



Test of Manufacturer Mail-Back Programs

REPORT

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Executive Summary

Electronics waste has become an increasingly visible and important issue. In response, Snohomish County, Washington has been actively engaged in trying to bring about a product stewardship type system for the management of electronic products.

The County established the Take it Back Network, a number of private businesses that have agreed to provide collection locations and recycling/processing services. The County has also established e-waste recycling at three of its transfer stations where it also charges an end-of-life fee.

Some electronics manufacturers are now offering limited "take-back" programs for computers and peripherals. Most of these programs involve mailing the products to the manufacturer, which will then provide or arrange for recycling. However, it has been unclear how practical these programs are for serving the needs of Snohomish County citizens. It has also been difficult to ascertain how effective these programs are in providing services to citizens or accomplishing the needed collection and recycling of electronic waste.

In addition, preliminary tests of existing manufacturer "take-back" programs by County staff indicated that they were confusing, cumbersome, time-consuming, and expensive. Consequently, Snohomish County hired a marketing consulting firm, PRR, to test the current electronics "take-back" programs offered by computer manufacturers. A PRR research associate conducted "secret shopper" research with five manufacturer take-back programs including IBM, HP, Dell, Gateway, and Lexmark.

The goal of this research was to test the convenience, information accuracy, time expenditure, and cost of the each of these programs. Avenues of contact included the website, email, and toll-free information numbers with each manufacturer.

The main findings of the research are briefly, as follows:

- ❑ IBM, HP and Dell offer take-back services that are similar in scope and cost. All brands of equipment are accepted. Average cost for recycling a complete computer system is approximately \$68.00, inclusive of shipping and materials, although Dell had a limited time 50% off recycling offer in place at the time of the research. The consumer orders the service via Internet, phone or email. The consumer must package up the computer equipment, put it out on the front porch and wait for a shipper to pick it up.
- ❑ Lexmark offers free recycling, but only for Lexmark products. The consumer must also bear the costs of packaging materials and shipping. This may work well for small printers, but in the case of this research project, a large desktop Lexmark printer was recycled that required \$40 in shipping costs and \$10 worth of packaging.

- ❑ Each manufacturer take-back program requires time to search an Internet site, make phone calls or send emails for information. Information derived from these sources was not consistently reliable. It was sometimes good, sometimes fair, sometimes poor and sometimes simply unavailable.
- ❑ Take-back programs tested required packaging materials, waiting for pickup, and sometimes, waiting for a package that included shipping instructions and labels. Waiting periods could take from 2 days to 9 days to receive instructions and labels. With IBM, after waiting 9 days for the initial recycling package, the researcher discovered that her entire system couldn't be sent in one box as prescribed by IBM. She had to order another recycling package and label from IBM, waiting an additional 9 days. With sourcing boxes for shipment, the total process took just under 3 weeks.
- ❑ Gateway doesn't actually offer a take-back program, but refers customers to other available recycling options. The information provided by Gateway was misleading, since it initially directed the researcher to local charities that no longer accept electronics for recycling. However, using links on the Gateway site, the researcher was eventually able to recycle her computer via a Snohomish County "Take It Back Network" private-sector collection site that had partnered with local government.
- ❑ The private-sector Take It Back Network collection site offered the cheapest, easiest, most convenient way to recycle. It cost approximately \$15 to recycle an entire computer system, including printer. It did not require waiting for a recycling package, label and instructions; sourcing packaging and boxing up the equipment; or waiting for a shipping company to pick up the equipment. It simply required a short drive to the collection site.

This manufacturer "take-back" program research project illustrated the high costs, relative lack of convenience and substantial time commitment required to recycle a computer via one of these programs. While these programs may work for some consumers located in areas without e-waste retail collection site options, they do not offer the easy, low-cost options desired by most consumers, certainly those in Snohomish County. Manufacturer programs need to improve significantly in terms of costs and ease of use if mail-back services are expected to serve any meaningful role in the collection of obsolete products.

Recommended improvements to existing take back programs include significant cost reduction, easy to find and use recycling information and websites; better training for customer service representatives, effective e-mail query management, and clear information on options and costs.

To develop effective manufacturer take-back programs, manufacturers may need to finance "brick and mortar" recycling drop off locations by partnering with local retailers, businesses, charities and government services. The advantage would be decreased cost to the consumer and manufacturer and increased convenience, yielding higher recycling rates.

Introduction

Electronics waste has become an increasingly visible issue throughout the U.S and abroad, as well as in Snohomish County, Washington. Public awareness of e-waste toxicity and local, state and federal regulations limiting disposal of computers, monitors and televisions have prompted the development of a number of new recycling options, locally and nationally.

