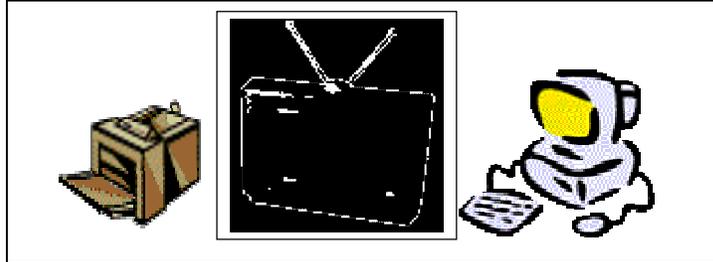


Section Three - Getting Specific

Chapter 1 - Special Event Collection



A special event collection is a program that occurs for a very short period of time: one or two days, generally four or fewer times per year.

Due to the focused time frame of the collection, there are typically higher tonnages and participation rates at the special event than there would be in any one day at an ongoing or curbside collection program. As a result, it requires a more concentrated effort to organize and staff. Tonnages tend to be high at these events, and traffic concerns are common. For example, while special events average about one-half of the tonnage that comes in to ongoing collections (23 tons per year compared to 56 tons per year), keep in mind that this is all in one or two days: not spread out over the year.

1. How do Approaches to Special Events Vary?

Special event collections have several different variations, some of which are quite subtle. The collection might be held on two consecutive days, or two consecutive weekends, or charge a fee one day and not the next. For example, some programs, such as in Hamilton County, Ohio and Jackson County, Illinois, handle businesses on a Friday and residents on Saturday. Another variation is having the vendor set up and manage the event, leaving you



Special event in a rural setting - Maine



the responsibility of promoting the event and paying the costs. In the National Survey we found that while just *under* one-half of all special event programs take place once a year for one day, just *over* one-half offer events more than once a year.

Still another variation is to have both a reuse organization and a recycler on-site. The reuse organization culls the usable materials before the material is handled or packed by the recycler. In this way, you accomplish the best of both worlds: reuse where possible and cost containment for the amount of material sent to the recycler. In Northern Cook County, Illinois, an impressive 23% of the material was diverted to reuse by this approach.



You can also hold the collection in conjunction with another event. In Wake County, North Carolina, the electronics collection event was part of a one-day “Christmas Wrap-up” in January, where they also collected trees, boxes and wrapping paper.

2. What Role Can a Sponsor/Partner Play in a Special Event?



Sponsors are non-government entities that contribute to the operation of the collection. For example, retailers might participate in the organization and management of the collection or provide a parking lot for holding a collection, as was the case in the Delaware/CompUSA partnership. A manufacturer that reimburses the cost of recycling is also a

sponsor or partner. A local business might provide a collection-site or staffing. More and more governments are succeeding in partnering to help operate or pay for their electronics-recycling program. Unless there are political or staffing reasons not to, explore the partner/sponsor possibilities in your area. You may be pleasantly surprised.

3. Storage

If the vendor is not on-site during the collection, it is likely to be necessary to have secure storage for the collected materials until the vendor can collect them or they can be transported to the vendor. You also should be sure that the storage is dry to prevent damage to the equipment, and to maximize reuse potential. So, be sure to select a site for the collection that you control and has adequate storage, or a site in which the owner will allow you to store materials.



In Hamilton County, Ohio, the program had planned on shipping all of the collected materials in one day. Instead, their processor informed them three days before their event that it would only be able to accept one truckload/day of material, although it ultimately accepted two loads/day. The program had intended to handle 72 tons, or 7 truckloads of material. While they received less than this, it ultimately took them five days to transport all of the materials from the collection-site, a fairground, to the processor.

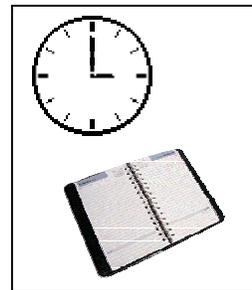


In Wake County, North Carolina, some of the material could not fit in the original truck so it was placed in the parking lot until another truck could arrive to handle it.

Wake County, North Carolina

4. Frequency & Hours of Operation

On occasion, special event collections will take place over a period of two days – possibly involving a weekend. In rare instances, they take place for a full week or month. However, purely one-day events are the norm. The hours of operation tend to be from around 9 A.M. until 2 to 5 P.M., but like household hazardous waste events, early-shows are frequent. Many people operating a 9 A.M. – 5 P.M. event have commented that they would not have the days be as long for future events, particularly when the event runs for more than one day.



Be sure that the date and hours of operation are well publicized, do not conflict with any major events in the community or on the site, and that the site host is fully aware of the planned event and date(s) and hours of operation. Naturally, if you are in a region where winter weather is a factor, you are likely to hold the event in the spring to fall season.

5. Case Studies²⁸

- State of Delaware Retail Partnership – One Day Event
- Hamilton County, Ohio Recycling Event – Two Day
- Lincoln Nebraska, Computer Recycling Event for Businesses
- Northern Cook County, Illinois – Electronics Manufacturer Partnership
- Franklin County, Massachusetts – Multi-site Regional Collection Program
- Cuyahoga County, Ohio – Coordinated Municipal & County Collections
- Jackson County, Illinois – Rural Collection Program





Best Buy Special Event, Framingham, Massachusetts



Case Study

Delaware Citizens Computer Recycling Pilot Project²⁹

Background

The Delaware Citizens Computer Recycling Pilot Project was a highly successful one-day computer recycling collection event sponsored by the Delaware Economic Development Office (DEDO), CompUSA-Wilmington and the Delaware Solid Waste Authority (DSWA). The event was held on Saturday, October 21, 2000 and drew approximately 400 cars filled with computer equipment from citizens and small businesses in the Wilmington area. The project netted over 6.5 tons of obsolete computer equipment in six hours – a bit more than one ton per hour.

Funded by a grant from the United States Environmental Protection Agency (EPA), Region III this project sought to replicate a public-private obsolete computer equipment collection model established in California. In essence, the model calls for the partnering of a government agency with a private sector retailer for operations and program promotions. The government agency funds the cost of program planning and the collection and processing of equipment and the retailer provides a location (their parking lot) and also funds event promotions and creates incentives for consumers to participate. The object is for the retailer to draw consumers dropping off old equipment to their store. Assuming that consumers will seek to purchase new equipment, the model allows them to donate obsolete computers and peripherals on the same day and at the same venue purchase new equipment.

The value of such a program is obvious. By establishing a partnership approach to environmental problems, a positive, sustainable solution can be achieved which marries the needs of both sectors. The government agency removes a large portion of electronics from the waste stream and the retailer entices the public into their store.

The enthusiastic support of this project by the retail partner, CompUSA, cannot be overstated. Not only did store managers work closely in planning and promoting the program, but also they took the lead in creative project design. In the end, CompUSA held a Customer Appreciation Day in conjunction with the recycling event, complete with clowns, face painters, free hot dogs, and discount certificates to computer recyclers giving them \$50 off their next purchase of a new computer system. In addition, CompUSA obtained support from over a dozen of their vendor partners who were represented at the event. They also got vendors to donate valuable computers and peripherals for a raffle at the end of the day. CompUSA reports that the Wilmington store was the top store in sales nationally for that day.

Project Objectives

Obsolete computer equipment is fast becoming a major problem for solid waste managers. Sometimes replacement of equipment does not mean that obsolete computers and peripherals are no longer useful. Many people who cannot afford the price of a new computer are interested in the use of used, less state-of-the-art



equipment. In this regard, obsolete computers are potentially an important component of the growing effort, nationally and internationally, to bridge the so-called *digital divide*.

This project was designed to address a possible solution to both the solid waste problem associated with obsolete computers and the re-distribution of still useful equipment. In particular, the project was also set up as a pilot experiment to test the value of creating a public-private partnership in addressing these issues.

Project objectives were as follows:

- Evaluate the merits of a partnership between DEDO and a private sector retail partner;
- Evaluate the infrastructure capabilities of regional computer recycling processors to service a single-day obsolete computer collection event;
- Establish a set of indices for predicting future collection quantities and resource requirements for similar events;
- Based upon lessons learned in this pilot project, recommend to DEDO and EPA further activities and opportunities for the collection, re-distribution and processing of obsolete computer equipment.

Partnering

This project required establishing a series of partnerships with the private sector and other organizations within the Wilmington community. Extensive phone contacts were made with a number of computer and electronic retail outlets to determine levels of interest in working with DEDO on this project. It was determined that an important element of the program was to ensure optimal participation by the public. To this end, it was decided that the collection event should be held in the Wilmington area, the most populous region of the state. The following retail establishments in the Wilmington area were contacted regarding their interest and capacity to service this project:

Best Buy
Circuit City
Sears
Second Source Computer Center
Radio Shack
Office Depot
CompUSA

Of the seven companies contacted, CompUSA-Wilmington was the most interested in supporting the project. They were located in a strategic area and indicated that they had ample space to stage the event. They were also immediately responsive to the idea of promoting the project themselves. In two brainstorming sessions with the store manager



and the retail manager, numerous ideas were explored. Both managers took the initiative in a number of areas including:

- Coordinating their vendor³⁰ partners to participate in a customer appreciation day that was planned as part of the recycling event.
 - Preparing signs and promotional material to be handed out to customers prior to the event.
 - Contacting property managers in the shopping center for permission to hold the event.
 - Communicating with other merchants so as to inform them of possible traffic issues.
- And,
- Convincing their vendor partners to donate merchandise to be used as prizes in raffles scheduled for the end of the day.

On the day of the event, store management coordinated all operational issues at the site. There is no question that the success of this project is directly due to the energy and enthusiasm of CompUSA's management team.

RFP for Processing

Besides partnering with a retailer, the choice of a company to assist in collections, processing and re-distribution of collected equipment was a key to program success. Project staff was aware that the electronics-recycling infrastructure is still in a nascent developmental stage. A Request for Proposals (RFP) was distributed to a number of regional electronics recycling firms.

The RFP document was mailed to nine firms in the region. All of these firms indicated that they would respond. RFP recipients were given two weeks to return formal bids.

The following companies were mailed RFPs:

Goodwill Industries of Delaware	Wilmington, DE
DMC Electronics	Hagerstown, MD
Vermont Retro Works	Middlebury, VT
Port Royal Metals	Sheldon, SC
Waste Management	Asset Recovery Group Houston, TX
Envirocycle	Halstead, PA
Elemental	Philadelphia, PA
Advanced Recovery	New Brunswick, NJ
Monmouth Wire and Computer Recycling	Gloucester, NJ

Of the nine, only two submitted responsive proposals – Elemental, Inc. and Goodwill Industries of Delaware. Goodwill was eventually chosen due to price, services offered, and their close proximity to the event. Goodwill operates the Delaware Computer Recycling Center that has been in operation for seven years.



One very important lesson learned during this portion of the project was that many electronics recovery businesses have difficulty responding to detailed RFPs.

Project Planning

The bulk of this project was planned and managed by a consultant with direct supervision from DEDO's director of the Green Industries Program. Major tasks included:

- Private sector research and outreach.
- Promotions coordination and public relations.
- RFP design and management.
- Outreach to volunteers and community groups.
- Collections, transportation & operations planning.
- Event day management.
- Project evaluation and analysis.
- Project meetings with all partners & sponsors.

