

## Section Two - Considerations For Any Collection Model

### Chapter 1 - Getting Started ~ *The Big Picture*

Once you decide to conduct an electronics collection, the natural next step is to determine the type of electronics collection program to develop. Making that determination will depend on many factors. The key questions that will direct your planning decisions are listed in checklist format below. Each item on this checklist will be further discussed in this chapter.

- Why are you beginning this program?
- What are you going to collect?
- Who will the program serve?
- What legal requirements must be satisfied?
- Who will manage the program?
- Are there social goals for the program?
- What will be the fate of the CRTs?
- What is your budget?
- What can be done to minimize costs?
- What are your data needs?

#### 1. Why Are You Beginning this Program?

In other words, what is motivating this new effort?

☞ **Is it a new state law, policy or regulation?** Several states have laws, regulations, or policies that prohibit the disposal of CRTs in the municipal solid waste stream – even from residential sources.<sup>11</sup>

☞ **Is it to increase your recycling rate?** States are under increasing pressure to meet recycling goals set by their legislatures. The U.S. Environmental Protection Agency has set a national recycling goal of 35% by 2005. Various State governments have also set recycling goals or are in the process of establishing new goals.

☞ **Is it to increase solid waste diversion?** Landfill capacity may be an issue in your region.

☞ **Is it to encourage reuse or charitable donation(s)?** Promoting reuse may provide a second life to equipment that is still functional. It may also address social needs by providing low-cost equipment to segments of the community that would not otherwise have access to computers. Reuse is a higher value on EPA's, and most state, solid waste hierarchies than recycling, landfilling or incineration for energy.

Many communities have an existing infrastructure of electronics reuse and perhaps recycling. Take care not to compete or work at cross-purposes with non-profit reuse



organizations and other outlets. You may wish to first catalog the extent of this infrastructure, and existing or potential non-collection methods that promote electronics reuse and recycling, before designing and implementing your own collection program.

☞ **Is it to remove toxics/heavy metals from the solid waste stream?** Diverting electronic equipment from disposal in an incinerator reduces heavy metal concentrations in air emissions and ash. The State of New Jersey has demonstrated this outcome.<sup>12</sup> There is less direct evidence of the immediate toxicity benefits of diversion from landfills.

☞ **Is it to provide a job training opportunity?** Many programs combine electronics collection with job training opportunities. Hennepin County, Minnesota<sup>13</sup> used this approach as do many not-for-profit organizations, i.e., Goodwill, Salvation Army.<sup>14</sup>

☞ **Are you being directed to start a program?** Electronics collection and recycling programs are a hot topic within the solid waste community. Many municipalities are including this new and growing waste stream in their recycling programs.

☞ **All of the above?**

☞ **None of the above?**

☞ **Some of the above?**

☞ **Other reasons specific to your community?**

There isn't any one right answer, but it is critical to understand "why" a collection program is being considered. These answers will guide the formulation of the program's goals and objectives, as well as aid in program design and implementation.

## 2. What Are You Going to Collect?

Electronic equipment is loosely defined as any item that transfers data or has circuit boards. Defining what will be collected as part of the program is integral to the program's design and cost. It should also be a direct reflection of your program goals.

### ☞ **Cathode Ray Tubes (CRTs) - Computer Monitors and Televisions**

Computer monitors and televisions are the primary focus of this manual and the principal target of electronics recycling/reuse programs throughout the country. The reason is due to the toxic materials in the equipment, and specifically the lead content in the monitors and television screens. There is between 2.14 lbs to 2.63 lbs of lead in the average monitor manufactured since 1995.<sup>15</sup> Other, consistent, data indicates the following lead contents in CRT glass.



CRT Size	Lead
13-inch	1.0 lbs
17-inch	1.5 lbs
27-inch	4.0 lbs
32-inch	6.5 lbs

**Figure 37: Lead in CRTs<sup>16</sup>**

Higher lead content is likely to be found in older equipment, which is, of course, the equipment most likely to come into the program.