Snohomish County has been actively engaged in trying to bring about a product stewardship type system for the management of electronic products, whereby the cost of end-of-life management would be incorporated into the product price when a new electronic product is purchased. To this end, it has held one of fifteen government stakeholder positions in the National Electronics Product Stewardship Initiative, representing the interests of local governments in the negotiations. Recognizing that this effort would not result in a "front-end financed" system prior to an anticipated (and now enacted) local ban on disposal of computers, monitors, and televisions, Snohomish County established a local multi-faceted electronics waste recycling program in 2002.

This program has numerous components. The County established the Take it Back Network to serve as the primary e-waste collection activity in the county. This network is comprised of a number of private businesses that have agreed to meet "environmentally sound management" requirements and provide collection locations and recycling/processing services for county residents, businesses and agencies. These businesses charge a fee for this service to the user. Each business establishes its own fees, and therefore fees are variable.

As a safety-net backdrop to these private collection services, the County established e-waste recycling at three of its transfer stations where it also charges an end-of-life fee. Currently, fees are \$14 per monitor, \$10 per CPU, and printers, mice, keyboards, cables and other small peripherals are accepted at no charge when recycled with a monitor or CPU.

These services are promoted on the County's website, in its brochures and in its advertising.

Some electronics manufacturers are now offering limited "take-back" programs for computers and peripherals. Most of these programs involve mailing the products to the manufacturer, which will then provide or arrange for recycling.

In recognition of some of these early programs being offered by manufacturers, and to give citizens a broad range of options, the County has promoted the electronics recycling programs offered by manufacturers. However, it has been unclear how practical these programs are for serving the needs of Snohomish County citizens. County staff have been concerned that they are misguiding citizens by directing them to these options and that there may be little to be gained by promoting these programs.

Likewise, it has been difficult to ascertain how effective these programs are in providing services to citizens or accomplishing the needed collection and recycling of electronic waste. In meetings and hearings, these programs have often been presented as evidence that manufacturers are "doing their part" and are taking responsibility for their products. Manufacturer representatives have stated that the problem is that the public just isn't motivated to use these services. When asked for numbers regarding the amount of material recycled through these programs, specific state-by-state or consumer information is not made available, and the pounds or tonnage reported as recycled includes warranty returns, in-house corporate units, and units from large commercial customers.

There have been additional reasons to be concerned about the viability and usability of the manufacturer mail-back programs. In August 2002, Washington Citizens for Resource Conservation conducted research seeking consumer preferences on e-waste recycling. At the time, 67% of consumers polled preferred to take their computers and electronics products back to a retailer for recycling, even if free recycling were offered at local landfills, transfer stations or via mail-back programs to manufacturers. If required to pay for shipping, only 5% of consumers said they would choose the mail-back option. If shipping were free, the preference for mail-back increased to 20%. What this research didn't test was the ease and cost of manufacturer mail-back programs. Consumers polled could only answer based on the imagined ease of access to these programs. They also answered on the assumption that these programs offered free recycling, if not free shipping. Other than some sporadic special offers, current manufacturer mail-back programs have all required payments for recycling, as well as payment for shipping costs. It can be deduced from the WCRC survey results that very few customers would be interested in the manufacturer mail-back programs as currently designed.

In addition, preliminary tests of existing manufacturer "take-back" programs by County staff indicated that they were confusing, cumbersome, time-consuming, and expensive. While these programs have been in place for a limited time, it is long enough to provide a fair test of program ease of access, cost and convenience.

Consequently, Snohomish County hired a marketing consulting firm, PRR, to test the current electronics "take-back" programs offered by computer manufacturers. A PRR research associate conducted "secret shopper" research with five manufacturer take-back programs including IBM, HP, Dell, Gateway, and Lexmark during the month of October 2003.

The goal of this research was to test the convenience, information accuracy, time expenditure, and cost of the each of these programs. Avenues of contact included the website, email, and toll-free information numbers with each manufacturer. Goals of testing each of these contact areas included:

- Ease of getting the information
- Number of layers/websites it takes to find the information
- Accuracy of information provided
- Total time for follow-up to inquiries
- Cost of recycling & other materials
- Overall time to complete the recycle or "take-back" process

The following report provides a profile for each manufacturer's take-back program in regards to website usability, email response, toll-free number response, and the overall recycling process time and follow-through. The report concludes with an overall estimation of the time and effort it would take the average consumer to recycle a computer, computer monitor or other electronics equipment using one of these programs.

Methodology

Employing a secret shopper technique, PRR was able to assess each of the five manufacturer take-back programs. This technique involved conducting an information search using the web, email, and toll-free numbers for each manufacturer to learn about their take-back programs and how to get a computer system recycled. It should be noted that the test for Lexmark was limited to recycling a printer, since that is all the Lexmark programs allows.

