Electronic Wastes being Recycled
at the University of Wisconsin-Stevens Point

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Abstract:

The purpose of this study was to execute an electronic recycling drive on the University of Wisconsin-Stevens Point campus and determine if there could be a feasible drop-off location on campus for year-round electronic waste recycling for students, staff, and faculty. Two electronic drives took place, one in each semester of the 2008-2009 academic year. These drives were to determine the need, if any, of the campus for holding such an event. These drives produced a combined 21,319 pounds of electronics that were recycled and kept out of a landfill. It was determined that a year-round drop-off location was not feasible but an annual recycling drive would be better.

Introduction:

Electronic wastes generated in the United States are a rising concern. They contain materials such as lead, cadmium, chromium, bromine, mercury, zinc, and lithium. They also contain precious metals like silver, gold, and copper (Midwest Computers).

The International Association of Electronic Recyclers have forecasted that more than three billion computers, televisions, and other consumer electronics will be retired from use by the end of this decade. The University of Wisconsin Extension has reported that Wisconsin residents have disposed of more than one million computers from 2002 to 2005. Since the inception of cell phone use in the United States the use has jumped to more than 128 million subscribers; each phone being used for an average of 18 months before being discarded for a new one. Cascade Asset Management, LLC reported that in 2005 approximately 130 million cell phones were thrown out each year. Counting the phones, batteries and chargers, that came to 65,000 tons a year.
Consumers are updating technological devices at a rapid pace. Everyone wants the newest and latest cell phone, computer, television, etc. With all the updating of electronics to newer makes and models this creates a different kind of waste, electronic waste. Many of these e-wastes are sent off to landfills instead of being recycled and disposed of properly. Of course there are those who will hold on to the items until they can properly dispose of them. But what about the consumers who don’t know they may be causing harm to the environment with producing more wastes therefore consequently increasing the flow of waste into the landfill to increase.

In 2007 student enrollment of UW-Stevens Point made up 26% of the City of Stevens Point’s population. This group of consumers purchases cheap inexpensive items that have a short life. Items such as computers, cell phones, microwaves, televisions, and battery operated items are bought and then within a few years or less are tossed aside for newer models. This is a growing concern on the UW-Stevens Point Campus. Other recycling programs have been implemented on campus to minimize the amount of waste. Such programs were Recyclemainia, Campus Move-out collection sites, and other various efforts during the year to allow students who live on campus to dispose of other recyclable items properly. However these solutions have only been effective with students who live on campus. With only 36% of students living on campus this waste reduction effort has made a small impact on a selection of students.

Recycling of these e-wastes provides accountability for all hazardous materials contained in discarded equipment, a reduction in environmental liability, increased protection for the community from environmental contamination, and potential asset recovery (5R processors).

Many Universities around the United States are already recycling electronics. Universities such as Yale and John Hopkins University have services for students that pick up
old electronics such as computers and cell phones. These campuses also have programs that allow staff and students to send batteries to the campus recycling center. These services are available to students on as well as those off campus. However there is a fee for computers and cell phones.

Other campuses such as Carnegie Mellon work with outside businesses to collect the computers, cell phones and batteries. Carnegie Mellon may not collect all types of e-wastes but they offer web-sites and other information to the staff and students about places off campus that will take these items. The University of Oregon offers a similar program to their students and staff as well.

The state of Connecticut makes it mandatory for all private and public universities and colleges to recycle. They have guidelines for these intuitions and links for them to use to better their recycling practices. They have guidelines and tips to help them implement waste reduction processes.

Currently UW-Stevens Point has a recycling procedure for on campus students to recycle batteries by sending them to the Resource Recovery Office. There are also bins for students in the dorms for “Goodwill” type items. Resident Hall students do utilize the bins however not all items put in those bins are working. Some of the electronics are in poor condition. What Goodwill does with these items is unsure. However if there were a collection system on campus then these materials can be correctly disposed of and the end results known.

**Methods**

Contact was made first with Surplus Property Office, the current end for computers and many other electronics from University departments. The manager, Fred Hopfensperger, was
more than happy to help out and give his support. Fred was given a ‘Great Green Employee Electronic Recycling Challenge’ from 5R. In recognition of 5R’s 20th anniversary as well as America Recycles Day 2008, their goal was to recycle 5 million pounds of electronics during the month of November. All ‘employees’ are allowed to recycle their electronics for free during this time, except televisions. This included all students, staff, and faculty members at our university. After talking and meeting with Fred, a trip to 5R Processors in Ladysmith, WI was made. Patti LeMay of 5R gave a tour of their operation and information on their high standards for recycling and reusing electronics. A date was set in November for the first drive. Flyers (See Appendix A) were made and hung around campus, along with messages in Student and Staff online Messages of the Day; announcements were made every day for two weeks. The site of the drive was picked due to ease of getting a semi truck in to pick up all the pallets. Student volunteers helped with sorting and palletizing all items.