Total Budgeted Project Management Time for this Project: 240 hours (over the course of 6 months)

The success of this pilot project can be attributed to the creation of a planning team consisting of representatives of a number of organizations. Five major project meetings were held over a six month period of time and were attended by representatives of the following organizations:

Delaware Economic Development Office
Delaware Solid Waste Authority
Delaware Department of Natural Resources and Environmental Control
Goodwill Industries of SE Pennsylvania
CompUSA
Goodwill Industries of Delaware
WHYY (regional public radio and television)
US EPA, Region III

Promotion

Numerous promotional strategies were used on this project. Promotion for this project were coordinated by the consultant and DEDO staff, including:

- Press releases (major media).
- Press releases (strategic neighborhood papers).
- Media advisories.
- Printing and distribution by CompUSA of 10,000 fliers (DEDO funded printing).
- Event day advertising in the Wilmington newspaper.



In addition, DSWA provided funding and support for a local radio station promotions package, including on-air advertising beginning several weeks before the event, and a live remote broadcast by the station on the event day from CompUSA's parking lot.

CompUSA also promoted the project heavily by distributing flyers in their store beginning two weeks prior to event, posting a banner on the front of the store and, of course, coordinating and funding their concurrent Customer Appreciation Day.

According to anecdotal information from donors on event day, the most successful promotional item was advertising in the local paper on the day of the event. Project coordinators feel that advertising several weeks prior to the event, coupled with all other activities, would have increased participation.

Costs

There were three cost components associated with this project. As a pilot project, a significant amount of planning, design and project analysis has been invested in by DEDO through their grant from EPA. In addition, a sizable investment was made in promotional materials and public relations, including a generous contribution from DSWA for radio advertising and a remote broadcast from the event. As has been noted, Goodwill's investment was also significant.

Figure 43: Delaware Project Costs

Project Consulting	\$12,000
Promotions	\$ 8,000
DEDO (EPA Grant)	\$ 3,000
DSWA	\$ 5,000
Processing & Collections	\$343 (net)
Service Fee (Flat Rate)	\$1,400
Materials Recovery	-\$1,057
Total Project Cost	\$20,343

Materials Collected

Over the course of the six-hour collection event, Goodwill Industries filled five (5) 24-foot box trucks and delivered them to their computer recycling facility. It took Goodwill nearly a month to test and inventory all equipment collected. Approximately 1/3 of the material salvaged was kept for in-house sales;

1/3 has been kept for periodic in-house auctions; and 1/3 was transferred to Elemental, Inc., a Philadelphia-based electronics recycling and salvage firm.

Goodwill Industries was not equipped with adequate scales or personnel for accurate measurement of the weight of material collected. Numbers given below are based on estimates derived from averages for each type of equipment listed.



The following table breaks down estimates of material collected by Goodwill:

Item	# Units	Estimated Weight in Pounds
CPU	180	2,600
Monitors	224	6,720
Keyboards	94	376
Printers	140	2,700
Misc. parts		950
Total		13,346 pounds

Figure 44: Materials Collected in Delaware

Goodwill reports that all monitors collected during the event were tested and, surprisingly, found to be in working order. On the other hand, Goodwill also reports that not all printers were in working order. This pattern is contrary to what many computer reuse operations find.

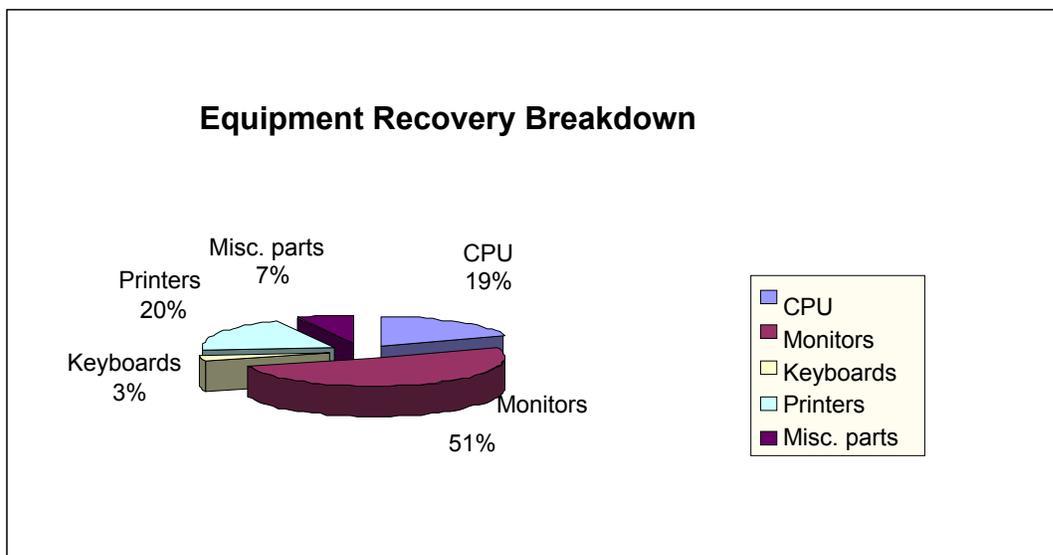


Figure 45: Equipment Recovery Breakdown - Delaware

Collection & Processing Economics

Goodwill’s winning bid to provide collection and processing services was based on a combination of a flat service fee of \$1,400 for personnel, equipment and processing capacity. In addition, Goodwill also pledged to pay a nominal price per unit for computers, working monitors, keyboards and printers. Their bid also stipulated a fee of \$5.00 to be paid by DEDO for every non-working monitor. Their plan was to send non-working monitors to Envirocycle, an electronics recycling company based in Pennsylvania. The table below breaks out material recovery values.



Item	# Units	\$/Unit	Value (\$)
CPUs	180	\$2.50	\$450
Monitors	224	\$2.50	\$560
Broken Monitors	0	-\$5.00	0
Keyboards	94	\$0.50	\$47
Total Value			\$1,057

Figure 46: Value of Materials - Delaware

While costs for the collection day event seem to have been well predicted, it appears that Goodwill underestimated materials handling, testing and processing costs once equipment was brought back to their facility. Whereas their bid document quotes a cost of \$800, figures were updated after the event to \$3,800. This is substantially higher and, according to Goodwill sources, indicates that prior to equipment sales income the company lost money on this project. There is a good possibility that these losses will be recouped once material is sold, but the timing to determine those economics is beyond the scope of this analysis.

The total bill charged to DEDO by Goodwill for collection and processing services represents a net cost of \$343.00 (\$1,400 - \$1,057 = \$343).

Using Goodwill's direct net charge, the operations cost per pound recovered for this project equates to:

$$\$343 / 13,346 \text{ pounds} = \$0.0257/\text{pound or } \$51.40 \text{ per ton}$$

Conclusion

It is clear that the direct impact of a public-private computer recycling event like the one described here is extremely positive – both from a business standpoint and from a public awareness standpoint. In particular, the indirect benefits of drawing people to their store were considerable for CompUSA. Similarly, although the scope of this study does not allow direct analysis, Goodwill was able to obtain over 100 computers for resale, plus a very large quantity of miscellaneous peripherals and components that have a degree of value. Handled appropriately, Goodwill should at least be able to break even on this project.

Key lessons learned on this project are as follows:

- The public-private partnership model requires a significant amount of planning, coordination and communication, but the benefits far outweigh the costs.



- The electronics processing industry in the region is relatively unsophisticated and requires a considerable amount of technical assistance in meeting the needs of communities – especially as regards residential and consumer computer equipment.
- Goodwill Industries of Delaware requires support and guidance in establishing lasting materials market networks; they also require a more efficient method of equipment handling and processing.
- It is likely that advertising in local newspapers for computer recycling events such as the one described here is the most effective means of getting the word out about collection details.
- As a promotional event, it is economically advantageous for the private sector to invest in projects like this.

For more information, contact:

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State of Delaware

Collection Method

- Special Event

Collection-site

- CompUSA Wilmington, DE

Frequency

- One day

Participants

- Residents
- Businesses

Program Operator

- Delaware Department of Economic

Transporter

- Goodwill Industries of Delaware
Development

Materials Accepted

- Computers
- Peripherals

Project Cost

- \$20,343

Demographics

2000 Total Population:	783,600
2000 Total Households:	298,736
2000 Average Household Size:	2.54
1997 Median Household Income:	\$41,315

Program Age

- October 2000

Program Funding Sources

- EPA Grant
- CompUSA in-kind

Per Ton Cost

- \$51.40



Case Study

Hamilton County, Ohio Department of Environmental Services Solid Waste Management District 2001 Computer Recycling Event

Background

The District conducted a free computer-recycling event for residents, schools, and business in Hamilton County in June 2001 at the Hamilton County Fairgrounds. The event was open on Friday, June 29, 2001 to pre-registered businesses and schools only. On Saturday, June 30, 2001, the event was open to the public.

The following items were accepted at the event:

- PC workstations,
- Scanners,
- Printers,
- Tape and disk drives, and
- Telephones.

The District made the decision to limit the number of acceptable items.

Vendor

The District contracted with UNICOR, a wholly owned government corporation (Federal Prison Industries), to recycle all computer equipment brought to the event. Once delivered to UNICOR, inmates at the Elkton Federal Prison unload the equipment, dismantle each computer, and send each part to a recycler located in Ohio. UNICOR provided free transportation through Great Lakes Trucking Company.

The Program

The District was responsible for promotion/advertising, providing volunteers to direct traffic, surveying participants, unloading computers, site set up, and passing out literature.

The initial project goals were to:

- Collect nine truckloads of computer equipment equaling 72 tons of material.
- Provide an outlet for Hamilton County entities to dispose of computers in a legal and safe manner.
- Raise awareness about the toxic materials in computers.
- Educate Hamilton County on permanent outlets for used computer equipment.



Publicity

The District publicized the event by using:

- *The Interchange* - front page article,
- Quarter page ad in The Cincinnati Enquirer,
- Dept. of Environmental Services website,
- Community newsletters,
- Letters to technical coordinators at each school,
- Business association newsletters,
- Press releases to media outlets (radio, television, print),



- Letters and flyers sent to computer stores, and
- Letters and flyers to environmental organizations.

The following is a breakdown of how residents heard about the event:

Source	Percent
Flyer	8%
Cincinnati Enquirer ad	33%
Television	34%
Website	6%
Radio	6%
Other	13%

Figure 47: How Residents Learned of Event – Hamilton County, Ohio

In order to increase awareness about computer recycling, the District listed outlets for reusable computers in all press releases and advertising. Also, each press release listed the amount of chemicals that are in a typical computer.



Costs

Total Project Cost	
Equipment	Costs
Pallet Jack	\$84.20
Forklift	\$535.89
Gaylord Boxes	\$2,161.50
Dumpster Rental	\$330.00
Safety Supplies (gloves, vests)	\$179.00
Plastic Covering	\$179.73
Refreshments	
Boxed lunches	\$500.40
Drinks, ice, etc.	\$171.71
Bagels	\$44.61
Advertisement	
Enquirer ad.	\$4,753.29
2 Banners	\$312.00
Flyers	\$200.00
Sheriff's Department	
Traffic Detail	\$308.00
Prisoner Detail	\$580.00
Liability Insurance	\$404.00
Overtime	\$413.64
Total	\$11,157.97
Total per ton	\$201

Figure 48: Costs - Hamilton County, Ohio

Material & Participants

Total number of participants: 45 businesses and schools; 232 residents.

Total quantity of material received: 55.5 tons.



Materials Collected

Item	# Of Units
PC Workstation (monitor + hard drive = 1)	1,222
Printers	426
Scanners	46
Phones	40
Monitors only	127
Cables	490
Tape and disk drives	23
Hard drive only	47
Mainframe	3
Copy Machine	1
Laptops	3
Other	29
Total*	2,457

- Keyboards and mice are not included in the total amount.