For each computer manufacturer, steps were completed as necessary to recycle one computer system that included the following items:

- 1 13" monitor
- 1 CPU, standard size tower
- 1 Inkjet printer, small HP model
- 1 Keyboard & mouse

For the Lexmark program, one printer was recycled:

- 1 large color laser printer (Optra 1275)

When pick-up and drop-off services were involved, a Snohomish County residential address was used to best simulate a local resident's experience in recycling electronics via a mail back program. An address in Everett, Washington was selected. Everett is a city with a population of 90,000 and the address used was in an urban residential setting. Because of the size of the PC's and overall weight of the systems, oversized shipping boxes were procured when the manufacturer did not supply them. When this was necessary, boxes and shipping materials were purchased from U-Haul.

When using the Internet, Google.com was used at the starting point, since Google is the most widely used search engine. Similar search words were always used as a starting point. For example, for IBM, the search words "IBM & computer recycling" were used.

Lastly, no government websites were used to find information about recycling programs unless the researcher was directed to them specifically by one of the manufacturers.

Research Terms and Ratings

For the purpose of this report, consistent terms and ratings were used for each manufacturer profile. Following is a list providing definitions of those terms.

Links/Layer/Levels	The number of web links or number of web page layers that were required to navigate through to find the pertinent information. This is also the number of phone tree levels required to obtain a "live" person.
Accuracy	This term refers to how accurate or "correct" the information provided or displayed on the website was.
Usability	This term refers to how usable or "functional" a particular activity was. For example, how "user friendly" the website was or how easily the caller was able to locate a "live" customer service representative on the phone.
Good, Fair, & Poor	<p>These are subjective ratings given to each manufacturer for their overall usability and accuracy.</p> <p>Good - This is the highest rating, denoting that this manufacturer's website or phone help was helpful and easy to use.</p> <p>Fair - This is the middle rating, denoting that the manufacturer's website, email, or phone help was adequate but could use improvements.</p> <p>Poor - This is the lowest rating, denoting that the manufacturer's website, email, or phone help was hard to use, misleading, or the information provided was inaccurate.</p>
Time Spent Doing	This is the amount of time that was taken for the researcher to complete an activity. This can include searching the web, writing an email, or packing up boxes. While response time for phone calls and emails was tested, they were not included in total time spent doing unless they were actually required communications to complete the recycling activity.
Time Spent Waiting	This is the amount of time the researcher had to wait in order to complete the recycling process, but was not "doing" an activity. This includes waiting for email responses, waiting for shipping instructions, and waiting for pick-up. This time is recorded in <i>business</i> days (not including Saturday or Sunday).

Time Measurement

Times were recorded for Internet searches, website navigation, emails and responses, phone calls, time needed to source packaging, receive packaging or shipping labels, wait for pickup of packages, etc. However the "Total Time Spent Doing" and "Total Time Spent Waiting" as reported in the study records the method requiring the shortest time. For instance, if the recycling process could easily, efficiently and most time effectively be accomplished via the Internet without the necessity of phone calls or emails, "Total Time" reflects this process only. But times for phone calls and emails are also reported separately, since some consumers might prefer these methods.

Researcher Profile

The staff member who produced this report and took the role of "secret shopper" for researching manufacturer take back programs is PRR Research Associate Katherine Schomer. Katherine was selected to conduct this research expressly because she had little prior experience with electronics recycling issues, similar to the average consumer. However, Katherine is an experienced researcher with an MA in Sociology. She has considerable skills in acquiring information by phone or via the Internet, and has conducted usability studies on Internet sites over the course of her career.

As a professional, Katherine can find and navigate websites better than the average consumer. She is also extremely proficient at working the phones and asking the proper questions to gather information and data. This report assumes that the times reported by Katherine to source Internet or telephone information would be at the low end of those normally required by the typical consumer.

IBM Recycling Program

Type of Recycling Program: Order as a Product

Description of the Program: Similar to HP and Dell programs, the consumer orders the recycling package via the Internet or from the toll free number, as if they are ordering a product. The recycling package appears to have a one time cost. After the customer orders the recycling package, IBM then sends instructions for fitting one computer system into a box (provided by the customer) and a UPS shipping label.¹

Total Time Spent Doing: **218.5 minutes (approximately 3-3/4 hours)**

35 minutes searching the Internet

90 minutes to go pick up the recycling packages from UPS²

3.5 minutes on the phone finding out why a printer couldn't be recycled

60 minutes sourcing packaging materials (2 separate boxes at separate times)

30 minutes to pack up the PC. (2 separate packages)

Total Time Spent Waiting: **18 business days**

9 days to receive the recycling package with UPS mailing label

9 more days to receive another recycling package to recycle the printer.