Once a vehicle backed into the loading dock area, student volunteers took all electronics and sorted them by bulkiness and loaded them onto a pallet and wrapped it with shrink wrap when finished. This process was made fluid after a few trial and error runs.

After the success of the first drive another was to be scheduled for the end of the Spring Semester. In order to have this next drive contact needed to be made with the following UWSP personal and/or offices; Building and Ground Superintendent, Chancellor of Business Affairs, Director of Safety and Loss Control, Student Involvement and Employment Office, Faculty Services, and Protective Services. E-mail was the main source of communication.

During these discussions a trip was made to Eau Claire to visit First Choice Computer Recycling. They gave a tour of their facility and described their safe handling procedures. After careful review they were then selected as the recycler for the drive in spring. Once permission
was granted posters were made and hung around campus (See Appendix B). An educational booth was erected during the Eco Fair held on campus to help ensure the understanding of why recycling electronics is important as well as to pass on the date for the event.

First Choice Recycling came down the day of the event and helped out with placing signs, directing traffic, and money handling. The event was held in a parking lot that allowed for one way traffic. Student volunteers took electronics and sorted them according to component. When a pallet became full volunteers would shrink wrap them. Once the event was finished a fork lift came and loaded all pallets and appliances onto the truck that First Choice brought down with them. Clean up was very minimal and took less than an hour.

Results

Both electronic recycling drives were successful. The drive held in fall had a larger volume of staff and faculty participation, approximately 90 percent, whereas the drive in spring had about 90 percent student participation. The fall electronic recycling drive collected 13,110 pounds of electronics and two five gallon buckets full of batteries that were recycled through the University. Students in the spring dropped off/recycled: 24 printers/scanners, 24 monitors, 15 plastic TVs, 14 CPUs, 13 VCR/DVD players, 12 microwaves, 9 other e-wastes, 5 laptops, 4 stereo/radios, 4 refrigerators, 3 satellite receivers, 2 dehumidifiers, 2 cell phone/phone, 2 LCD monitors, 2 air conditioners, and 1 dishwasher. The total weight came to 8,209 pounds. Staff and faculty members recycled: 14 monitors, 13 printers/scanners, 12 CPUs, 11 other e-wastes, 10 VHS/DVD players, 6 plastic TVs, 6 microwaves, 3 wooden TVs, 2 lap tops, 2 washing machines, 1 stereo/ radio, 1 cell phone/phone, and 1 LCD monitor. (See Appendix C).
Participants of both drives were asked if they would like something like this to happen once a year and if they or someone they knew would utilize this service. Approximately 90 percent of all participants would like to see a drive once a year and 75 percent of those participants would more than likely utilize it.

Discussion

The initial plan for this project was to find a site on campus that could be used as a drop off place for all students, staff, and faculty members. Shortly after starting this project it was determined that this was not feasible due to cost, lack of available space, and supervision. Instead an annual drive was the only other option available.

The first drive had no cost to everyone involved. With the short window of two weeks, preparation was done quickly. More preparation time would have allowed for more advertising of the event. This drive would have been more successful if more time was allowed for advertising. However it was successful due to no cost for recycling electronics with the event.

The drive in spring once again would have been more successful if more time was allowed for advertising and if there was no cost to staff and faculty members. Discussions for permission should have been started in early January instead of late February. This may have been a contributing factor to the delay in advertising and final permission given. Even though there were only two weeks to advertise the event different types of advertising were available during the spring than fall, i.e. radio, Student Government Association newsletter, and newspaper.

Also a tally system for recording who and what type of electronics was used. However there was a flaw in this system; only receipts for students were given back for record keeping;
the recycler kept all others. Once the bill came only what students owed was recorded and not what faculty and staff members had brought in. (Students did not have to pay directly, money that students owed came out of the UW-Student Research Funds. They were also given a separate costing sheet which made all but 4 items free for disposal; refrigerators, microwaves, TVs, and monitors.) All attempts at keeping an accurate record besides receipts failed.

Student participation was different during both drives. Students didn’t participate as largely as hoped due to the timing of the first event; being in the middle of the fall semester. The second drive was held at the end of the academic year so students were more willing to recycle or get rid of their items. Results show that students in the spring semester recycled almost as much as all participants in the fall semester. With better bookkeeping differences between students and faculty/staff members would more than likely show that students will recycle more during the spring semester if it is at no cost to them. It would also show that faculty and staff members are more willing to recycle electronics if it is free.

The drive in fall had a lot of congestion with traffic, therefore for the spring drive an area was used to allow for one way traffic to easily drop items off and then pull out when done. Better signs were used to help direct traffic to the site of the drive in spring.

Too many volunteers showed up for the spring drive and made it very congested at times. The opposite happened during fall when not enough volunteers showed up.

