

Vending Machine Webinar Transcript
11/18/2010

00:00 – Una Song:

This is the vending machine webinar entitled “Always Count Your Change, How ENERGY STAR Refrigerated Vending Machines Save Your Facility Money and Energy.”

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Going to the next slide, I’ll just run through the agenda very quickly. I wanted to introduce our panelists. And, we’ll also be giving you background on the ENERGY STAR vending machines, we’ll talk about energy savings and emerging trends, and we’ve got three great success stories to share with you. And then, the Green the Capitol is also on the line, and they will be sharing some of their experiences resulting from a field study that we did with them a couple of years ago. We’ll also talk about next steps for your organization, and we will have time at the end of the webinar for Q&A.

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Today’s presenters: My name is Una Song and I am with the EPA. I am a Program Manager within the ENERGY STAR program, and one of my projects is to encourage the purchase of ENERGY STAR qualified vending machines. Rob Lamoureux is with The Cadmus Group. And The Cadmus Group supports me in our marketing efforts for vending machines. Sarah Jensen is with the Green the Capitol office at the U.S. House of Representatives, and she is joined by Mitch Green, Contracts Administrator also at the U.S. House of Representatives. And, they will be talking with you about the Green the Capitol efforts. So, without further ado, I will hand it over to Rob to give you some background on ENERGY STAR vending machines.

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01:45 – Rob Lamoureux:

Great, thanks Una. My name is Rob Lamoureux, I’m an energy efficiency engineer. And, we’re going to talk about vending machines today.

As far as the ENERGY STAR specification goes, they are interested in refrigerated beverage vending machines and the savings that they represent. A refrigerated beverage vending machine is just anything that can take coins and give you a cold soda or beverage. But, the ENERGY STAR specification does not apply to chip machines or candy bar, DVD machines, lottery, or any other vending machines. It is just a refrigerated beverage vending machine.

The history of ENERGY STAR’s involvement with refrigerated vending machines. It started in 2004, and that is when they came out with their first specification for energy consumption guidelines for vending machines. In 2006 they expanded the specification to include rebuilding an existing machine and adding new components that could make it more energy efficient. In 2000 they came out with a more stringent

guideline for energy consumption for each machine for daily use and this applied to both new and rebuilt vending machines. And then also of note is that in August of 2011, the Department of Energy is going to have a federal standard for all new machines that are built and to be used in the United States.

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Some background of vending machines is that there is over three million refrigerated vending machines in the United States currently, and the average non-qualified vending machine would use about 3,500 Kilowatt hours per year. But yet, an ENERGY STAR qualified machine would use significantly less; about 1,800 Kilowatt hours per year. So that is significant savings, it is almost 50 percent savings. If you look at that large population, three million vending machines, it is a lot of electricity consumption and that is equivalent to the entire energy use of the State of Delaware. And, another way to look at it is, one refrigerated vending machine uses the same power as seven residential refrigerators. So, it is a significant source of energy and we want to make them as efficient as possible.

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The current ENERGY STAR requirements is that both the new and rebuilt machines, they use the same standard. So, just to give you a little history, the original ENERGY STAR specification was looking for no more than eight kilowatt hours per day, and the more stringent code that is available today is for six and a half kilowatt hours per day. It is a method of continuous improvement. In addition to a certain guideline for how much daily energy consumption, they also should have the ability to do one of two things. And, that is to shut the lights off at night or for an extended period of time, or let the refrigerated compartment temperature rise a few degrees. So, if you are high school and you've got soda in your vending machines, no one is there a midnight so the lights could be off at midnight and the temperature of the cans could go up a few degrees, and then, they would get cold before people came in the next day.

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Here is a bar graph that looks at the annual electricity cost for one refrigerated vending machine. This is based on a nationwide electricity cost of ten cents per kilowatt-hours. A conventional machine would cost you \$366 dollars in electricity to run for a year, an ENERGY STAR machine uses significantly less (the middle bar) at \$238 dollars, and if you enable the low power features to shut the lights off at night and let the temperature rise a few degrees, that would drop to \$185. By going to a conventional machine, to an ENERGY STAR machine, to an ENERGY STAR machine that uses these low power modes, you're almost cutting your electricity consumption in half. So, that is a significant source of savings.

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There is sort of an old joke that a pollster called a citizen and he said, "Do you realize that 50 percent of eligible voters don't show up to vote on Election Day, and do you think its lack of knowledge or apathy? And so the person on the other line said, "I don't know, and I don't care." So, what we're trying to do today is just to let people know how much energy vending machines use and there are sources of

improvement. And, hopefully you care about how much energy is used in your facility. This is a situation where there is a sort of split incentive. The machines are typically owned by the bottlers or distributors, but yet it's the facility that is going to be paying the electric bill. And, if you look at your own facility, you might have a contract administrator who is very concerned about the contract, but the facility manager is maybe the person who sees the bill, so it's just a lot of people involved in the process, and maybe all of the players don't have all the information that we need. And, certainly the customers are just looking for convenience, and it's great to buy a cool beverage and it is really convenient, and so they are even less concerned about the energy use. We just want to get information out to you so that you can realize there is some savings available to your facility.