Cost:

\$68.00

\$30.00 for one computer (CPU, monitor, & Keyboard)

\$30.00 for the printer

\$8.00 for shipping materials (boxes, etc.)

Discounts/Incentives: None

Contact Method Statistics:

	Website	Email	Telephone
#Links/Layers/Levels to get information	27	3	2
Time Spent Doing	35 minutes	3 minutes	3.5 minutes
Time Spent Waiting for A Response	18 business days	No Response	0 minutes
Usability	Poor	Poor	Good
Accuracy	Poor	Poor	Good

¹ This was for one computer system only (CPU, monitor, & keyboard) this did not include recycling the printer. However, the researcher did not realize that until after the recycling package was received.

² This recycling package required a signature. Since the researcher was not home during delivery times, she twice had to go pick up the packages at UPS in Everett.

Comments: The specific web page within the IBM website detailing the recycling program was very difficult to find. 5 or 6 Google.com links were tested and kept ending up at the IBM asset recovery program for small businesses. Finally, the researcher went to the product section of the IBM website and was able to find the web page where the recycling package could be ordered. Once the correct web page was found, the recycling package was easily ordered.

When on the phone with IBM a "live" person was reached very quickly. They said that in order to recycle a computer the researcher would need a part number, which they provided. Then they connected the researcher to the sales department where the "part" could be ordered and purchased. The process was very easy and helpful.

Once the recycling package was ordered, it took 9 nine days to receive it. Unfortunately the package from IBM was sent via UPS and required a signature. The researcher was unable to be present at home during the delivery time, so a pickup date was arranged with UPS at the Everett, WA station. This created a 4-day delay.

At UPS, a small box was picked up that contained a one-page instruction sheet on how to fit a CPU, monitor, and keyboard in **one** box. Also received was a UPS shipping label for **one** box. There was no room for the printer. IBM was called and they said the recycling package did not include a printer and that another box would have to be ordered. This was a frustrating and misleading process, because when the original package was ordered on the website the assumption was that this would cover the entire system. Nowhere on the site did it state the price for recycling was "per box."

To test their email response time, IBM was emailed with questions about how to recycle a computer system with them. A response was never received. The only email received from IBM was an automated response confirming the Internet purchase of the recycling package.

Overall this program was slow, confusing, and misleading. It is also expensive considering that the cost is \$30.00 per box, not per computer system.

HP Recycling Program

Type of Recycling Program: Order as a Product

Description of the Program: Like the Dell and IBM programs, consumers order the recycling package via the Internet or from the toll free number, as if it were a product. When ordering, the consumers must provide the specific items being recycled and the number of boxes they will be sending. A few days later HP sends an email instructing the consumer to place their packaged PC on their porch or in front of their house labeled "HP Recycling." They give specific dates as to when UPS will come and pick up the PC. No shipping labels are required; UPS labels packages at time of pick up.

Total Time Spent Doing: **65 minutes**

20 minutes web searching
30 minutes getting packaging materials
15 minutes spent packing the PC

Total Time Spent Waiting: **4 business days**

1 day to place the order
2 days to get instruction email
1 day to wait for UPS pickup

Cost: **\$67.00**

\$59.00 for the recycling package
\$8.00 for the shipping materials (boxes, etc).

Discounts/Incentives: Recycle before 10/31/03 and get \$50 e-coupon for the HP store.

Contact Method Statistics:

	Website	Email	Telephone
#Links/Layers/Levels to get information	6	3	3
Time Spent Doing	20 minutes	3.5 minutes	4 minutes
Time Spent Waiting for A Response	2 days	8 hours ³	0 minutes
Usability	Good	Good	Fair
Accuracy	Good	Good	Fair

³ HP responded to email within 8 hours but the time was close to midnight, so the return message was not seen until the next day.

Comments: Overall, the HP website was one the easiest to find and to use. The first link that was listed in Google.com for this manufacturer went directly to the correct web page. From there it was easy to go through the steps to recycle a computer system. A very helpful response was also provided to the initial email inquiry.

One drawback was that once the process of ordering the recycling package was started, the researcher realized that knowing the total number of boxes was required to complete the order. So boxes had to be sourced and packed with the computer system. The entire system actually fit in two boxes. After packing the system up as recommended by HP, the order was placed. It took 2 days to get a response from the Internet ordering site as to when the system would be picked up. However, when the response came, they said to expect the computer to be picked up the very next day, and it was.

Another drawback is that to recycle this system was expensive. Just to recycle the computer system was \$59.00 dollars. Boxes and shipping materials also had to be purchased at additional expense.