Figure 49: Materials Collected - Hamilton County, Ohio

Conclusions & Recommendations by the District

1. Although the District collected 16.5 tons less than anticipated, staff was quite pleased with the attendance, as well as the organization of the event. Furthermore, the District received extensive coverage by the media that increased residents' awareness regarding toxicity of computers and informed them of the local, permanent outlets.
2. In addition to media coverage, the District received extremely favorable remarks from participants. Comments ranged from "please conduct another one" to "quite impressed how organized the event was run."
3. Because the residential collection event had much less participation than expected, future collection events should focus strictly on business/school participation as this sector seems to benefit the most from a collection program. Advertising should focus more on this sector. For example, instead of a paid advertisement in the Cincinnati Enquirer, run an advertisement in the Business Courier. Additionally, advertising for the program should begin several months in advance.



4. Each tractor-trailer driver requested a Bill of Lading from the District (which we did not have).
5. The location for the event was ideal for the business collection. The site was free and the Fairgrounds were very accommodating. Unfortunately, many residents did not know where the Fairgrounds were located. Therefore, if conducting a residential event, a different location should be found.
6. In order to decrease costs, conduct a one-day event only, and hold it during the week. Not only will this eliminate overtime costs, it will also decrease food and beverage costs, rental costs, and liability insurance.
7. Traffic detail is unnecessary.
8. Consider using a different vendor, especially concerning transportation needs.
9. Rent a 6 cubic yard dumpster as opposed to a 30 cubic yard. With 9-10 prisoners, no outside volunteers are needed.
10. Conduct event in June as many schools purge their computers at this time.
11. Pre-register participants.
12. Business and school event only. However, if residents call ahead, they will be able to participate as long as they are registered.
13. Two functioning forklifts and operators.
14. Require/encourage businesses with more than 50 pieces of equipment to have them wrapped in plastic and on pallets.
15. Have a Bill of Lading prepared.

Contact Information:

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Cincinnati, Ohio 45219

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Fax: 513-946-7779
Holly.Christmann@hamilton-co.org
www.hcdoes.org



Hamilton County, Ohio

Collection Method

- Special event

Collection-site

- Fairgrounds (county)
- Easily accessible site
- No charge to use facility.

Amount Collected

- 55.5 tons/first event

Program Age

- 1 - 6 months

Participants

- Residents
- Pre-registered businesses, municipalities, and schools.
- Residents did not have to register.

Frequency

- 2 one-day events/year
- 1 day for pre-registered businesses and schools and 1 day for residents.
- Will conduct annual event one day/year.

Initial Funding Sources

- Government

Set up Costs

- \$11,158 (55.5 tons x \$200/ton)
- Next event's budget about half the cost.

Fees Charged

- No fees charged

Price Paid to Recycle

- \$200/ton

Fate of Materials Collected

- UNICOR dismantles computers that can't be reused, and sends parts to be recycled.

Demographics

2000 Total Population:	845,303
2000 Total Households:	346,790
2000 Average Household Size:	2.38
1989 Median Household Income:	\$29,498
1989 Per Capita Income:	\$15,354

Materials Accepted

- Computer monitors
- Computer hardware
- Computer peripherals

Program Operator

- Solid Waste Management District

Transporter

- Electronics recycler
- Transportation free

Program Funding Sources

- Budget

Annual Operating Costs

- \$11,000



Case Study

Waste Cap of Lincoln, Nebraska Computer Recycling Program for Businesses³¹

Background

WasteCap of Lincoln hosted a used computer collection event for local businesses in Lincoln and Lancaster County. The project had several goals and objectives.

1. Increase awareness among businesses on the proper handling of end-of-life computer equipment.
2. Promote local businesses and organizations that provide collection and processing services for used computer equipment.
3. Sponsor a one-day collection event of used computer equipment for businesses to gain a better understanding of the issues associated with the special handling of computer equipment.

Although the event did not target households, households that were willing to pay the fees were allowed to participate. The fees were \$15 per monitor and \$0.50 per pound for peripheral equipment.

Costs

- The WasteCap of Lincoln Director spent more than 200 planning hours and the two WasteCap of Lincoln assistants over 40 planning hours to develop this project. This time has the value of \$4,425.00 in administrative costs.
- An additional 143 volunteer hours were contributed at a value of \$1,430.00.
- Total in-kind for advertising and printing was valued at \$7,942.00. Because the event was designed to have participants pay for recycling, there were no costs incurred by WasteCap of Lincoln to the Contractor. However, the total cost of recycling (covered by fees) was \$2,106.
- Out of pocket expenses for printing, postage, rentals and supplies totaled \$3,153.00.

Excluding recycling, administrative and in-kind costs, total costs for the event were \$0.75 per pound or \$1,500 per ton. Costs per participant were \$414.13 without recycling and \$465.75 with recycling costs included. It can be expected that if costs were decreased and public education increased, these costs could be reduced drastically per unit by bringing in more volume.

Also, in comparing this event with other events, the advertising costs could be reduced dramatically by not sending direct mail and not using billboard advertising. Removing these two aspects of advertising would reduce total costs by \$2,149 to give total out of pocket costs of \$1,003.00. This could reduce costs to \$0.48 per pound (not including administrative and recycling costs).



The Program

The event was run on a Wednesday from 10:00 a.m. until 4:00 p.m. The time and day were chosen to accommodate businesses rather than to encourage households to participate.

Prior to the event, over 120 phone calls regarding the collection were received in the WasteCap of Lincoln office. Many of the callers were surprised to hear the costs and it is strongly believed that the fees were a significant deterrent to participation. The fees were \$15 per monitor and \$0.50 per pound for peripheral equipment. Participants were limited to five (5) computer systems.

Participation & Materials

The event had 40 cars with 71 monitors and 2,082 pounds of peripheral equipment. Monitors were estimated at 30 pounds each. With that estimation, this event brought in 4,212 pounds of computer equipment.

For more information, contact:

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WasteCap of Lincoln
P.O. Box 83006
Lincoln, NE 68501-3006

Phone: 402-472-0888
Email: wastecap@alltel.net



Lincoln and Lancaster Counties, Nebraska

Collection Method

- Special event
- Pilot program

Collection-site

- Parking lot (state fairgrounds)

Demographics

2000 Total Population:	284,923
2000 Total Households:	113,263
2000 Average Household Size:	2.41
1989 Median Household Income:	\$29,911
1989 Per Capita Income:	\$12,947

Amount Collected

- < 5 tons/ one-day event
- 71 monitors and 1 ton peripherals/1st one-day event

Frequency

- 1 one-day event
- Future events not planned

Participants

- Event targeted businesses
- Households welcome to participate but not targeted

Program Age

- One-time event, April 25, 2001

Program Operator

- Public/Private non-profit (WasteCap)

Transporter

- Electronics recycler

Materials Accepted

- Computer monitors
- Computer hardware
- Computer peripherals

Program Funding Sources

- User fees
- Currently no on-going funding

Initial Funding Sources

- Government
- Private
- In-kind media

Annual Operating Costs

- > \$10,000

Set up Costs

- \$5,000 - 10,000, includes staff time & in-kind advertising

Fees Charged

- \$15/monitor
- \$0.50/lb for peripherals
- Limited to 5 full computer systems

Price Paid to Recycle

- \$1,000/ton (\$0.50/lb)

Fate of Materials Collected

- Demanufacturing



Case Study

Partnership with Corporation

Solid Waste Agency of Northern Cook County, Illinois

Background

In July 1999 the Solid Waste Agency of Northern Cook County (SWANCC) held a pilot one-day event in Evanston, Illinois. This proved to be a success and resulted in SWANCC and the locally headquartered Motorola Corporation forming a partnership to expand and continue the program at Motorola's Arlington Heights campus.

Collection-site

Over the past two years, Motorola has provided SWANCC with a site and volunteers to conduct four one-day collections. The Motorola site includes a loading dock for semi-trailers, a large parking lot for traffic flow, staging areas for the recycling company and non-profit organizations, and a location that is easy to reach from a highway.

Vendor

Motorola helped to secure very attractive deals with recycling companies. The vendor provided recycling services for free at all of the events, then on-site labor, supplies and transportation for \$39 per ton at the last two.

The Program

The one-day events are open to residents of Northern Cook County and to Motorola employees. A wide variety of products, including computers and peripherals, office equipment, small appliances, entertainment and visual equipment, and power tools are accepted. Air conditioners, humidifiers, microwaves, large home appliances, software, computer and compact discs are not accepted.

The April 29, 2000 collection will frankly always be remembered at SWANCC as the "big headache" day, when 1,350 vehicles showed up over the course of six hours to unload 108.3 tons of used electronics! Having had less than one third that many participants at the same location six months earlier, the recycling company and event organizers were shocked, understaffed, and overwhelmed with the amount of material to deal with. Forced to leave tons of equipment on the ground in rows to allow traffic to continue flowing; it was not a pretty site. Workers were exhaustedly loading trucks until 11:00 p.m.

One reason for the high turnout was the amount of free newspaper publicity received as a result of SWANCC's press releases, public access television, and other activities. The "Y2K scare" that caused people to purchase new computers in 1999 is also thought to have contributed to the remarkably high turnout.

In July 2001, two separate collections were held one week apart at two Motorola campuses. Since the dates were close together, publicity efforts were no more difficult or costly with this arrangement. Yet by dividing the collection in this way, organizers were better able to control the traffic and material flows, even though the number of total



participants was higher still than at the 2000 event. A different recycling company was also involved and it was better prepared, with more trucks on-site.

At these twin events, SWANCC brought in two non-profits to take the equipment that participants claimed were in good working order. This successfully diverted an amazing 23% of all materials for reuse.

Benefit to Motorola

Motorola has contributed very significantly to the success of this program and to cost containment. In turn, Motorola has benefited from the goodwill fostered by having many of its employees participate in the collection; it has received very positive public recognition of its contributions, and has enhanced its reputation in the community.

For more information, contact:

Mary Allen, Director of Recycling and Education
SWANCC
1616 E. Golf Road
Des Plaines, IL 60016

Phone: 847-296-9205
Email: mary@swancc.org



North Cook County, Illinois

Collection Method

- Special event

Collection-site

- Parking lot (corporation)

Amount Collected

- ~140 tons/year
- 108 tons/one-day event
- 72.2 tons/2 Saturdays in 2001

Participants

- Residents
- Intended for residents but school districts, municipalities or small businesses not turned away. Not true for future collections.

Program Operator

Collaboration between:

- Non-profit organization (SWANCC)
- OEM (Motorola)
- Recycling contractor

Materials Accepted

- Computer monitors
- Computer hardware
- Computer peripherals
- Televisions
- VCRs
- Other small appliances

Initial Funding Sources

- Government

Set up Costs

- \$1,000 - \$5,000
- Covers food/beverages for volunteers, promotional signs and materials and vests, gloves, etc.

Fees Charged

- None

Fate of Materials Collected

- Demanufacturing
- Recycler

Demographics

2000 Total Population: 800,000
2000 Average Household Size: 2.68
1989 Median Household Income: \$40,741

Frequency

- 2 events/year
- 2 days/year

Program Age

- July 1999

Transporter

- Private contractor

Program Funding Sources

- Budget

Transporter

- >\$20,000
- Previously, contractor did collection for no cost. Due to large volume collected, SWANCC helped pay for labor costs (\$500).

Cost to Recycle

- ~\$260/ton



Case Study

Franklin County, Massachusetts Solid Waste Management District Regional One-Day Event - Multiple Sites

Background

The Franklin County Solid Waste Management District serves 21 towns in western Massachusetts with a total population of 64,000. The District received a technical assistance grant from the state Department of Environmental Protection to conduct a pilot consumer electronics collection in order to determine the type and volume of electronics being stored in residences. While the program focused on households, several businesses and schools participated.