**Recommendations**

Preparation for the drive should start early on in the semester, no more than a month into it. Contact made with a recycler would be best made while details are being finalized with campus departments/personnel. Advertising and flyers would get the most use or attention if
made and/or made available to students a month before the drive. This would give more than
enough time for students, staff and faculty members to plan accordingly.

Having a one way road to allow for traffic to flow easily in and out worked best and
should be used. Also having no more than five volunteers at one given shift would be ideal,
especially during ‘rushes’. Two people should take money and write receipts while volunteers
unload. This would allow for more than one vehicle to be attended to at a time and keep the line
moving.

Also a well organized tally system is necessary. Both the recycler and the student
organization running the drive should keep a copy of all receipts and make sure that all are
accounted for. Also make sure that recycler give weights for all electronics recycled not only
those that needed to be paid for.
Resources


Cascade Asset Management, LLC. Waste Reduction and Recycling Demonstration Grant Application. 1 August 2006. 10 September 2008.


Fred Hofensberger. E-mail correspondence. 30 July 2008


Patti LeMay. E-mail correspondence. 8 August 2008

Patti LeMay. Phone Interview. 9 August 2008


Appendix A

Flyer for fall electronic drive.

Old electronics collecting dust? Here's your chance to get rid of them for FREE!

When:
Friday, November 14, 2008, 1-5 pm

Where:
Surplus Property Office
601 Division Street
(Next to Residential Living and Hardees)

For Whom:
All UWSP Students, Faculty and Staff

BE SMART
BE RESPONSIBLE
BE GREEN
RECYCLE!

Acceptable Items
Monitors/Terminals
Scanners
CPU's
Laptops
Docking Stations
Copy Machines
Fax Machines
Printers
Batteries
VCR/DVD Players
Phones/Cells Phones
Telecommunication Equipment
Audio Visual Equipment
Typewriters
Fax Cartridges
Wire/Cabling
Aluminum
Cash Registers
Keyboard/Mice
Stereo Equipment
Microwaves
Circuit Boards
Networking Equipment
Mid-range Equipment
Mainframe Equipment
Calculators
Uninterrupted Circuit Boards
Video Boards
Misc. Electronic Equipment
Printer Cartridges

SPONSORED BY WASTE MANAGEMENT SOCIETY AND UW-SURPLUS
Appendix B

Flyer for spring electronic drive.

Electronic Recycling Drive

Highlights:
• Free to all students with student ID
• Small fee to staff and faculty members
• Light bulbs will NOT be accepted

Acceptable Items:
* cell phones * printers * iPods
* MP3 players * microwaves
* computers * refrigerators * stoves
* software * batteries
* radios * CRTs * fax machines
* copiers * TVs * DVD/VCRs
* scanners * cameras * and more!

UWSP

Location: 601 Division/Parking Lot V (closest to Hardees)

Contact person: Amanda at adent251@uwsp.edu

Time: 10 am to 3 pm
Date: Saturday May 9th

Sponsored by:
Waste Management Society, First Choice Recycling, and Surplus Property Office
Appendix C

Graph showing what students, staff and faculty members recycled.

<table>
<thead>
<tr>
<th>Items</th>
<th>Amount From:</th>
<th></th>
<th>*Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Students</td>
<td>*Staff/Faculty</td>
<td></td>
</tr>
<tr>
<td>Printers/Scanners</td>
<td>24</td>
<td>13</td>
<td>37</td>
</tr>
<tr>
<td>Monitors</td>
<td>24</td>
<td>14</td>
<td>38</td>
</tr>
<tr>
<td>Plastic TVs</td>
<td>15</td>
<td>6</td>
<td>21</td>
</tr>
<tr>
<td>CPUs</td>
<td>14</td>
<td>12</td>
<td>26</td>
</tr>
<tr>
<td>Microwaves</td>
<td>6</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>VCR/DVD players</td>
<td>13</td>
<td>10</td>
<td>23</td>
</tr>
<tr>
<td>other e-waste</td>
<td>9</td>
<td>11</td>
<td>20</td>
</tr>
<tr>
<td>Laptops</td>
<td>5</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Stereo/Radios</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Refrigerators</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Satellite Receivers</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Dehumidifiers</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Cell phone/Phones</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>LCD Monitors</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Air Conditioners</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Dishwashers</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Washing Machines</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Wooden TVs</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Recycled</strong></td>
<td><strong>130</strong></td>
<td><strong>82</strong></td>
<td><strong>212</strong></td>
</tr>
<tr>
<td><strong>Total Weight</strong></td>
<td><strong>8,209</strong></td>
<td><strong>Unknown</strong></td>
<td><strong>Unknown</strong></td>
</tr>
</tbody>
</table>

* Numbers are as accurate as can be without being able to compare to the recyclers.