Gateway Recycling Program

Type of Recycling Program: Reward for Recycling

Description of the Program: This program encourages the consumer to recycle their old computer when they purchase a new Gateway PC. The consumer is responsible for donating or recycling their computer on their own, but Gateway provides some ideas of how to do this. They provide links to Goodwill, Salvation Army, and some recycling services databases. Once the equipment is recycled/donated, the consumer provides a receipt for verification and receives a coupon towards a future Gateway purchase.

Total Time Spent Doing: **155 minutes (Approximately 2-1/2 hours)**

90 web searching
30 connecting with recycling company and getting computer ready for drop off
35 minutes driving the computer to recycling center

Total Time Spent Waiting:

3 days

1 day to do the search
1 day to find a PC recycling company
1 day to take the PC to be recycled

Cost:

\$15.25⁴

\$10.00 for the monitor
\$2.00 for the printer
\$2.00 for PC Tower
\$1.25 in tax

Discounts/Incentives:

Get \$50 towards next Gateway Store purchase

Contact Method Statistics:

	Website	Email	Telephone
#Links/Layers/Levels to get information	39	4	5
Time Spent Doing	1.5 hours	4.5 minutes	6 minutes
Time Spent Waiting for A Response	N/A	9 hours ⁵	0 minutes
Usability	Poor	Good	Fair
Accuracy	Fair	Good	Poor

⁴ Cost to recycle a computer system at PC Recycle, a local retail collection site eventually sourced via Internet links from the Gateway site. Gateway does not actually offer or charge for computer recycling services.

⁵ Gateway responded to the initial email inquiry within 9 hours but the time was close to midnight, so the message was not seen until the next day.

Comments: The Gateway website was easy to find and navigate; the problem was that the actual program description was not very clear. They call it a "trade-up" program, but consumers are not really "trading-up" since they do not send Gateway their old computers. Instead, consumers must find a place to recycle/donate their computer system on their own. Then they need to provide written verification of recycling or donation to Gateway to get a discount towards their next purchase.

Gateway does provide some direction. They suggest both Goodwill and the Salvation army. They even provide links. However, the researcher looked up and contacted both these charities locally and they would not take the computer. Gateway then suggested contacting the local Chamber of Commerce. The Chamber provided a response a few days later with additional ideas. Farther down the web page, Gateway provides some links as to where you can recycle electronics. The third link actually worked (National Recycling Coalition). The NRC site provides a list of Snohomish County "Take it Back Network" participants and collection sites. The computer was taken to PC Recycle to be recycled.

In the beginning the researcher found this process to be tedious and difficult — definitely not worth the effort unless someone was planning to buy a new Gateway computer. However, had the researcher known about the "Take it Back Network" network, it would have been easiest to just use the Snohomish County resources rather than Gateway.

Gateway provided prompt and helpful email response but a phone call went less successfully; the person reached had no idea what the researcher was talking about. They provided a web address, but it was to the wrong site. However, Gateway did have a chat feature on their website where the researcher was able to communicate via email to a "live" customer service representative. It was definitely an innovative feature, but unfortunately the rep did not know anything about the program and simply provided a referral to the toll-free number.

One good thing about this program is that the researcher ultimately found a cheap local recycling option. It only cost \$15.25 to recycle an entire computer system. But this is because a Snohomish County "Take it Back Network" collection site was used, not because of any program provided by Gateway.

Dell Recycling Program

Type of Recycling Program: Order as a Product

Description of the Program: Very much like the HP and IBM programs, consumers order the recycling package via the Internet, as if it were a product. When ordering, the consumers must provide the specific items being recycled because costs are incurred for each item (\$15.00 per item). A few days later Dell sends an email instructing the consumer to place their packaged PC on their porch or in front of their house labeled "Dell Recycling." They give specific dates as to when Airborne Express will come and pick up the PC. No shipping labels are required this is provided by Airborne Express.

Total Time Spent Doing: **65 minutes**

20 minutes web searching
30 minutes getting packaging materials
15 minutes spent packing the PC

Total Time Spent Waiting: **5 business days**

1 day to place the order
3 days to get instruction email
1 day to wait for UPS pickup

Cost: **\$38.00**⁶

\$30.00 for the recycling package
\$8.00 for the shipping materials (boxes, etc).

Discounts/Incentives: For a limited time receive a 50% discount on recycling and receive 10% towards next Dell purchase.⁷

Contact Method Statistics:

	Website	Email	Telephone
#Links/Layers/Levels to get information	5	4	5
Time Spent Doing	20 minutes	4 minutes	4 minutes
Time Spent Waiting for A Response	3 business days	No Response	0 minutes
Usability	Good	Poor	Good
Accuracy	Fair	Poor	Good

⁶ This cost factors in a limited time discount.