The Program

The District scheduled a one day, 6 hour long collection for consumer electronics on Saturday, September 19 at three sites (two hours at each site), all of which were Department of Public Works (DPW) garages.

The District anticipated receiving 4-5 tons of electronics, but instead received 12 tons. Of the 12 tons, approximately 9 tons were from residents and 3 tons from schools. Equipment came in from 192 residents and 6 schools. Residents came from twenty-three towns in Franklin County. At each site two or three residents had chosen to drive over 30 minutes from their town of residence to the collection-site. Of the 1,200 pieces of equipment collected, there were approximately 165 CPUs, 200 monitors, 180 televisions, 140 keyboards, 86 printers, 80 stereos, and 70 VCRs.

Collection Logistics

The first step was selecting a date. The second step was to identify DPWs that were both centrally located and in different parts of the county. The DPWs were then contacted to gain permission to use the sites for the collection. Each site had access to a telephone, bathroom, and most importantly, cover. It was important to the District to keep the electronics secure and dry over the weekend until they were shipped to the demanufacturers the following week.

The decision was made to collect a wide range of electronics, but not items that could be classified as scrap metal, such as toasters and fans, or items that had little demanufacturing value, such as hair dryers and humidifiers. The goal was to collect electronics that would either fall under the Massachusetts CRT ban (computer monitors and Televisions) or could contain heavy metals, such as items with circuit boards.

The District heavily advertised the event, with almost half of the total expense for the collection going to display ads. Half-page ads ran in five area newspapers over a two-week period immediately preceding the collection for a total of ten ads. The District decided to open each site for two hours to minimize the number of volunteers and staff needed to operate each site. The ad also listed what was and wasn't acceptable. Press releases were sent to newspapers, radios, and local cable stations.



In addition, there were several large articles in the daily newspapers regarding electronics prior the collection. This received good media coverage.

Equipment

In the two weeks prior to the collection, calls were made to freight and moving companies in an attempt to locate a company to move the electronics from the collection-sites to the processor. All of the collections were held on ground level and thus needed a pallet jack and hydraulic lift gate to move the electronics from the ground to the floor of a truck. Five freight companies and six moving companies were contacted. None of them were able or interested in moving the electronics. Two days before the collection, it was learned that Ryder truck rents trucks with hydraulic lift gates. The District rented a 24-foot box truck from Ryder for this purpose.

A component whose importance was originally overlooked was the need for a forklift truck or bucket loader with forks at each site.

Initial plans were to pack the electronics in gaylord boxes, but after talking with the processor, it was decided to stack the equipment on pallets and wrap the pallets with stretch film. The pallets were obtained at no cost and the stretch film was purchased through a state procurement contract with Grainger.

Collection Process

Pallets and stretch film were delivered to each site on the Friday preceding the collection. All pallets were placed indoors. On the day of the collection four or five volunteers were present at each site. Traffic cones were laid out to direct traffic in a one-way direction to the unloading area.

As vehicles arrived, a volunteer would conduct a brief survey with the resident. The number, type, and age of each piece of equipment were recorded as well as the town of residence. The items were then unloaded and stacked on the pallets. All CRTs (monitors and televisions) were stacked together. All other equipment (VCRs, printers, stereos, CPUs) was stacked together. When the stack was approximately 4 feet high, it was wrapped in stretch film.

There were several items that had to be turned away, such as electronic drum sets, humidifiers, fans, cameras, etc. Some items were accepted that might not have a high demanufacturing value, such as baby monitors, satellite receivers, and typewriters. We lacked the appropriate information to know what "extras" to accept and made the best decisions possible on the spot. While it is impossible to list every electronic item in a "do and don't" scenario, there may be general recommendations, such as the "circuit board" specification.

The most time-consuming aspect of this project was the four trips in two days that it took to load and unload the electronics from each site to the processor. This was a difficult and tiring process, especially at the one site that did not have a forklift. After several attempts using the bucket loader without forks, we were fortunate to have a forklift from a nearby orchard come and assist us.



Observations/Recommendations from the Solid Waste District

1) We were woefully unprepared for the volume that we received. We were short by almost 10 pallets overall and had to leave items on the floor to pack on Monday. Be prepared for the worse and then some.

2) It is difficult and nearly impossible to exclude businesses. We didn't specifically advertise for them or exclude them. When they arrived we accepted their materials. We believe that they will find a way to bring their equipment, even if excluded. Typically, businesses bring in their "waste" disguised as a household - either by using their personal vehicle or making several trips.

3) We knew of several schools that were going to participate but we didn't know the volume they were bringing. A community college brought in two stake-body trucks of computers! We don't believe this to be the exception with schools. Many schools have technology grants or technology coordinators who are cleaning out old computers and replacing them with new ones.

4) We were asked by several individuals at the collection-sites if they could "scavenge" some units or parts. In most cases, they were denied this request due to the impossibility of knowing which monitors/keyboards/CPUs/televisions worked and which didn't work. It is easy to understand why they would make this request. At one site there were 27 pallets stacked 4'-5' high with electronics, some looking relatively new. It's overwhelming to see so many "products" destined for disposal. Incorporating a "reuse" area into a collection is an option to be explored.

5) It is imperative to have the right equipment to move the full pallets (average weight 680 lbs.) from the ground up to truck level. And even with the right equipment, this process is labor and time intensive. Using a facility with access to a loading dock would have reduced the time it took to load the truck. A town could "free load" the equipment, basically loose onto a truck and then palletize or box it in the trailer.

6) We chose to keep the equipment dry, although this was not a requirement from the processor. We have been informed that keeping the equipment dry facilitates remanufacturing versus demanufacturing of wet equipment. Follow the specifications of your contractor.

7) Two-thirds of the material that was collected was not CRTs.



Statistics Regional Special Event Electronics Collection

Site One	Site Two	Site Three	Total
▪ 64 from 11 towns	▪ 107 from 13 towns	▪ 25 from 10 towns	▪ 196
▪ 2 businesses	▪ 3 businesses	▪ No businesses	▪ 5 businesses
▪ No schools	▪ 4 schools,	▪ 2 schools	▪ 6 schools
▪ 369 items total	▪ 750 + items total	▪ 116 items total	▪ 1,235 items
▪ 307 households	▪ 703 households	▪ 61 households	▪ 1,071 households
▪ 4 units/household	▪ 3.5 units/household	▪ 2.6 units/household	▪ ~ 3.2 units/household
▪ Average 14 years old	▪ Average 15 years old	▪ Average 12 years old	▪ Average 14 years old
▪ Estimate 3 tons	▪ Estimate 8 tons	▪ Estimate 1 ton	▪ 12 tons

Figure 50: Statistics Franklin County, Massachusetts, Regional Special Event

Expenses directly associated with special event (4 weeks planning)

75 hours @ \$20/hour	\$1,500
Labor 28 hours @ \$15/hour	\$ 420
Administrative Overhead	\$ 750
Travel expenses	\$ 70
Advertising (5 local newspapers; 10 ads total)	\$2,780
Stretch film	\$ 156
Ryder truck transport to processor	\$ 309
Misc. (food, photos)	\$ 70
Mailing to towns/ schools	\$30
TOTAL	\$6,085

Figure 51: Expenses - Franklin County, Massachusetts, Regional Special Event

For more information, contact:

Jan Ameen, Executive Director
 Franklin County Solid Waste Management District
 51 Wells St.
 Greenfield, MA 01301

Phone: 413-772-2438
 Email: fcswmd@crocker.com



Franklin County, Massachusetts

Collection Method

- Special Event

Collection-sites

- Three DPW garages

Amount Collected

- 12 tons

Participants

- Residents
- Businesses
- Schools

Program Operator

- Solid Waste District

Materials Accepted

- Computer monitors
- Computer hardware
- Computer peripherals
- Televisions
- VCRs
- Fax machines, portable phones, stereos
- NOT kitchen appliances, lamps, microwaves, items without circuit boards

Initial Funding Sources

- Grant

Set up Costs

- < \$5,000

Fees Charged

- None

Cost to Recycle

- Covered by grant. Would have been \$300/ton

Demographics

2000 Total Population:	71,535
2000 Total Households:	29,466
2000 Average Household Size:	2.38
1989 Median Household Income:	\$30,350
1989 Per Capita Income:	\$13,944

Frequency

- One-day event, 2-hours per site

Program Age

- Fall 1999

Transporter

- Solid Waste District

Program Funding Sources

- Grant

Operating Cost

- \$6,000

Fate of Materials Collected

- Demanufacturing
- Remanufacturing



Case Study

Cuyahoga County, Ohio Solid Waste District Municipal & Public Collection Summary

Background

The Cuyahoga County Solid Waste District conducted its 2nd semi-annual Computer Round-Up in August 2001. The collection was a two-part event, with cities holding their own collections and the District conducting a public collection event at the Cuyahoga County Fairgrounds in a building the size of a football field. In addition, the driveway leading to the building could handle a line of 150 cars.

The Program

Eighteen (18) communities participated in the collection of CPUs, monitors, printers, other peripheral computer equipment, and cell phones from their residents. Cities were required to deliver their equipment to the fairgrounds a few days prior to a public regional public event.

The Contractors

The District contracted with Refuse Transfer Systems, Inc. to provide transportation of the computer equipment from the fairgrounds to the Trumbull Correctional Institution.

The District also worked with the Computers for Education Program of Ohio. The Benedict Group, a not-for profit organization within the Ohio State Prison System, operates the program. This program collects and recycles old computer equipment and does not charge a processing fee.

Promotion

The program was promoted through a variety of media and community outlets. Over 5,000 flyers were distributed to churches and temples, computer and appliance stores, elementary and high schools, and computer clubs. In the weeks preceding the event, press releases were sent to radio, television and cable stations, and numerous community publications. Promotional flyers were also included with each mailing and publication request that was sent out by the District for one-and-a-half months prior to the event. Paid advertising was conducted in the Cuyahoga County Sun Newspapers and on various radio stations. The Cleveland Plain Dealer donated advertising space for this event and also reported the collection prior to the event. In addition, sixty-second (:60) commercial spots aired on radio stations one-week prior. Total paid advertising cost \$7,574.

Staffing

Volunteers from the county as well as 10 female “soon to be released” prisoners were used to staff the collection event (unloading vehicles and separation of material) at the fairgrounds. The traffic was divided into two lines and prison labor from the Trumbull Correctional Institution operated one of the two lines of traffic. There were two prison guards present.



Material & Participants

During the city collection, eighty-eight (88) pallets of computers were received from the communities. These computers filled two (2) trailers.

In addition, 606 residential vehicles were received on Saturday during a five (5) hour collection event. During the one-day public collection, three (3) tractor-trailers were filled with 134 pallets of old, unwanted computer equipment.

Approximately the same number of vehicles participated in each event. There was an initial surge on Saturday, but it spaced out more evenly throughout the day. On Wednesday, most of the vehicles arrived early in the evening – just after work.

The combined weight for all equipment collected (5 trailers) totaled 58.32 tons.

