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Putting Vending Machine Energy Consumption on Ice

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The energy cost of a cold drink has gone down on the University of Wisconsin-Stevens Point (UWSP) campus (Wisconsin). The installation of **Vending Misers** on all of the institution's vending machines is cutting energy use and greenhouse gas (ghg) emissions, making the per-drink climate impact significantly lower than it once was.

UWSP is currently working toward **campus-wide energy reductions** between 20 percent and 30 percent by 2012, a goal set out for them by Governor Doyle in his "Get Off the Grid" campaign (now called the "**Energy Independence**" campaign). "We've made significant strides to get there and so far have met all the goals," comments Robert Oehler, Director of Facility Services and Sustainability Task Force Chair. "It will be a challenge to meet it by 2012 because we'd already done so much before the standards were set." Reductions in their vending machine energy consumption is already part of their sustainability plan.

Vending machines use energy 24/7/365 whether or not anyone is around and can add 2.26 tons of CO2 emissions to the atmosphere every year. Do the math and you'll soon discover that a typical machine will consume 7-14 kilowatt-hours (kWh) of energy every day, which can add \$300+ annually to the institutional energy bill per machine. So, beginning in the summer of 2005, UWSP directed their vending service provider to begin to add Vending Misers to all of the machines throughout campus on a rolling schedule.

Vending Misers are permanently wall-mounted between the electric outlet and the vending machine and each Miser is equipped with a motion sensor. If no one is near the machine for 15 minutes and the compressor is idle, the Vending Miser will shut the machine off. When someone walks by again, power is re-introduced and the lights turn on. If necessary, the compressor will be turned on again depending on temperature inside the machine and the ambient temperature of the room.

Once installed, they run relatively maintenance-free. Each Vending Miser costs around \$175 and comes with annual CO2 savings of 1.12 tons and estimated electricity reductions around \$200, giving them an ROI within one year.

But they do come with some challenges. "We're a state school, so all vending machines are supposed to come with a built-in timer that shuts the machine off during lunch hours to discourage students from purchasing a vending machine meal," explains Oehler. "Since the Vending Misers aren't compatible with these timers, we had to get permission to purchase our vending machines without the timers."

Tufts University (Medford, MA) also had **Vending Misers installed on campus**-close to 90 of them to be precise-but they, too, ran into a few challenges. First, they had to overcome misconceptions about the Misers; service personnel and those unfamiliar with the Vending Misers would occasionally unplug them as a result. Signage was posted on each vending machines to educate students and service providers alike.

Tufts personnel also found that there were some logistical hurdles. Some of the machines needed to be physically moved in order to gain access to the electrical outlet. Since the machines are very heavy, the moving had to be done by the vending

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machine company which required significant coordination of contractors and staff.

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Additionally, they soon discovered that when several Miser-equipped vending machines were plugged into the same circuit and the machines turned on simultaneously, those circuits were overloaded. Resolving this issue meant switching machines to different outlets, installing new electrical circuits, and adding Vending Miser Repeaters to some machines to stagger start times.

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Nevertheless, Tufts has appreciated the savings achieved through their Vending Misers. Going forward, they will replace their old machines with new **ENERGY STAR qualified machines** which use 50 percent less energy than conventional units, saving on average \$150 per machine per year. ENERGY STAR machines achieve these savings-about 1,700 kWh/year-by installing more efficient compressors, fan motors, and lighting systems as well as optional software that kicks the machines into low-power mode much like the Vending Misers.

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According to ENERGY STAR, State University of New York (SUNY) at Buffalo recently **installed 132 of these machines**, achieving annual savings of \$20,948 and 261,849 kWh. Ensuring that their **Request for Proposal for a beverage partnership** included specifications for energy efficient equipment made this changeover possible.

Whether it's with Vending Misers or ENERGY STAR, turning down the energy consumption associated with vending machines is a very low-cost, high-return action that reduces energy consumption. According to Oehler, "The Vending Misers are one of many best practices we've instituted which are now being applied to other schools."

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