⁷ With the 50% discount the recycling costs alone were \$30, without the discount it would be \$60. Dell also stated this was a "limited time offer", but they did not specify the expiration date.

Comments: Like HP, the Dell website was one of the easiest to find and use. The first link that was listed in Google.com for this manufacturer went directly to the web page that was needed to be able to recycle a computer. From there it was easy to go through the steps to recycle a computer system. The researcher simply indicated what equipment would be recycled and provided a credit card number. One negative was waiting 3 days for instructions on what to do next. An email was sent with directions to pack up the computer, mark the boxes as "Dell Recycling" and put them on the porch the next day for Airborne Express to pick up. The researcher had to scramble to find boxes and get the computer packed up. Airborne Express did pick up the computer on the day promised.

A non-automated response to the researcher's email was never received. However, when Dell was called, customer service was very helpful. A detailed web address was provided that led directly to the main ordering page for recycling a computer.

Overall this program was easy to use, but very expensive. Even with the limited time half price offer, it still cost \$38 to recycle a full computer system, including the cost of packaging. Normal recycling charges would increase total costs to \$68.

Lexmark Recycling Program

Type of Recycling Program: Verify Equipment and Receive A Shipping Address

Description of the Program: In the program Lexmark will take back *Lexmark only* printers to be recycled at no cost. However, the consumer does have to pay for shipping costs. Using the website, the consumer verifies that they have a "real" Lexmark printer by providing the model and serial number. Once the printer is verified (instantaneously) the consumer is provided with an address where they can send their Lexmark printer to be recycled. Again, the consumer pays for shipping only.

Total Time Spent Doing: **85 minutes**

40 minutes web searching
30 minutes getting packaging materials
15 minutes packing up the printer

Total Time Spent Waiting: **2 business days**

1 day to find the program and address
1 day to find a large enough box and pack up the printer

Cost: **\$50.00***

\$40.00 to ship via UPS
\$10.00 for shipping materials

* a smaller desk top printer would have cost approximately \$16 for shipping charges.

Discounts/Incentives: None

Contact Method Statistics:

	Website	Email	Telephone
#Links/Layers/Levels to get information	6	5	3
Time Spent Doing	40 minutes	7 minutes	3 minutes
Time Spent Waiting for A Response	0 hours	1 hour	0 minutes
Usability	Good	Good	Good
Accuracy	Good	Poor	Poor

Comments: Like Dell and HP, the Lexmark web page for the recycling program was very easy to find. The program came up right away in a Google.com search, and the link went directly to the proper web page. The only problem with this site is that the printer serial number in order to get the shipping address. The serial number was very difficult to find on the printer. There was also a hyphen in the serial number on the printer, but the website would not take the number with the hyphen in it. This took repeated attempts to get it right because nowhere on the website did it direct the consumer to leave out the hyphen.

Even though the telephone and email customer service were prompt and courteous, incorrect information was received from both of these sources. The email response indicated that Lexmark only recycles print cartridges, but that customer service could be called. When customer service was contacted, they directed the researcher to a website that addressed a trade-in program. Lexmark also buys back some printers that are not broken or in good shape. But this was not the recycling program being tested.

The Lexmark printer that was recycled was the only obsolete Lexmark unit available for conducting the test. It was large and awkwardly shaped (16"x21"x20"). It was difficult to find a box that the printer would fit into. For more standard size printers (inkjet/LaserJet) this part would not be as difficult. Shipping this larger printer was also expensive, in that it weighed 77lbs compared to a more typical weight of 10 lbs for the average desktop printer. The cost of this program would obviously vary depending on the size and weight of the printer recycled.

Overall though, this program was simple and easy to accomplish. Once a recycling shipping address is obtained, the consumer just mails the printer to that address. The only difficulty is in packing up the printer. One drawback is that Lexmark only recycles their own printers.

Overall Averages

Calculating total time, effort, and costs involved with each of the manufacturer's recycling programs, a picture can be provided of what it would take the consumer (on the average) to recycle a computer system using one these programs.

Average Links/Layers/Levels per manufacturer:

Average Time Spent Doing per manufacturer:

(Average time completing the recycling activity using Internet ordering only; no phone calls or emails unless necessary to get more information to complete transaction)

Internet: 16
Email: 3
Telephone: 3

118 minutes (approximately 2 hours)

Internet: 41 minutes
(Includes searching for website, accessing site and reviewing information)
Telephone: 42 seconds
(Only IBM required a phone call to complete the transaction; 3.5 minutes averaged over 5 manufacturers)

Packing and Shipping: 76 minutes
(Includes picking up recycling packages from UPS; sourcing and purchasing shipping materials and packing computer equipment. IBM time totaled 3 hours, other manufacturers each required 45-65 minutes)

Average Time Spent Doing, Emails:

4 minutes

(Includes writing and sending emails; reading email responses)

Average Time Spent Doing, Phone calls:

4 minutes

(Includes making calls and talking with customer service representatives)

Average Time Spent Waiting per manufacturer:

Internet: 6.5 days

(Includes a high wait of 18 days for IBM to wait for mailing labels for 9 days on two separate occasions; also includes 0 days for instantaneous download of mailing label from Lexmark website; Gateway has no Internet ordering as was not figured in.).