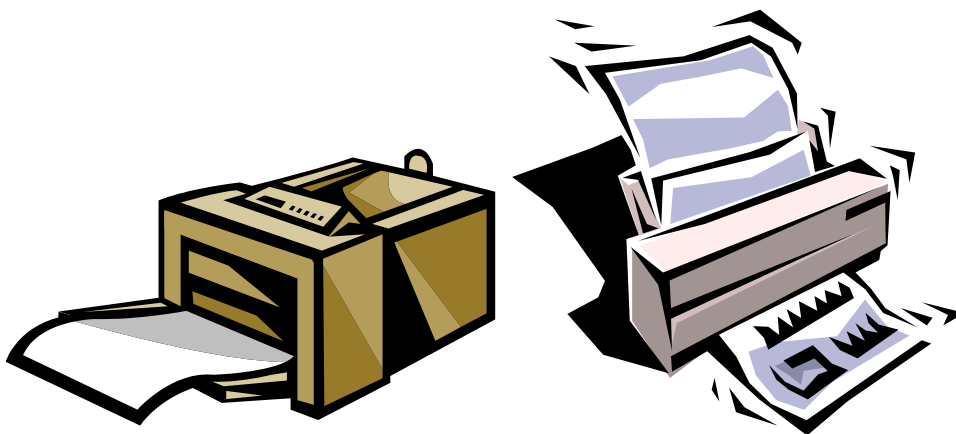
In the same Minnesota study referenced above the televisions that came into their pilot project was as follows.<sup>17</sup>

Age of Television by Decade	Percentage of Total
1960s	10%
1970s	37%
1980s	47%
1990s	6%

**Figure 38: Age of Televisions Brought to Program**

The overwhelming majority of material, 94% was at least 10 years old, with a significant percentage being at least 20 years old.

We recommend that you target CRTs, no matter what type of program you decide to offer.



## 🔌 Computer Components

Generally, central processing units (CPUs), printers, scanners and small computer peripherals, such as modems, external drives, keyboards, mice, and zip drives are collected as part of the computer system. Experience has shown that the public wants to recycle the entire system: even if you advertise only the monitor, other components will arrive as well. We recommend making the program easy for the participants and, therefore, that you accept computer components as well as the CRTs.

**Cabarrus County, through the assistance of Voices and Choices & with help from the City of Concord, will have a truck in front of the Carolina Mall to collect surplus and obsolete electronic equipment.**

**CABARRUS COUNTY  
ELECTRONICS RECYCLING  
MARCH 8TH - 12TH, 2001  
THURS, FRI, MON 8 - 5  
SAT 8AM - 2PM**

**If your business has a large amount of electronics to be recycled, please contact Eileen Benson with Cabarrus County:  
Phone or e-mail**

...

**Acceptable Items:  
Computers/monitors  
and other hardware  
including mainframes  
All audio visual equipment  
Telephone systems  
Electric typewriters  
Printers, copiers, scanners  
Sound systems  
A limited number of bad or  
broken  
Monitors  
Virtually anything else used in  
business**

**NO TELEVISIONS WILL BE  
ACCEPTED**

It is also noteworthy that CPUs may have a revenue value when recycled; moreover, they too, contain lead in the solder. Indeed, there is a question whether CPUs, like CRTs, may legally constitute hazardous waste due to the concentration of lead.

## 🔌 Other Electronic Equipment – Anything with a Circuit Board

It is worth considering including VCRs, stereos, radios, portable and cell phones, fax machines, camcorders, and even copying machines in the program. These items are easy to collect – except for the copying machines are likely to come into the program anyway, and many (if not most) recyclers will accept these materials at no cost to the collection.



## 🔌 Anything with a Plug

Some programs collect any and all electrical and electronic equipment. If the objective of your program is to maximize diversion from disposal this may be an appropriate strategy. It may, however, be quite costly. An amazing array of materials can come in if no limits are set. Examples of “anything with a plug” that will be brought in include:

- 🔌 Air conditioners – which contain CFCs,
- 🔌 Curling irons,
- 🔌 Dehumidifiers – which contain CFCs,
- 🔌 Electronic drum sets,
- 🔌 Irons,
- 🔌 Lamps,
- 🔌 Microwaves,
- 🔌 Play Stations,
- 🔌 Tape decks,
- 🔌 Vacuums,



- ☞ Vaporizers, and
- ☞ More.