Program Expenses – August 2001

Description	Amount
Event advertising (radio & print)	\$7,574.00
Lunch (catering for three days)	\$596.75
Traffic cones (qty. 50)	\$0
Ad/flier design & printing	\$462.00
Banner (qty. 1)	\$90.00
Five-gallon coolers (qty. 2)	\$46.00
Gaylord boxes (qty. 150)	\$1,125.00
T-shirts	\$373.94
Hauling of computers	\$3,521.45
Trash roll-off	\$332.00
Event supplies	\$103.88
Grad-All training (2 people)	\$250.00
Equipment for collection	\$2,231.52
Port-a-potties (qty. 2)	\$212.60
Pallets (qty. 185)	\$555.00
53' trailers (qty. 11)	\$1,489.08
Total	\$18,963.22

Figure 52: Program Expenses - Cuyahoga County, Ohio

For more information, contact:

Cristie Cook, Program Officer
Cuyahoga County Solid Waste District
323 Lakeside Ave. W, #400
Cleveland, OH 44113-1009

Phone: (216) 443-3749
Email: ccook@www.cuyahoga.oh.us



Cuyahoga County, Ohio

Collection Method

- Special event

Collection-site

- Fairgrounds (county)

Amount Collected

- 159.61 tons/year
- 101.29 tons/April 2001
- 58.32 tons/August 2001

Demographics

2000 Total Population:	1,400,000
2000 Total Households:	571,457
2000 Average Household Size	2.39
1989 Median Household Income:	\$28,595
1989 Per Capita Income:	\$14,912

Frequency

- 2 one-day events/year for the public & 2 municipal collections in conjunction with public events.
- April 2001: Wednesday 4 p.m. – 9 p.m. (public)
- August 2001: Saturday 9 a.m. - 3 p.m. (public)
- One-day collection collections

Participants

- Residents
- Small businesses and municipal buildings.
- Businesses with large numbers of computers referred directly to processor.

Program Age

- 12 months
- Program began summer, 2000
- 3 events to date.

Program Operator

- Municipal or regional authority

Transporter

- Private company

Materials Accepted

- Computer monitors
- Computer hardware
- Computer peripherals
- Cell phones for Motorola's Donate-A- Phone program

Program Funding Sources

- Budget

Continued on next page.



Cuyahoga County, Ohio - Continued

Set up Costs

- \$15,000 - \$20,000
- Majority of cost for advertising and equipment rental
- August 2001 equipment rental included eleven 53-foot trailers, forklift, grad-all (\$2,200), fans to vent building and traffic cones.
- Grad-all is 4WD with boom and forks. Can lift pallet or skid from truck. Otherwise need chains to unload equipment from trucks.
- Advertising included 60 second radio spots on different types of radio stations (\$7,574), flyers in churches, stores and public schools, news releases (free exposure), assistance from municipal governments, print ads, cable television stations.
- County provides communities with gaylords. Communities asked to palletize equipment in gaylords (for stacking in trailers).

Annual Operating Costs

- \$33,000 for two events
- Transportation is substantial cost. Processor 65 -70 miles from county fairground.

Fees Charged

- No fees charged

Cost to Recycle

- No recycling fees
- \$325/ton (operating cost/tons collected)

Fate of Materials Collected

- Reuse or repair
- Processor is Computers for Education Program of Ohio, operated by not-for-profit Benedict Group within Ohio Prison System. Program refurbishes and de-manufactures, depending on speed and condition of machine.



Case Study

Jackson County, Illinois - Rural Collection Program

Background

The Jackson County, Illinois Health Department (JCHD) felt that it was important to provide citizens with an environmentally-sound way to rid themselves of unwanted electronic equipment. But situated in rural southwestern Illinois and operating with a modest budget to match, they were not sure that they could successfully collect enough electronics to make a special event worthwhile or that they would be able to find vendors to affordably transport and process the equipment. Nevertheless, it was decided to give it a try.

Vendor

A Request for Qualifications & Proposals was sent out to identify potential vendors and four firms responded: more than had been expected. One of these companies, System Service International (SSI, Lombard, IL), said that it would accept a very wide range of equipment and with the exception of televisions, for no charge. It would not, however, provide site staffing or transportation. SSI was selected as the processor and the decision was made to proceed.

The Program

In order to control costs, the decision was made to exclude televisions from the program.

In order to make the collection available to schools and units of local government, the collection was held on both a Friday, specifically targeting these entities, and a Saturday to serve the general public and businesses.

Businesses were required to register prior to the collection.

Each participant was given a copy of the County's recycling directory, hopefully resulting in an increased awareness about the County's other recycling efforts. The collection generated some good publicity for the County, as well. JCHD anticipates sponsoring an annual collection to provide a continuing outlet for residents to recycle their electronics. Improvements being considered include accepting televisions, scheduling deliveries by larger generators, such as schools, and possibly arranging collection of some electronics ahead of time.

Participation

The event attracted 175 participants with over 40,000 pounds of used electronics. More than half of the equipment received was from local school districts that had been storing computers and monitors for years.

Operating Cost

A total of \$2,900 was spent on the collection, including \$700 on transportation, \$750 for labor, pallets and gaylords, and \$800 on advertising. At a cost of \$145/ton, JCHD was



satisfied that a high budget wasn't needed to keep a rural community's electronics out of the landfill.

Staffing

While SSI had provided on-site personnel at Chicago-area collections, it was unable to do so because of Jackson County's distance away. JCHD felt that with proper planning, it could adequately manage the collection-site without having the vendor present.

JCHD supplied two staff members to unload vehicles and oversee the collection, plus an additional two employees on Saturday to survey participants. As an incentive to have community service workers assist in the collection, the local probation office agreed to offer double credit for the hours worked during the collection. This strategy netted three (3) additional workers on Friday and eight (8) on Saturday.

In addition, one recycling center forklift operator and one laborer were utilized throughout each day.

Finally, a local trucking company was hired to transport the material the 348 miles from the collection-site to the processor, at a rate of \$1.02/mile: a total of \$355.

Collection-site

The City of Carbondale agreed to allow JCHD to use a public parking lot next door to a recycling center and visible from a major regional highway. This proved to be an ideal location for the collection.

For more information, contact:

Bart Hagston, Recycling Coordinator
Jackson County
PO Box 307
Murphysboro, IL 62966

Phone: 618-684-3143
recycle@jchdonline.org



Jackson County, Illinois

Collection Method

- Special event

Collection-site

- Recycling Center

Amount Collected

- 15-20 tons/two-day event
- 15,000 - 20,000 lbs/day

Participants

- Residents
- Small businesses and municipal buildings

Program Operator

- Municipal or regional authority
- County operates program, but contracts with processor

Materials Accepted

- Computer monitors
- Computer hardware
- Computer peripherals
- VCRs
- Contractor at prior event took almost all types of electronic equipment, except televisions.
- Selecting contractor for this year's collection. Not sure what accepting yet.

Initial Funding Sources

- Government

Set up Costs

- \$1,000 - \$5,000
- Just under \$3,000 for first collection.

Fees Charged

- No fees charged

Fate of Materials Collected

- Processor last year refurbished and resold some units, demanufactured some for component resale, and broke down rest (glass, plastics, metals) for recycling.

Demographics

2000 Total Population:	59,612
2000 Total Households:	24,215
2000 Average Household Size:	2.21
1989 Median Household Income:	\$27,109

Frequency

- 1 two-day event/year
- 2 days/year

Program Age

- 9 months
- October 2000

Transporter

- Municipal or regional authority
- Last year paid trucking company to take loads to processor in Chicago

Program Funding Sources

- Budget

Annual Operating Costs

- \$1,000 - \$5,000
- Cover costs through recycling fees paid to County by privately-owned landfill
- Pay recycling center to use their labor, fork lift, gaylords and pallets
- This year expect costs to go up significantly.

Price Paid to Recycle

- \$145/ton



Chapter 2 - Ongoing Collection Program



An ongoing collection program is one that is operated on a regular and predictable schedule: for example, the first Saturday of every month, every day that the recycling center is open, etc. Access to these programs often mimics the hours that regular recycling is available.

1. Why Hold an Ongoing Collection Program vs. Another Method?

If you have an ongoing recycling collection center or a permanent household hazardous waste collection program, an ongoing electronics collection program can be a relatively straightforward addition to your program.

If you already have a collection recycling center or a permanent household hazardous waste collection program, an ongoing program is an appropriate addition to your program.

If you don't have an ongoing recycling collection program or permanent household hazardous waste facility, and you don't have a sponsor or other organization to partner with that can provide a regular collection location, then an ongoing collection program may not be the best-suited selection for your community.

Ongoing collections advantages include:

- ☞ The second highest participation rate by weight of materials.
- ☞ Natural as an "add-on" to current collection recycling collection or household hazardous waste program.
- ☞ Extended opportunities for participation.
- ☞ Excellent opportunities for public education.
- ☞ Very flexible model with many variations.
- ☞ The opportunity to thoroughly explore different partnerships and funding strategies.

If you have already tried a one-day electronics collection program and it has worked well, the next step might be to hold the event more often - once a month, for example – and make it into an ongoing program.



2. Variations to the Approach

There are a wide variety of models of ongoing collection programs. The most common strategy, over 80% of programs, is as an add-on to an ongoing recycling collection program.

Other models include:

- ☐ Charity operated and hosted.
- ☐ Electronics recycler operated and hosted.
- ☐ In conjunction with permanent household hazardous waste collection programs.
- ☐ At transfer stations, landfills and DPW yards.
- ☐ Electronics manufacturer offers a mail-back program.

Local electronics recycler offers ongoing collection

In some cases electronics recyclers offer residents of their community or region the opportunity to bring electronics directly to their facility for recycling. Sometimes a fee is charged or an appointment may be required. It is a wonderful service to be able to promote to residents. This can replace the need for a locally managed program. There are several examples of such programs in New Jersey. Some recyclers that offer this program include: HessTech, LLC in Edison, NJ and NewTech Recycling, Inc. in Bridgewater, NJ.



If there are electronics recyclers in your area, consider contacting them about offering such a program. Be sure to do the same type of due diligence that you would have done to select a vendor, however. Promoting an opportunity to residents, and possibly small businesses, that proves to be a sham recycler or environmental polluter when you could have known about such potential problems is obviously a dangerous strategy for any government to use.

Wake County, North Carolina

Local reuse/charitable organization offers ongoing collection at its facility or at a regularly scheduled collection location

Several charitable organizations accept working computers and televisions on a regular basis or would be willing to cooperate with you in developing a program. In Massachusetts, there are several examples of charities working collaboratively with municipalities to divert working or repairable computers and televisions. Some of these examples include chapters of Salvation Army and Goodwill Industries. In Mercer County, New Jersey, a waste exchange operates an ongoing-collection program.



In addition to taking advantage of storefront donations, some charities have regular dates that trucks are located in a mall parking lot, or other similar location, to accept donations. For example, in Longmeadow, Massachusetts, Goodwill Industries of the Greater Springfield/Hartford area has a donation truck parked in a suburban mall parking lot every Saturday. The truck accepts donations of all types of materials and is able to provide a donation receipt if the resident requests.

Transfer station or solid waste disposal facility

If you are a host community for a transfer station, landfill or waste-to-energy facility, contact the company that owns and operates the facility and ask them to accept electronics for recycling. The reasons that you have to offer are quite compelling to the private sector:

- Great public relations with the community.
- Excellent way to maintain good working relationships with the municipality. This, as you know, is significant in terms of permits and oversight.
- In many host community agreements there are provisions for “give backs” to the community. Ask for this to be one of them.
- Decrease their potential liability as a hazardous waste site or failing other environmental limits by eliminating the second highest source of lead in municipal solid waste.
- In some states, solid waste facility siting and operating permits require community environmental support or recycling activities offered to the public. An electronics-recycling program is likely to, at least, partially satisfy such a requirement. If you are not sure if there is such a requirement in your state, contact your state environmental agency.