Email: 6 hours

(Emails from HP and Gateway took 8 and 9 hours, respectively, but were responses to late night emails; Lexmark responded in 1 hour; IBM and Dell did not respond and were not averaged in.)

Telephone: 0 minutes

(Includes time waiting or put on hold during calls; this time was inconsequential, since calls were put right through.)

Average cost of recycling a computer per manufacturer:	\$67.67⁸
	(includes shipping and packaging materials)

Research Conclusions

Recycling via Manufacturer using the Internet

For just under \$70 dollars, including the purchase of packing materials, a complete computer system can be easily recycled through HP and Dell (although Dell offered a 50% online discount during the time this research was conducted). Their programs are fairly simple to access on the Internet and the recycling "product" is easy to order. For both of the programs an email response was received within a few days of the order notifying the researcher to expect pick up of the computer system within 1 to 3 business days. In both cases the shipping companies came the earliest possible day. The most significant drawbacks to these two Internet based programs were the cost (at least \$60 or more) and arranging to get large enough packaging materials.

The Lexmark program was also easy to find over the Internet. Once the website was accessed, the researcher needed simply to enter a mailing address, printer type, and serial number. Lexmark immediately provided a shipping address. The biggest effort was packaging and preparing a large desktop printer for shipping, which was the only obsolete unit available for conducting the test. The only cost was shipping, which varies with the size of the printer.

The IBM recycling service was very hard to find on the Internet, but once found, seemed easy to order and at \$30.00, relatively inexpensive. Unfortunately the ordering process is misleading because the cost is actually \$30.00 "per box." IBM does provide instructions on how to fit a CPU, monitor, and keyboard in one box but this did not include the printer. In order to recycle the printer an additional recycling package had to be purchased (another \$30.00). It took nearly 3 weeks just to receive the shipping label for the first order, so the time it would take to recycle the whole system (CPU, monitor, keyboard, and printer) is 4 to 6 weeks, once the need for a second box is realized, and a second order is placed. The whole process is slow, misleading and frustrating.

Lastly, the Gateway program was initially easy to find via the Internet. However the program itself was confusing because the consumer must find a place to recycle or donate the computer system on their own. Gateway first suggests donating to Goodwill or Salvation Army, but once these options were investigated, they prove impractical, since these non-profits no longer accept computer systems in Snohomish County. However, towards the end of the Gateway recycling website they provide a link to the NRC (National Recycling Coalition). From here the

⁸ This figure was calculated averaging the cost of recycling a full computer system (computer, monitor, printer, keyboard and mouse) based on full-price recycling mail-back recycling services provided by IBM, HP and Dell. The limited-time 50% Dell discount was not figured in. The cost of recycling a Lexmark printer was also not figured in, since it was not a full computer system, and a large printer was recycled requiring high shipping charges. The cost of recycling a computer using information provided by Gateway was not figured in, since Gateway does not actually offer a take-back program, but simply refers customers to available recycling services in their area.

researcher was able to find a Snohomish County participating recycler that would take a computer system for little cost (about \$15.00). Once a participating retailer was found, recycling the computer was easy. Just transport the computer to the collection site; no packaging materials are required.

Recycling via Manufacturer using the Email or the Phone

Trying to get information about how to recycle a computer system by using email was only successful with HP. They responded quickly with the required information to recycle a computer system. An email response was never received from Dell or IBM. With Lexmark and Gateway, very prompt responses were received but the information provided was inaccurate.

Only with Dell, HP and IBM were phone calls successfully fielded. When asked how to recycle a PC, Dell and HP provided a web address that was correct and provided the information needed to order the recycling package. IBM provided an order number and transferred the researcher to their sales department to purchase the recycling package over the phone. Unfortunately, the Gateway and Lexmark customer service representatives were very helpful but either they didn't know anything about the program or they provided inaccurate information.

Overall Conclusions of Recycling via Manufacturer

After testing the process with multiple manufacturers, it was concluded that none of the services were as convenient or inexpensive as using a local Take it Back Network business (\$15) or the County's E-waste collection service at its transfer station (\$24). In both cases, loading the computer system in the car and driving to the nearest location was the greatest effort. No boxes, complicated packaging or high costs were involved.