**Mixed consumer electronics, Best Buy Collection, Framingham, Massachusetts**

### **3. Who Will the Program Serve?**

Another fundamental question is who may participate in the program. Define the audience that you are trying to reach.

- ☞ Residents
- ☞ Municipal buildings
- ☞ Schools
- ☞ Other local institutions
- ☞ Local businesses

Setting up your program presents a unique opportunity to reach out beyond residents to include government, institutions, schools and businesses. These sectors may not be aware of options for electronics recycling and their options may in fact be quite limited. Offering access to a recycling program or vendor is a valuable service that you can provide.

By vendor, we mean the recycler or reuse organization that will take the collected materials from you and then process or reuse them.

Many communities that welcome businesses, institutions and other non-residential participants, charge a fee for participation. Another strategy is to make separate arrangements for businesses or other large volume customers outside the municipal collection program for residents.

One challenge that opening the program to a larger audience presents is the possibility that volumes of materials may become quite high. Ideally, arrangements will be made to handle large volumes separately from the collection or curbside programs.



Cabarrus County, North Carolina, offers useful language for how to promote the program to businesses, but at the same time divert large volumes from the collection events. Their strategy is to make separate arrangements with their vendor to go to the business or other large volume customer. This is an excellent strategy for dealing with these materials.

By including the non-residential sector, you may be confronted with security issues and program demands that residents are unlikely to require. Sometimes businesses, government and institutional customers have security and end-of-life hazardous waste liability concerns. They may need to have their computers shredded and the metals recovered as the preferred end-of-life management strategy. Reuse may not be an acceptable option for them, and they may also want to know that you are obtaining a certificate of recycling from the processor.

#### **4. What Legal Requirements Must Be Satisfied?**

##### **□ Federal Requirements Only**

The CRTs in color computer monitors and televisions are often hazardous when discarded because they contain lead. Although the lead is probably not an environmental problem while the monitor or television is intact, the lead may leach out under conditions typical of municipal landfills. Facilities and communities that are disposing or recycling used CRTs should always check with their state environmental agency about state regulatory requirements, which may be different from federal regulatory requirements.

**Households:** Used computer monitors or televisions generated by households are not considered hazardous waste and are not regulated under federal regulations.

**Donation or Resale:** Monitors and televisions destined for continued use (i.e., resold or donated) are not considered hazardous wastes.

**Small Quantities Exempt:** Businesses and other organizations are not regulated under most federal requirements if the facility discards less than 100 kilograms (about 220 pounds, or less than 5 CRTs) per month of hazardous waste, including used CRTs. These wastes go to a facility authorized to receive solid waste.

**Large Quantities:** Wastes from facilities that generate over 100 kilograms (about 220 lb.) per month of hazardous waste are regulated under federal law when disposed. CRTs from such facilities sent for disposal (not reuse or recycling) must be manifested and sent as "hazardous waste" to a permitted hazardous waste landfill. CRTs sent for recycling from such facilities are also currently subject to federal regulation; however, EPA is in the process of streamlining requirements to make it easier and less costly to send CRTs for recycling. A proposed rule to this effect will be issued shortly. In the meantime, some states are addressing this issue by handling these materials as "Universal Waste," thereby reducing the management requirements applicable to the recycling of CRTs.



This discussion summarizes current (October 2001) relevant federal regulatory requirements. For the complete federal hazardous waste requirements for generators, consult 40 CFR Parts 260-262. In spring 2002, EPA is expected to propose new regulations pertaining to CRTs. EPA's Office of Solid and Hazardous Waste is working to streamline regulations to promote CRT reuse and recycling. The proposed rule will make it easier to collect, transport and recycle end-of-life CRTs.

Facilities that are disposing or recycling CRTs should always consult their state regulatory requirements, which may be different from federal regulatory requirements.

#### **State Requirements**

This is truly a state-by-state situation. It is important to find out from your state environmental agency if there are legal requirements more stringent than the federal regulations pertaining to the collection of used electronics for recycling. In addition, there may be permit requirements for in-state recyclers. If this is the case, be sure that any vendor you contract with has the appropriate permits to operate in your state. On the other hand, if EPA authorizes your state for handling CRTs as a Universal Waste, the requirements could be less onerous.