The same rationale applies if you are not a host community, but rather a community with a long-term contract for solid waste disposal. Request that the facility add collection electronics recycling. It may just work – at no additional cost. Or, the company might be willing to amend its contract to adjust the recycling fee to include the new service. When added to a recycling fee, it may amount to a penny or less per ton. It saves the community from having to be directly involved, provides a tremendous public service, and the cost will be absorbed in a line item that exists; thus, it is not a new program cost to the community and is likely to be a simple political sell.

If there are many municipal contracts for waste disposal, you may be able to secure the facility’s cooperation for all of the contract communities. Speak with some of your “disposal partners” and attempt to present a multi-community request. This can be quite powerful.

In Chicopee, Massachusetts, Waste Management, Inc. is offering electronics recycling to residents and businesses from Chicopee at the landfill and transfer station that it owns and operates. Chicopee reimburses Waste Management for the fees paid to the recycling vendor, but Waste Management does not pass through any of the administrative or management costs.



Electronics manufacturer offers a mail-back program

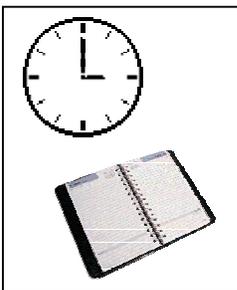
Electronics manufacturers are becoming more involved in the recycling of their equipment. There is a description on page 50 of the Appendix of current manufacturer programs (be aware that this information is subject to change). Some companies, like Hewlett-Packard and IBM, rely on mail-back, others on leasing, such as Dell, and still others, such as Compaq Computers, are partnering with electronics recyclers. In addition, it is anticipated that the NEPSI project will result in additional manufacturer involvement in management of electronics, including expanded take-back systems and partnerships.

A Program Consideration Pertaining to Reuse

Special event programs are able to have charities and reuse organizations on-site during the event to cull and separate the reusable or repairable materials before the recycler has access to them. For ongoing collections, the strategy of setting aside electronics with potential for reuse can still be used, but it will likely need to be adjusted. Municipal or private sector program staff can be trained to sort likely reusable materials and to put it aside in appropriate containers or packaging for collection by a charity or remanufacturer. This may require two vendor pick-ups: reusable and not reusable materials.

In Washtenaw County, Michigan; Washington County, Oregon; and Tallahassee/Leon County, Florida, volunteers and staff are allowed to take electronic equipment that citizens or businesses bring to the collection. However, these programs report that this represents less than one percent of the material that comes in.

3. Frequency & Hours of Operation



Deciding how often to offer the collection program will be one of the many decisions that will have to be made. The location of the collection program is likely to influence the frequency. For example, if the location is at your regular recycling center, this will probably dictate one of two extremes:

- ☞ At all times that the Center is open.
- ☞ At hours that the Center is not generally open.

In the first case the Center has adequate staffing, the physical space to dedicate to gaylords or other packing/sorting materials, traffic patterns, and demand.

In the second case, the Center is small with staff already strained with responsibilities, conflicting traffic patterns, and inadequate demand to warrant the additional pressure on resources. This is the case at the permanent Household Hazardous Waste Collection facility in Conway, Massachusetts. The site is very small and doubles as both the town transfer station and as a regional hazardous waste collection-site for special wastes: oil, paint, batteries, mercury and electronics. Even though the same person staffs the transfer station and the hazardous waste program, the hazardous waste access is only



every other Sunday afternoon for two hours, while the transfer station is not open at that time and is open at additional times during the week – and even on Sunday.

As another example, if the collection is offered at a parking lot, the owner of the site will probably determine how often and when the site is available. Or, if it is held in conjunction with a charitable organization or other entity, their needs will likely define the frequency.

If another organization or entity is hosting the ongoing event, you may request a certain pattern or accessibility, but in reality they will decide the conditions of access.

If you are in a part of the country affected by winter, you may not want to offer your program during the winter months. In your promotional materials, be sure that the public is aware that it is an eight-month a year program.

4. Case Studies

- 🗑️ Computer Recycling at a Household Hazardous Waste Facility – Oneida & Herkimer Counties, New York
- 🗑️ Electronics Recycling at a Town Transfer Station – Mansfield, Connecticut
- 🗑️ Regional Collection Facility – Franklin County, Massachusetts



Case Study

Oneida & Herkimer Counties, New York –

Computer Recycling at a Household Hazardous Waste Facility

Collection-site

The Oneida-Herkimer Solid Waste Authority has dedicated part of its 1,000 square foot household hazardous waste (HHW) collection center to accepting used computer equipment and monitors. The program is staffed daily by one full-time employee who also assists with HHW collection and residential convenience station operation. The New York State Department of Environmental Conservation operating permits for the HHW facility allowed for the collection of computers and therefore no permit modifications were required.

Vendor

The Authority wanted to be sure that the electronics recycling company was handling the material properly. The Authority made site visits to several electronic recycling companies to understand the companies' recycling processes and to be certain that the companies had adequate capacity to handle the anticipated volume from the Authority's program. As a result of this process, both Waste Management and Recycling Products, Inc. (WMI) in Schenectady and SEER in Buffalo (Secure Environmental Electronics Recycling of New York, LLC) were selected. However, the Authority made the decision not to enter into a contract with either of the recycling firms. This decision was based on the perceived lack of need for a contract and because the Authority wanted to have maximum flexibility in recycling options.

Current Vendor Arrangements With WMI & SEER

Material/Service	WMI - Price	SEER - Price
Computer Monitors/CRTs/Terminals – 17 inch and less	\$ 7.90 per unit	\$ 7.15 per unit
CPU / Server	\$0	\$2/per unit
Laptop	\$0	\$2/per unit
Printers and other electronic equipment	\$0	\$ 0.23 per pound

Figure 53: Vendor Pricing Arrangements - Oneida & Herkimer Counties, New York



The Program

In April 2000 the HHW facility began accepting computer equipment from residents at no charge and from small businesses for a fee of \$9.50 per monitor. Televisions are not accepted because the Authority does not feel it has determined the best way to manage larger CRT units.

Businesses are required to complete a manifest for their computer monitors. Information on the manifest includes brand name, model number and serial number for each monitor delivered. This information is provided to the electronics recycling company upon shipment. Generators are required to submit a C7 Notification Form to the New York State Department of Environmental Conservation that states that they are shipping material that will be dismantled for recycling.

One challenge faced by the program has been *scheduling* Collections from businesses and schools. On occasion businesses have shown up unannounced with large volumes of computers that are not manifested or properly documented. This can be very difficult for staff to handle if the timing is poor.

Operating Costs

Oneida-Herkimer's overall annual budget for HHW is \$125,055. The Authority believes that the labor and advertising share of the overall budget that can be attributed to the electronics-recycling program represents a very small fraction, perhaps 5%. In 2000, the computer equipment recycling/processing and trucking costs were \$8,260. Once these costs and the computer recycling fees revenue from businesses is considered, the Authority estimates that the total electronics program costs less than \$10,000/year.

Equipment

The Authority requires that businesses deliver computer equipment in gaylord boxes (4' x 4' x 4' cardboard boxes). It provides the gaylords and pallets to businesses at no charge. The Authority does not need to purchase these materials because they come in to the recycling center from local companies to be recycled: which they are.

Staffing

The residential convenience station and HHW collection facility has one full-time employee. That person spends approximately 5% of his time helping to unload and segregate electronics.

Publicity

All of the HHW, electronics, yard waste composting and general recycling outreach are done together through printed brochures, a web site, and an Earth Day insert in the local paper. The total cost for outreach is about \$15,000 per year.



Authority's Recycling/Disposal Procedure:

1. Inventory and sort all computer equipment being recycled or disposed of.
2. Place all computer monitors and cathode ray tubes (CRTs) in gaylord cardboard boxes (4' X 4') Gaylord boxes may be obtained at the Authority's Household Hazardous Waste Collection Facility on Leland Ave in Utica. (Contact the Authority's office for availability of boxes)
3. Place all other computer equipment together in a separate gaylord box.
4. This program only includes computer monitors, CRTs, CPUs and other computer equipment. Place all printers, fax machines and copiers in the trash.
5. If you have a small number of computer monitors and computer equipment, you may deliver them loose.
6. Complete the attached Shipping Manifest Form or only the computers monitors and cathode ray tubes (CRTs) in each gaylord box being delivered to the Authority's facility.
7. A fee of \$ 9.50 will be charged for each computer monitor (CRTs) up to a screen size of 17 inches. Please contact the Authority office for prices on larger CRTs and television sets.
8. Complete the attached "C7 Notification Form" and submit to the NYS Department of Environmental Conservation in Albany.
9. Contact William Rabbia or David Lupinski at the Oneida-Herkimer Solid Waste Authority offices (733-1224) to schedule a delivery date and time.
10. Deliver computer monitors, CRTs and other computer equipment on the scheduled day along with the appropriate fees to the Authority's Household Hazardous Waste Collection Facility on Leland Ave in Utica.



**Household
Hazardous
Waste Collection
Facility**

For more information, contact:

David Lupinski, Recycling Director
Oneida-Herkimer Solid Waste Authority
1600 Genesee Street
Utica, NY 13502

Phone: (315) 733-1224



Oneida and Herkimer Counties, New York

Collection Method

- Ongoing collection

Collection-site

- Recycling Center

Amount Collected

- 24 tons/year (2000)
- > 185 lbs/day

Participants

- Residents
- Small businesses

Program Operator

- Municipal or regional authority

Materials Accepted

- Computer monitors
- Computer hardware
- Computer peripherals

Initial Funding Sources

- Government

Set up Costs

- < \$1,000

Fees Charged

- \$9.50/monitor (businesses and institutions)

Fate of Materials Collected

- Demanufacturing
- Remanufacturing
- Recycler
- Reuse or repair

Demographics

2000 Total Population:	299,896
2000 Total Households:	122,407
2000 Average Household Size:	2.45
1989 Median Household Income:	\$32,495
1989 Per Capita Income:	\$11,285

Program Age

- 12 - 36 months

Transporter

- Private contractor

Frequency

- 5 days/week (weekdays)
- 260 days/year

Program Funding Sources

- Budget

Annual Operating Costs

- > \$10,000

Cost to Recycle

- \$600/ton (\$7.50/monitor)



Case Study

Electronics Recycling at a Town Transfer Station - Mansfield, Connecticut

Background

In September 1999 the Town of Mansfield was awarded a \$10,000 grant from the Connecticut Recyclers Coalition to establish a model television and computer recycling collection at the town transfer station.

Start Up

Due to state solid waste facility siting requirements, it was necessary to obtain a solid waste permit modification from the Department of Environmental Protection. This was accomplished without much effort and the program was able to begin in early December 1999.

Vendor

The Town arranged for Envirocycle (Hallstead, Pennsylvania) to do the transporting and recycling of the collected materials. At that time Envirocycle already had a contract with the Connecticut Resources Recovery Authority for several special events and agreed to extend the 17.5 cents per pound price to the Town of Mansfield. Envirocycle also agreed to offer these terms beyond the contract's termination date.

Financing

The Town of Mansfield's trash and recycling costs are paid entirely through user fees that are dedicated to an enterprise fund. Consequently, it was necessary to establish fees for electronics collection to help defray the cost of recycling.

In order to determine an appropriate fee, Mansfield started the collection program without any fees. After an adequate sample of materials had come in, they weighed and measured three pallets: one pallet containing large televisions, one containing computer monitors and one containing computer peripherals. Based on this sampling, the Town's Solid Waste Advisory Committee proposed to Town Council the establishment of a temporary rate structure – \$5.00 for computers, peripherals and televisions (19" or smaller) and \$10.00 for large screen televisions or consoles (20" and up). Town Council approved the rates and after a few more months of data, the Committee evaluated the rate structure and kept the fees the same.

