted. "In the end, we agreed to implement over twelve measures, many at multiple locations." MMSD's 45 schools include 29 elementary schools, 11 middle schools, and five high schools.



The Madison Metropolitan School District, like most school districts in Wisconsin, is facing budget reductions. They were working with Honeywell to find ways to save energy and the representative suggested to contact Focus on Energy for additional assistance.

Two of the projects at MMSD involved efficiency technologies including building automation systems and vending machine controls. Building automation systems control various aspects of a facility's operation (e.g. heating, ventilating, air conditioning, and lighting systems) so that each system can turn off and on as needed for maximum energy efficiency. These automatic control systems are anticipated to substantially reduce MMSD's annual electricity and natural gas usage. By installing these systems in several buildings, the district's annual energy bills are projected to drop by more than \$85,000.

The second technology is a vending machine controller that is attached to vending machines to power them up and down as needed. Normally vending machines operate 24 hours per day, seven days a week, whether they are being used or not. However, control units turn machines off when they are not in use, saving energy. This technology is expected to reduce vending machine-related electricity use at the school district by more than 100,000 kilowatt-hours (kWh) of electricity each year.

For more information,
call 800.762.7077 or visit focusonenergy.com.

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Projected Energy Savings of the Top 5 Measures Implemented at MMSD				
Energy-saving measures	Annual therm savings	Annual kWh savings	Annual kW savings	Annual cost savings
Steam trap retrofits	286,567	—	—	\$114,633
Building automation system	202,163	695,868	25.3	\$85,241
Building sealing	164,103	—	—	\$99,929
Fluorescent lighting retrofit	—	955,546	351	\$79,459
Occupancy-based outside air adjustments	31,914	165,739	—	\$24,689
Total projected savings (of top 5 measures)	684,747	1,817,153	376.3	\$403,951

MMSD installed several additional energy efficiency measures that can be implemented cost effectively at almost any school facility. These include: sealing the building to keep conditioned air inside, repairing steam traps, upgrading lighting systems, and installing variable speed drives.

Using tools such as infrared heat guns, a building sealing professional inspected each facility for gaps around beams, ductwork, windows, and other potential openings. By continuing to make the buildings more airtight, the district will reduce expenses and improve the comfort level of staff and students.

Faulty steam traps in schools that are heated with boilers were repaired and replaced, reducing operating costs. When operating properly, steam traps retain steam within a heating unit until it releases heat and condenses back into water. They open periodically to discharge the condensed water back to the boiler to be reheated. However, when steam traps fail in the 'open' position, this failure allows the steam to pass back to the boiler before it has condensed, thereby reducing system efficiency. Replacing failed parts results in increased efficiency and lower operating costs.

MMSD replaced at least 50 percent of the steam traps in the district. This measure alone will save more than 200,000 therms of natural gas each year. In addition

to building automation systems, vending controls, and steam trap retrofits, MMSD also retrofitted fluorescent fixtures with energy-efficient T-8 lamps and electronic ballasts, installed occupancy sensors, and variable speed drives.

MMSD applied for, and was awarded Focus on Energy financial incentives that helped offset the costs of installing energy-efficiency throughout the district.

Overall, the Focus projects completed for MMSD are estimated to save more than two million kWh and 422 kW of electricity—equal to powering almost 200 Wisconsin homes each year. The projected natural gas savings expected are 820,000 therms annually—equivalent to providing 820 homes with natural gas. The energy cost savings are projected to exceed \$450,000 annually for MMSD.

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