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When you ask for an ENERGY STAR machine, your supplier or bottler might meet that need in one of two ways. One is to get you a new machine, and the other is that maybe they have a stock of old machines that they bring in from the field and they would refurbish them: change the lights, change the refrigerator compressor and make it significantly more energy efficient and bring it up to ENERGY STAR qualifications. Machines are going to last 12 to 15 years in the field, so it's a durable good. They are going to come in a couple of times during the lifetime for refurbishment, and we would like to see them refurbished with more energy efficient equipment, and not just brought in to change the logo when Pepsi or Coke updates their logo. I think when they refurbish it is a great time, and when there is a demand for these type of machines, that they take the extra step and refurbish the equipment and get them to use more efficient components.

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Also a newer trend in vending, and this is our vending machine in my place of work on the left, is glass front machines. That is vendors who can do not only a 12-ounce can but a 20-ounce bottle and juice and energy drinks. If these are newer machines there is a high likelihood that they are also ENERGY STAR qualified machines. So, if your facility is looking for something where you can get multiple sized products, that is also a good way of sort of asking your vendor to give you a newer machine at the same time. And, you may find that they may be excited to get you a new machine that can do multiple products, and then you will be excited that you have an efficient machine at the same time.

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So, some of our past success stories, folks who have looked out at a fleet of large numbers of vending machines have included a lot of colleges; SUNY Buffalo, University of Michigan, Dartmouth College. High schools, K-12, the Davis School District in Utah, as well as industry and retail stores; Walmart, I mean there is a couple of vending machines in every Walmart, so when they change out their fleet of machines, that is a significant amount of savings that will be realized across the country. So, if you have a facility, or you control multiple facilities and you look at how many machines you have, there could be significant savings across your organization.

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So, I'd like to introduce both Sarah Jensen and Mitch Green, of the U.S. House of Representatives. If they could give us a little introduction to the mission of the Green the Capitol and how the Green the Capitol got started.

10:06 – Sarah Jensen:

Ok, thank you Robert. This is Sarah Jensen, I'm accompanied by Mitch Green, who is our contract administrator for the Chief Administrator Office at the U.S. House of Representatives. We're under the CAO's office, and I work directly in the Green the Capitol office and Mitch works directly with us on sustainability initiatives, particularly with contracting. The Green the Capitol office was begun in 2007 with three interrelated goals. One was to minimize our carbon emissions, and two was to reduce the energy consumption of the House, across the entire House community, by 50 percent over 10 years. And, finally an all-encompassing goal, to become a model of sustainability for the country and for the world. And, when we talk about a model of sustainability we're talking really about a campaign to induce energy and resource saving behavior across the House community. It includes the personal choices we make and how we go about procurement. So, essentially, what we do and what we buy.

In the course of our initiative, we have saved over four million dollars in utility savings, energy savings, and over 13 million kilowatt hours of energy, not an insignificant source of those energy savings go to vending machines. We did have 53 vending machines swapped out with ENERGY STAR qualified vending machines, and we partnered up with EPA and Cadmus to discover what the energy savings meter possibilities were there. We wanted to examine what the impact of the low power modes were and the energy savings associated with having ENERGY STAR machines in the first place. With that that I'm going to pass it off to Robert to talk from Cadmus' perspective about how the monitoring went. The study was in the summer and early fall of 2008.

12:06 – Rob Lamoureux:

Yea, thanks Sarah. In 2008 we went to the U.S. Capitol armed with some of our engineering toys and tools, and so what we did was a multiple month measurement of the actual electricity usage of the vending machines and the use outside of the capitol, and looked at the consumption. And, so some of the tools we used were this device here on the right- the "Watts Up Pro" and that's a plug in model that could measure how much electricity and energy the machines were using over an extended period of time. And then on the left there was another device that measured inside the machine, the temperature of the machine, as we let the temperature rise a little bit at night. And then we also confirmed that the lights were being shut off as this is a sensor that this is a time of day that the lights came on and off for a many weeks study. We got a baseline; without the extra low power modes enabled, we measured how much energy a number of the machines were using. And then we turned off the lights for 12 hours during the night and measured how much energy they were using then, and then we let the refrigerator rise three degrees at night and saw what the energy consumption difference was by measuring that.

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What we found is that for the ENERGY STAR machines, activating the low power modes will lead to even greater savings. By letting the lights go off at night, we did 12 hours; we saved an additional 22 percent of the energy needed for that machine. And the lower power modes for the refrigeration, letting it go up a few degrees at night, that saved us an additional three percent. So, what we found is that the lighting mode had a significant savings opportunity. Refrigeration mode also had a savings opportunity, but we found that more of the savings were in shutting the lights off at night. And, so enabling the low power modes, we found it's a low cost step. It could easily be performed during a service call by a technician who is checking out your machines or maybe restocking your machines. So, it's a low cost step and it leads to significant savings.