Collection-site

The materials are collected in a closed tractor-trailer container with a roll-up door and translucent ceiling. It is located in plain site of the transfer station attendant. During public hours, residents come to the entrance shed, pay the attendant, and then place the electronics inside the container.

Within the tractor-trailer are three labeled locations: a pallet for large televisions, a gaylord box on a pallet for computer monitors, and a gaylord box on a pallet for computer peripherals.



Staffing

Two full-time employees who are responsible for operating the bulky waste landfill and the solid waste transfer station staff the transfer station. This project has required approximately two to three hours per week handling electronics. This includes preparing full pallets for shipment, moving the pallets to temporary storage, and being sure that the right materials are in the correct container. About every six weeks the Envirocycle truck arrives for collection. It takes one transfer station attendant a half hour to load 10 pallets onto the Envirocycle truck with the town's forklift.

Set up Costs

The Town's set up costs have been:

Type of Cost	Estimated Cost	Funding Source
Transfer Station Permit Modification	\$250	Town's Enterprise Fund
Site Preparation	\$2,500	Public Works
Initial Container Rental	\$575	Grant
Container Purchase	\$5,676	Grant
Signage for Collection Area	\$123	Grant
Bituminous Concrete	\$598	Grant
Publicity	\$464	Town's Enterprise Fund
Total	\$10,186	

Figure 54: Set up Costs - Mansfield, Connecticut

Volume

In the first year, the town collected 27,938 pounds of electronics. As of October 2001, 58,205 pounds of electronics have been collected.

Cost to Operate Program

For the first year of the program, there was \$4,889 in recycling fees paid to Envirocycle. The town recovered \$1,281 of that expense through fees. The balance of the program costs, \$3,608, was covered through the solid waste enterprise fund. In fiscal year 2001, Mansfield budgeted \$7,500 for ongoing computer and television recycling. The actual cost for recycling was \$6,809.76. The town recovered \$1,784 of that expense through fees.

For more information, contact:

Virginia Walton, Recycling Coordinator
Town of Mansfield
4 South Eagleville Road
Storrs, CT 06268

Phone: (860) 429-3333

Email: waltonvd@mansfieldct.org



Mansfield, Connecticut

Collection Method

- Ongoing collection

Collection-site

- Recycling Center at transfer station

Demographics

2000 Total Population:	20,720
2000 Total Households:	5,291
2000 Average Household Size:	2.4
1989 Median Household Income:	\$38,591
1989 Per Capita Income:	\$13,502

Amount Collected

- 10-15 tons/year

Participants

- Residents
- Small businesses and municipal buildings

Program Operator

- Municipal or regional government/authority

Materials Accepted

- Computer monitors
- Computer hardware
- Computer peripherals
- Televisions
- VCRs

Initial Funding Sources

- Grant
- Government

Program Funding Sources

- Fees
- Budget
- User fees cover ~ 1/3 recycling cost
- Remainder from solid waste budget which is covered through user fees for residential trash and recycling

Set up Costs

\$5,000 - 10,000

- Demonstration grant from Connecticut Recyclers Coalition
- Grant covered cost of preparing area, purchase of custom modified truck body, and signage
- Advertising costs came from recycling budget

Annual Operating Costs

- \$5,000 - \$10,000

Frequency

- 3 days/week
- Tues, Thurs, Sat
- 156 days/year

Program Age

- December 4, 2000

Transporter

- Electronics recycler

Cost to Recycle

- \$350/ton

Continued on next page.



Mansfield, Connecticut - Continued

Fees Charged

- \$5/computer component (not keyboards), televisions and monitors with 19" or less screens
- \$10/CRTs >19"
- Have pay-as-you-throw trash system. Residents accustomed to paying at transfer station and for curbside collection.
- All solid waste/recycling costs paid by user fees (solid waste fund)
- Have to charge for recycling electronics to help cover costs.

Fate of Materials Collected

- Demanufacturing
- Recycler
- Reuse or repair
- Non-profit for resale
- Contractor is Envirocycle.



Case Study

Franklin County, Massachusetts - Ongoing Collection Program

The Programs

In addition to offering periodic special event collections, approximately ten of the twenty-one towns in Franklin County offer ongoing electronics collections at their transfer stations. The towns themselves decide whether to offer this service, and the towns pick up the cost through fees and/or their own solid waste budgets.

Fees and Materials

Most towns are charging \$5 per CRT, but some are not charging a fee. The Town of Orange, for example, charges \$8 per monitor and \$10 per television. The list of accepted materials typically includes all computer equipment and peripherals (printers, scanners, fax machines), VCRs, stereos, radios and telephones.

Collection and Transportation

One town uses a roll-off container for collecting used electronics, while most towns have a shed of some sort on the premises where residents leave their equipment. When a sufficient amount has accumulated, the transfer station attendants then load the equipment into one of their trucks and transport it to the nearby regional facility (provided by the state contract) located at the University of Massachusetts in Amherst.

For more information, contact:

Jan Ameen, Executive Director
Franklin County Solid Waste Management District
51 Wells St.
Greenfield, MA 01301

Phone: (413) 772-2438
Email: fcswmd@crocker.com



Franklin County, Massachusetts

Collection Method

- Ongoing Collection

Collection-site

- Transfer stations

Amount Collected

- Approximately 5-10 tons/year
- Uncertain as each town hauls directly to University of Massachusetts facility

Participants

- Residents

Program Operator

- Municipality

Materials Accepted

- Computer monitors
- Computer hardware
- Computer peripherals
- Televisions
- VCRs
- Fax machines, portable phones, stereos

Initial Funding Sources

- Grant

Set up Costs

- \$1,000 - \$5,000

Fees Charged

- 10 towns currently charge \$5/CRT and \$1/everything else
- 6 towns do not charge.

Price Paid to Recycle

- \$200+/ton

Fate of Materials Collected

- Demanufacturing
- Remanufacturing
- Recycle
- Reuse or repair
- Non-profit for resale
- Envirocycle is contractor

Demographics

2000 Total Population:	71,535
2000 Total Households:	29,466
2000 Average Household Size:	2.38
1989 Median Household Income:	\$30,350
1989 Per Capita Income:	\$13,944

Frequency

- 1-2 days/week (varies by town)
- 78 days/year

Program Age

- Fall 1999

Transporter

- Municipality

Program Funding Sources

- Fees
- Budget

Annual Operating Costs

- < \$1,000



Chapter 3 - Curbside Electronics Recycling

A curbside electronics collection program is a dedicated curbside bulky waste program.

1. Why use curbside collection vs. another model?

As with any other recyclable, the public generally prefers curbside. A drawback to curbside collection, however, is that the material is generally of poor quality by the time it reaches a processor and therefore has less potential for reuse/repair. Materials left at the curb get wet and may not be handled as carefully as material at an ongoing program or special event. In larger cities, curbside may be necessary. But in medium-sized communities, an ongoing collection program or special event may be better. The Massachusetts Department of Environmental Protection notes that the materials collected from curbside programs in three of the state's major cities are known as the poorest quality material to come into the state contract recyclers.

2. Variations on curbside

As with other curbside recycling programs, there are two basic approaches: municipal or private sector.

Municipal Curbside Collection

If your community offers curbside bulky waste collection, adding electronics to that program can be simple. Some communities, like Springfield, Massachusetts for example, have decided to do this by appointment – you call the Department of Public Works (DPW) and say that you have two televisions and a computer (for example) for recycling. You are told what day to put the materials outside and then they are picked-up by municipal employees and brought back to a designated electronics sorting and packing area. Some programs, like the curbside program in Medford, Massachusetts, require that a sticker be purchased first and placed on the items. In Medford, stickers can be purchased at City Hall and at local retail outlets.

Or, electronics can be added to regularly scheduled bulky waste days and either the truck attendants are trained to separate the electronics from other bulky material - i.e., a part of the truck is segregated by welding in a panel for collecting the electronics – or the electronics are sorted out at the transfer station.

In either case, the public needs to be educated and trained to manage their electronics as bulky waste. This may require that the trash collectors be trained to leave behind electronics when they see them at the curb and to put a sticker on them, or leave a flier, explaining why the materials were left behind, and how to deal with them.

Identifying televisions and computers and other large devices should not present a problem in this regard, but smaller items like phones and modems are likely to be disguised in the trash.



Private Sector Curbside Collection

In 19% of the curbside electronics programs, a private hauler rather than the local government operates the program. If the hauler is already under contract to provide bulky or solid waste curbside service, then a contract amendment might be necessary.

The hauler may ask the government to help set up and promote the program. You may also be asked to absorb the cost of recycling. The hauler, however, may want to select the recycler that it works with and to contract separately with them. Still, be sure to determine that the vendor meets your standards.

Having the hauler contract with the recycler may have its advantages. Once the hauler is offering curbside electronics recycling for your community, it may offer it in other contract communities as well – thus becoming a larger source of material and possibly securing a better rate. Make sure you can find out about this and take advantage of it. Or, you could organize a regional approach among fellow contract communities.

When you approach the commercial hauler, be sure to have your research done about the hazardous waste and other legal implications for a hauler to collect and handle used electronics. Be prepared to explain to an attorney why there is no RCRA barrier to their handling electronics from households. If there is an applicable Universal Waste Rule in your state, reference that as well.

Charity In-Home Pick-Up

Some charities, for example Goodwill Industries in some communities, offer in-home pick-up for working electronics. Find out if charities in your area offer this service and, with their permission, publicize it or recommend it when you receive calls from residents about what to do with old computers and televisions. It is important that you make clear that the charity is only interested in working systems. Otherwise the charity is put in the position of dealing with material that has to be managed as a recyclable: an expensive proposition. Be prepared to address the “what if” element with the charity.

Charging a Fee

Charging a per unit or per CRT fee for curbside collection is relatively common. Thirty-five percent of the curbside programs require a fee, and generally in the form of a sticker purchased at City Hall or the DPW. Where a sticker is required, items will not be picked up unless the stickers are obvious. Some programs worry that stickers will impede the reuse potential or recyclability of the electronics. Usually this is not the case. It is worthwhile, however, to check with the recycler or reuse organization to determine if it has any restrictions or specific requirements about where on the unit to place the sticker. See page 47 of the Appendix for comments from the electronics industry pertaining to this issue.

While the survey did not reveal any examples of this, another approach to financing of curbside programs would be to add a fee into annual trash bills – as happens in some parts of the country. Unlike the sticker approach, or a fee per unit at a ongoing collection



or special event, this is not a *user* fee, but rather a program-wide fee where the program costs are spread out across the entire community. Naturally, you need to decide for your own community what will work and what makes sense.

3. Surveying Participants

Curbside programs are generally not set up to survey participants as one might at an ongoing or special event collection program. You should, however, be sure that whoever is doing the actual curbside pick-up (whether it be municipal, private, or charitable) is keeping records of what is collected in your community and in a format that will enable data to be effectively reported to you. The hauler becomes your intermediary and you have to rely on it for data collection and reporting.

4. Breakage

Perhaps surprisingly, breakage of CRTs has not proven to be a problem for curbside collection programs. CRTs are very difficult to break when they are still in their original housing. The faceplate is actually multiple layers of glass and is quite thick. The CRT is fragile on the sides and at its neck: all of which is protected by the housing.

Nevertheless, most curbside programs do not simply throw the CRTs in with other bulky materials. Instead, they are either collected separately or the truck is able to segregate the electronics from the other bulky waste. This saves on the need to separate the electronics from a complex mix of materials, much of which will go to scrap metal dealers.