Gateway's program benefited from having these local programs available. However, Gateway did not make finding these recycling options easy. Had the researcher known about the "Take it Back Network" up front, she would probably have skipped Gateway and used the Snohomish County program resources instead.

The HP and Dell programs were the easiest manufacturer programs to find and utilize. The hardest part was finding and purchasing large enough boxes to package up the computer system. However, these programs were costly to use.

The most problematic program turned out to be IBM's. It was difficult to find and access. Confusion as to how many boxes were required to complete the recycling process made the program slow and deceptively expensive.

As for recycling printers, using the Lexmark recycling package was also very easy. But this program might be a better recommendation for smaller, standard size printers. The cost of shipping a larger printer was high (\$40.00). Costs for an average sized desk top printer would have been a more reasonable \$16.00.

Implications and Recommendations

This manufacturer “take-back” program research project illustrated the high costs, relative lack of convenience and substantial time commitment required to recycle a computer via one of these programs. While these programs may work for some consumers located in areas without e-waste retail collection site options, they do not offer the easy, low-cost options desired by consumers polled in WCRC’s August 2002 research study on e-waste recycling preferences.

No mail back services where found that accept televisions. This is not surprising. Mail back programs typically require the customer to package up products for pick-up. Televisions are often large, cumbersome and come in various shapes and sizes. Unless the customer happened to retain the original shipping box and packing materials, it would be difficult to prepare a used television or console for shipping. Shipping costs would also be prohibitive. A cursory look at Amazon’s website listed shipping charges for a new Toshiba 20” flat screen television at \$42.16. At the other end of the scale, a Zenith 50” plasma flat panel HDTV shipped for \$119. Add that to recycling costs, anywhere from \$20 for smaller TVs to \$45 for consoles, according to Seattle-based electronics recycler Total Reclaim, and recycling a television presents a major expense.

While the existing manufacturer mail back programs do not seem to be particularly effective or practical at this time, it may be beneficial for Snohomish County to continue to acknowledge the existence of these fledgling manufacturer programs and encourage manufacturers to continue to refine their programs to make them effective.

But manufacturer programs need to improve significantly in terms of costs and ease of use. Shipping costs are an understandable expense that must be covered, until manufacturers move to internalize these costs. But recycling costs should at least be competitive with those charged by local recyclers who practice environmentally sound management, or should be eliminated altogether.

All emails regarding recycling should be answered promptly and with accurate information. From a customer service standpoint, there is no excuse to not answer email queries as occurred with Dell and IBM during the course of this research. If email correspondence is not routinely and regularly answered in the course of a company’s business, they should not offer it as an option on their websites.

Customer service representatives should be fully trained on recycling issues and options, since it is sold “as a product” through company websites. They should be able to provide and answer questions about this service just as easily as they can take an order for a new computer.

Web page information should be easy to locate and access. Most consumers would not intuitively know where to look on the manufacturer site for recycling information. Is it a service? Is it a product? The same is true when dealing with manufacturer automated phone answering menu options. It’s not clear what option the customer must choose to speak to a customer representative about recycling.

Recycling should be considered an important enough issue to be categorized separately on website and automated phone answering menus.

Customers should not have to be at home to sign for a recycling package and label, nor should they have to wait for a label to be mailed to them. On this individual aspect, the Lexmark program should be the model for the industry. Lexmark allows the customer to download a mailing label and print it out for shipping on the spot. Even sporting event and theater tickets can be downloaded and printed for use with today's technology, so this should not be difficult to implement with other manufacturer recycling programs.

Eventually, manufacturers need to move to a no-cost, easy to use mail-back service, as a cost of doing business and to provide good customer service, if mail-back services are expected to serve any meaningful role in the collection of obsolete products. The existing programs are not only cumbersome, but they are also expensive.

General Conclusions and Next Steps

Current manufacturer mail-back programs are probably of little use to consumers in Snohomish County, as there are less expensive and more convenient recycling options offered by some retailers, businesses and several County transfer stations.

Manufacturer mail-back programs need significant improvement and cost reduction to be considered viable options for many consumers in Snohomish County or other localities. Improvements are needed in these areas:

- significant cost reduction
- effective, easy to find and use recycling information
- effective, easy to find and use websites
- customer service representatives well trained with accurate information
- effective e-mail query management
- accurate and clear information on options and costs

To develop effective manufacturer take-back programs, manufacturers may need to finance "brick and mortar" recycling drop off locations by partnering with local retailers, businesses, charities and government services. The advantage would be decreased cost to the consumer and manufacturer and increased convenience, yielding higher recycling rates.