#### **Local Requirements**

In addition to state laws pertaining to the purchasing process by government units, many local governments have local procurement requirements. There may also be local waste management laws or regulations.

### **5. Who Will Manage the Program?**

Determine who will be involved in the management and day-to-day operations of the electronics collection program. Consider what resources the municipality can provide to support the program. For example, answer the following questions taking into account the specifics of your community.

- Is there a solid waste manager or operator available to manage the program?
- Is there a physical location under government ownership available, and permitted, for collection and storage?
- Are there municipal resources for collection, i.e., labor, truck, storage area, etc.?
- Are the finances in place for an electronics program?
- Are there local political reasons why maintaining day-to-day responsibility for the program is important?
- Who provides the bulky waste handling system now? Municipal curbside? Contracted curbside? Collection? None of the above?
- Is there a charge for bulky waste pickup?
- Is your community accustomed to special collection events, i.e., Christmas trees, textiles, household hazardous waste?





### ***Is There a Role for Partnerships?***

Developing partnerships for managing or funding the program might be a viable option depending on the objectives of your program. To identify potential partners, think about your community and which organizations and companies might be interested in the objectives that you defined for your program. Following is a list of potential candidates.

- ☞ Electronics retailers,
- ☞ Electronics recyclers,
- ☞ Solid waste haulers,
- ☞ Local companies,
- ☞ Charities,
- ☞ Reuse companies,
- ☞ Manufacturers of electronics (including phones, etc.),
- ☞ Software companies, and
- ☞ Television/electronics repair shops. . .

Before contacting these entities, have a clear idea of what you want from them, such as in-kind contributions, use of space, funding, advertising, the cachet of their name, discount coupons as an incentive, etc. Also be prepared to explain why you are contacting *them in particular*, how they will benefit from the partnership, and why this program is important to their industry and the region.

While securing partners for ongoing events may be more difficult (because of the longer term financial commitment) than for special events, be sure to try to create these relationships anyway. As the NEPSI process proceeds, we can hope that more private sector recycling partnerships and opportunities will arise.

Having a partner and the type of partner you work with affects the character and tenor of the event. It will also affect public perception of the program. Reuse programs can contribute a “feel good” element that encourages people to participate in the program – they may even pay a fee as long as they are convinced that some societal good will come of it, such as job training, computers for the economically disadvantaged, etc.

### ***Charity Partnership Example***

Some of the most successful partnerships have been with charities. In Massachusetts, for example, Goodwill Industries of Greater Springfield/Hartford is working collaboratively with several communities to offer electronics collection, reuse, and recycling.

The project began in 1998 between the Towns of East Longmeadow, Longmeadow, and Northampton. Several months of discussion and negotiation resulted in signed Memoranda of Understanding (MOU) between each of the municipalities and Goodwill Industries. The MOU detailed the services and financial arrangements for each community. The collection program began in 1999 and continues to this day.

Following are the different collection models used in each of these communities.





*Northampton, Massachusetts*, has a population of almost 30,000. There is no municipal curbside trash collection. Northampton had the option to collect electronics and then use city staff to pack and transport the materials to a regional collection-site at the University of Massachusetts Amherst (approximately 10 miles away). The City opted instead to pay Goodwill 10 cents a pound for collection and transportation from the Recycling Center, for Northampton has neither the staffing nor the equipment capacity to handle this. The decision was made that if a vendor was going to be hired to collect the materials, the city would rather partner with a charity and support its non-profit reuse and employment training goals.

Participants are charged a \$5 per unit fee by the city for a television or a computer system – CPU, monitor, keyboard, mouse, modem, and a printer. The materials are collected under a shed roof at one of the two municipal recycling centers, but are not packed. Goodwill staff loads the materials into the truck along with textiles for transportation back to its facility.

Goodwill has an agreement with the State of Massachusetts that covers the expense of recycling for any materials or parts that Goodwill cannot repair or sell. The materials to be recycled go to one of the two facilities currently under Massachusetts State contract for recycling of electronics. Goodwill has a textile collection box at the site so it collects the electronics at the same time. As a result, there are three pick-ups a week at the site. Goodwill also offers in-home pick-up at no cost if the unit is in working condition.