SLIDE CHANGE

So, what we found is that in the halls of Congress, the savings are in the halls. These vending machines, you walk by them every day and you just don't realize how much savings there are. They kind of just fade into the background but they are a source of some decent savings.

If we looked at the 53 vending machines in the U.S. House side, first we confirmed that they were indeed ENERGY STAR, and that provides a certain amount of savings for an organization. And then with the low power modes enabled there is a potential annual savings of over \$17,000 a year by keeping these low power modes enabled. And then, that translates to 144,000 kWh of energy savings every year- and that is with a fleet of just 53 machines. So, sometimes colleges might have a fleet of 100 machines or even larger, so depending on the size of your organization there is significant savings available.

With this we had the lights going off at night and the temperature rising just a few degrees at night. That led to the savings for this organization. So, I think the neat thing is that the Green the Capitol is looking at continual improvement. And so, since our study occurred a couple of years ago, they have taken some additional measures and saved some additional energy and have some other neat things to talk about. So, I'd like to bring Sarah Jensen and Mitch Green back into the call and we'll look at some of the other things they have been working on.

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16:06 – Mitch Green:

Good afternoon, this is Mitch Green. As Sarah mentioned, the Green the Capitol office works on a number of sustainability programs in the Capitol. And, we were fortunate enough to be approached by both Coke and Pepsi to test some machines for them. These machines are HFC-free machines. They are using CO2 as a refrigerant, which is a natural product, and this has the effect of reducing potential green house gas emissions significantly over using a machine with a traditional refrigerant. They worked out very well for us and in addition to a change in refrigerant; we also installed a series of occupancy sensors in the machines that also help adjust what is going on with the operation of the machines. As a general

rule, we have our machine lights turned off between about 6 PM in the evening and 7:30 in the morning. We have had very few concerns and comments from our community here, even though we do have a large number of people that work at night and use machines. That has been very successful, as Robert said earlier. And, that is one of the other things we're doing. I'll turn it back to Robert now.

17:18 – Robert Lamoureux:

Ok, great. With these occupancy sensors or even with the hard programming that you have, so, when you have an ENERGY STAR machine it is going to have the ability to program it to have the lights go off at night or let the temperature rise. But, with these new sensors integrated in some of the newer Coke and Pepsi machines- Coke in particular I spoke with one of their executives- it is going to look at the pattern, the vending pattern, as your machine is vending products. And, if it notes that it never sells soda after midnight, it is going to let the temperature rise as much as nine degrees at night. And then, right before it knows it's going to start selling again it would let the temperature get cold again. When people show up first thing in the morning, I'm actually a cold soda caffeine in the morning person, that that would be cold when you arrived in the morning. So, there is savings with these. And, the unique thing about the integrated occupancy sensors is that, it actually doesn't need programming. So, it's kind of neat that it would sort of look at your situation for a couple of weeks and then just sort of start making decisions. These machines are also ENERGY STAR qualified, so CO2 is a refrigerant of the future. I think both Coke and Pepsi are pretty committed to moving their machines and the CO2 direction as far as refrigerants go. So there is a great story with Green the Capitol and Green the Capitol's continuous improvement.

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So, another case study that we did was in a Davis School District in Utah, K-12, and they had 221 conventional vending machines. They were replaced with ENERGY STAR machines, and that led them to over \$33,000 in annual savings and energy savings of almost 400,000 kWh. So, basically, they approached the current vendor and they just worked it out with them because they are a big client and they were able to replace all the 220 plus machines over time. Maybe not in the first week, but they came up with a plan that was agreeable to everyone. And, they also asked them to go the extra step and program the machines to go off at night and weekends which gave them more savings.

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Another case study that we did was at SUNY Buffalo, and they had 132 conventional vending machines and they were replaced with ENERGY STAR qualified machines. That led to savings of over \$20,000 a year and annual energy savings of over 260,000 kWh per year. And so the contract administrator, right when they were doing an RFP, a Request for Proposal, they were very specific and they asked for energy efficient vending machines for all facilities. What we've found is that there are two times to ask your provider for energy-efficient machines. One is anytime, and the second time is contract time. So, if they can't work out something, at contract time is a good time to let them know what your goals are, and that they would hopefully be aware of those goals and work with you towards those goals.

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So, what should your organization do next?

Basically get an inventory of how many machines are under your control- and just the refrigerated vending machines, not the chip vending machines. So, if you have a large college or a large facility, a large retail chain or hotel chain, count up the refrigerated vending machines under your control, in a rough count multiply that by \$180 and you can see the potential moving from what might be inefficient machines to ENERGY STAR qualified machines. Ask your current provider, bottler, to swap out these machines with ENERGY STAR qualified machines and then maybe the best time to do this would be at contract time. So, insert energy-efficient language right into your RFP for your beverage provider selection and then you could also insert into the RFP, or just ask them that they also program your machines to turn off the lights at night and let the temperature compartment rise a few degrees on nights and weekends and slow periods. So, that is what your organization should do next, what we're going to do now is the question and answer session.

Stopped at 22:02