5. Case Studies

- ☞ Springfield, Massachusetts – Curbside, Special Event & Ongoing Collection
- ☞ Fremont, California - Curbside, Special Event & Ongoing Collection



Case Study

Curbside, Special Event & Ongoing Collection Program – Springfield, Massachusetts

Background

The City of Springfield provides residents with a bulky waste curbside pick-up service through its Department of Public Works (DPW). The DPW has funding and equipment to operate five two-person crews, four days a week. Adding used electronics to the list of materials served by curbside pick-up was a simple and straightforward undertaking.

The Program

The DPW's goal is to make the curbside collection program as convenient as possible for residents. Therefore, this is an appointment-based program. Residents call to set up an appointment and then set their bulky waste at the curb. There is no fee for this service.

In addition, Springfield holds six household hazardous waste collections each year, at which used electronics are accepted. While it is not advertised, electronics are also accepted on an ongoing basis at the municipal transfer station. Further, Springfield has access to two regional charity hubs that accept working computers and televisions from residents.

Equipment

The DPW uses two large open body tailgate trucks for appliances, electronics and metal items (bikes, gas grills, etc.) destined for recycling. They average about 200 stops per day.

Initially, Springfield was renting a trailer from the processor, Electronicycle, for consolidation of electronics and trucking. After research, however, the DPW found that it would be more economical to purchase a used 48-foot trailer to dedicate to this purpose. The cost was \$4,900.

Funding

When the Massachusetts CRT disposal ban took effect in April 2000, Springfield applied for and received a Department of Environmental Protection grant to cover the city's recycling fees for 2000. During the grant period, the DPW was required to transfer the televisions and computer equipment to a regional electronics consolidation-site in a neighboring community. Since January 2001, Springfield has been responsible for all recycling fees. With this change, the DPW began consolidating the used electronics at its own facilities in order to get the \$200 per ton rate set by the state contract for shipments over one ton.

Overall costs for the electronics-recycling program include the electronics-recycling fee and the cost of trucking the materials to the processing facility in Gardner, Massachusetts. Each trip takes five hours round trip and costs about \$150 per month for labor alone.



The current total cost of the electronics-recycling program is approximately \$30,000 per year. Springfield uses unrestricted funds it receives from the Massachusetts Municipal Recycling Incentive Program grant program.

Volume of Material

Approximately 150 tons a year of used electronics are being collected in Springfield. The DPW roughly estimates that over 90% of the material comes in through the curbside program: representing approximately 5% by weight of the total amount of bulky waste picked-up, and thus, perhaps, 5% of the labor.

For more information, contact:

Gregory Superneau
Environmental Coordinator
City of Springfield
70 Tapley Street
Springfield, MA 01104

Phone: (413) 787-6075

Email: gsuperneau@largo.ci.springfield.ma.us



Springfield, Massachusetts

Collection Method

- Curbside
- Special event

Collection-site

- Curbside
- Special event: landfill

Amount Collected

- 150 tons/year

Participants

- Residents
- Small businesses
- Municipal buildings

Program Operator

- Municipal or regional authority

Materials Accepted

- Computer monitors
- Televisions

Initial Funding Sources

- Grant
- Government
- State paid disposal costs for first year

Set up Costs

- < \$1,000

Fees Charged

- No fees charged

Fate of Materials Collected

- Recycler

Demographics

2000 Total Population:	152,082
2000 Total Households:	57,130
2000 Average Household Size:	2.57
1989 Median Household Income:	\$25,656
1989 Per Capita Income:	\$11,584

Frequency

- Curbside: 4 days/week (Tu, Wed, Thurs, Fri)
- Special events: 6 one-day events/year (Sat)
- 214 days/year

Program Age

- 12 - 36 months

Transporter

- Electronics recycler
- Investigating purchase of trailer and providing transportation

Program Funding Sources

- Grants
- Budget
- Some state funds used (earned from curbside recycling program and some tax funds).

Annual Operating Costs

- Transportation - \$3,000
- Disposal - \$30,000

Price Paid to Recycle

- \$500/ton



Case Study

Curbside, Special Event & Ongoing Collection - Fremont, California

Background

Until recently, used electronic items had been picked up by Browning Ferris Industries (BFI) as part of the regular trash service contracted with the city, and then landfilled. In spring 2001, Cal/EPA issued a clarification of the state environmental code that effectively lifted the hazardous waste management exemption for households and Conditionally Exempt Small Quantity Generators. This clarified that effective July 1, 2001 used electronics from all sources, such as CRTs that fail the federal test for hazardous waste toxicity, could not legally be disposed at municipal solid waste landfills or incinerators; in effect, mimicking the Massachusetts solid waste disposal ban but by regulatory interpretation. A copy of this interpretation is found in the Appendix on page 14.

As a result of this decision, BFI (and all other solid waste handlers in California) has been forced to begin separating electronics from bulky item pick-up and to arrange for it to be transported to an electronics processor.

Funding

In the case of Fremont, the processor that BFI uses is Harrison Metal Recyclers (HMR), of San Francisco. HMR charges BFI 26 cents per pound (\$520/ton) for CRTs and accepts other mixed electronics at no charge. For now, BFI is absorbing that cost. A portion of the monthly single-family garbage fee covers the cost of bulky-item pickups. As a result, Fremont residents have not noticed a change in service since the Cal/EPA clarification and Universal Waste regulations have been adopted.

The Program

The City of Fremont intends to serve its entire community with used electronics collection. It intends to provide access to single-family residents through curbside bulky waste collection plus referrals for donation and reuse. Access for multi-family residents will be a combination of one-day events, ongoing collection and referrals to charities and reuse organization. Finally, businesses will be served with a combination of referrals and collection. With its history of one-day electronics collection, curbside and referral services already in place, the city is negotiating with BFI to develop ongoing collection capability at one of its sites.

Curbside

The residential hauling contract that Fremont has had with BFI since 1994 includes a bulky item curbside pick-up service. Trucks run five days a week, and residents can call up to twice a year to arrange for this free service. This costs each single-family household in the city 78 cents per month. In 2000, 1,637 tons of material from the bulky collections was landfilled and 181.5 tons was recycled. In 2001, an additional 3 - 4 tons per month of electronics are expected to be recycled.



Special Event

In 2000 and 2001, Fremont's Earth Day activities included one-day collection of electronics. Eleven tons and 21 tons were collected in respective years. The city paid about \$15,000 for radio, television and print ads for Earth Day in 2001, and these ads all included mention of the electronics collection, among many other activities. At that time, HMR reused or recycled the wide range of electronics accepted at this event, at no cost. This may not be the case in the coming year.

For more information, contact:

Barbara Frierson
Environmental Specialist
City of Fremont
P.O. Box 5006
Fremont, CA 94537-5006

Phone: (510) 494-4672
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Fremont, California

Collection Method

- Curbside and special event

Collection-site

- Curbside
- Special event: public park

Amount Collected

- 30-40 tons/year

Participants

- Residents
- Curbside pickup only for single-family
- One-day events open to small businesses and municipal buildings

Program Operator

- Municipal or regional authority, private contractor, charity, OEM, electronics recycler, retail outlet

Materials Accepted

- Computer monitors
- Computer hardware
- Peripherals
- Televisions (not at collection events)
- VCRs
- All home electronics

Initial Funding Sources

- Government, customer garbage fees

Set up Costs for Local Government

- < \$1000 (does not include staff time)

Demographics

2000 Total Population:	208,000
2000 Total Households:	70,270
2000 Average Household Size:	2.96
2000 Median Household Income:	\$71,201

Frequency

- Curbside: 2 days/year
- One-day event on Earth Day.

Program Age

- 12 - 36 months

Transporter

- Hauler and electronics recycler

Program Funding Sources

- Budget

Annual Operating Costs

- ~\$20,000 (ditto)



Endnotes

¹ From "How Stuff Works," by Marshall Brain,
<http://www.howstuffworks.com/television1.htm>

² Black and white televisions and monochrome computer monitors do not have leaded glass and therefore do not present the same environmental and management issues that most CRTs represent. Often, therefore, they are not accepted at collection programs. Laptop computers do not have CRTs either. They do, however, have mercury lamps and rechargeable batteries, as well as printed circuit boards and lead solder.

³ "Cathode Ray Tube Manufacturing And Recycling: Analysis Of Industry Survey," by A. Monchamp, H. Evans, J. Nardone, S. Wood, E. Proch and T. Wagner, Spring 2001.

⁴ Characterization of Products Containing Lead and Cadmium in Municipal Solid Waste in the United States, 1970-2000, Franklin Associates, Ltd., Prairie Village, KS, January 1989, EPA/530-SW-89-015A.

⁵ The recent EPA Municipal Solid Waste in the United States: 1999 Facts and Figures Report indicates that electronics currently comprise approximately 1% of the solid waste stream. The report acknowledges, "it may underestimate generation . . . because of data limitations." Page 10. Further, many experts believe that over the next several years this figure will climb rapidly – possible to 3%; especially with the advent of digital television signals in 2006.

⁶ The ban applies to incinerators and waste-to-energy facilities.

⁷ Email Correspondence, Brooke Nash, Branch Chief, Municipal Waste Reduction Massachusetts Department of Environmental Protection, October 14, 2001.

⁸ Conversation with Robin Ingenthron, EnviroCycle, September 2001

⁹ An advance disposal fee is a system where the consumer pays a fee at the time of purchase for the purpose of covering the end-of-life recycling and management costs.

¹⁰ The 89% includes programs that refer residents and businesses to charities.

¹¹ Massachusetts bans cathode ray tubes from disposal in solid waste facilities. California has created a ban through a letter of interpretation (Appendix page 16). Several other states are actively considering legislation to create bans similar to the Massachusetts model.

¹² Union County, NJ, Demanufacturing Program-Semi Annual Report, Union County Utilities Authority, October 1, 1997-March 31, 1998

¹³ Cheryl Lofrano-Zaske, Principal Planning Analyst/Problem Materials Program, Hennepin County Environmental Management Division, Hennepin County, MN, presentation at EPR2, April 22-23, 1998



⁹ Conversation with Christine Beling, EPA Region I, August 2001.

¹⁵ “Cathode Ray Tube Manufacturing And Recycling: Analysis Of Industry Survey,” by A. Monchamp, H. Evans, J. Nardone, S. Wood, E. Proch and T. Wagner, Spring 2001

¹⁶ *Recycling Used Electronics: Report on Minnesota’s Demonstration Project*, Minnesota Office of Environmental Assistance, 2001, page 3.

¹⁷ *Ibid.* at 44.

¹⁸ Many communities are opposed to using prisoner labor from a policy perspective.

¹⁹ WasteCap of Lincoln, Computer Collection Event: Planning, Outcomes and Recommendations, July 2001, page 10.

²⁰ *Ibid.*

²¹ *Ibid.* at 16

²² E-mail message from Marilyn Rybak on January 16, 2002.

²³ WasteCap of Lincoln, Computer Collection Event: Planning, Outcomes and Recommendations, July 2001, page 36.

²⁴ “Curbside Collection Participation: Influences and Motivations,” by Rebecca Davio, Ph.D., *Resource Recycling*, August 2001, page 12 – 14.

²⁵ WasteCap of Lincoln Computer Collection Event: Planning Outcomes & Recommendations, July 2001, page 11.

²⁶ WasteCap of Nebraska provided significant advice in developing this list.

²⁷ Conversation with Robin Ingenthron, EnviroCycle, September 2001.

²⁸ All Case Studies reflect the observations, opinions and reporting of the program in question, and not that of NERC or EPA.

²⁹ Abridged from the full report “Delaware Citizens Computer Recycling Pilot Report”

³¹ WasteCap of Lincoln Computer Collection Event: Planning Outcomes & Recommendations, July 2001