*East Longmeadow, Massachusetts*, has a population of 13,000. Its municipal recycling center is less than five miles from Goodwill Industries' headquarters. It is also within five miles of a weekly Goodwill attended truck in the neighboring community of Longmeadow. After experimenting with a fee-based collection program at the East Longmeadow Recycling Center, the program was changed to allow residents to bring materials at no cost to either the attending truck in the neighboring community or to the Goodwill Industries headquarters. East Longmeadow pays 25 cents/pound to Goodwill for the materials collected from their residents.

*Longmeadow, Massachusetts*, has a population of approximately 15,000. Longmeadow's MOU with Goodwill Industries provides for a weekly attended Goodwill truck to accept electronics – whether they work or not – and to provide weekly pick-ups at the Longmeadow Recycling Center, where electronics are also collected. Longmeadow pays Goodwill 10 cents/pound for the materials it picks up at its Recycling Center, but does not pay for the materials brought to the attended truck.

*Goodwill Industries* had to significantly alter its long-standing collection policies in order to participate in this project. As a result, it took almost a year of negotiations and meetings to come to an agreement about terms and conditions that would satisfy both the participant communities and Goodwill. Of great importance to Goodwill was its reputation as a re-use center. It was very wary that this program – because it accepts working and non-working products – would create the image that Goodwill accepted



trash. In order to address these concerns, Goodwill preserved its policy that in-home pick-ups would be limited to working televisions or computers. For a time, it considered using unmarked trucks to make the pick-ups at the town recycling centers, but abandoned that idea.

Goodwill hoped that partnering in this program would not only add a new component of employment training to its service community, but would generally be a source of increased donations of quality materials to Goodwill. Goodwill also wanted to avoid losing money on the venture. It acknowledged that the employment-training component was of value to the organization and would consider this in its evaluation, but that its labor, transportation and handling costs had to be addressed. The pilot communities agreed with this perspective.

It was also very important that Goodwill be assured that all of its recycling costs would be absorbed by the state. Such an agreement was reached and is annually reviewed. The State of Massachusetts does, in fact, cover the cost of recycling, but Goodwill must use one of the state contract recycling vendors.

### ***Commercial Landfill Operator Partnership***

In communities that host non-municipal landfills, it may be possible to negotiate arrangements with the landfill owner/operator to provide electronics recycling for residents of the community as part of the host relationship. In Granby, Massachusetts, Waste Management agreed to offer such a program and pay the full cost. In Chicopee, Massachusetts, Waste Management agreed to offer and manage the program, but the city agreed to be billed for the actual recycling costs. Both programs are ongoing collection programs based at the landfills. There are no other locations that were identified as suitable for setting up electronics recycling collections in either community.

### ***Partnership With Commercial Hauler – Collection Model***

In a simpler model than those mentioned above, a small solid waste hauler offered to place a 42-foot trailer at a municipal recycling center for use by a small city (population approximately 15,500) for collecting and storing electronics. The hauler also pays the cost of transportation and recycling for the materials collected. No fee is charged for this service. The hauler, which has a contract with the city to provide trash-hauling services for municipal buildings, is small, privately owned, and aggressively seeking to expand its market share. It saw this program offering as a way of promoting its commitment to recycling.

### ***Partnership with Retailer – Special Event & Collection Models***

Currently, there is a great deal of interest in retail partnerships. There are a few successful examples of retail/government partnerships, but they are extremely limited in scope. Several years ago, the City of San Jose, California, successfully entered into a relationship with Frye's Electronics. Frye's accepts electronics for recycling when a replacement item is being purchased.



Another example is a special event that took place in Delaware. CompUSA hosted a one-day event in the parking lot of its Wilmington, Delaware, store. The project was coordinated by the Delaware State Office of Economic Development and funded through an EPA grant. A case study describing this project can be found on page 79.

Finally, Best Buy recently launched a series of two-day special events at its stores around the country. Its intention is to eventually offer one 2-day special event in each of its sales regions, once a year. Fees were charged for participating. In this case, Best Buy did not partner with government. Instead, it partnered with electronics manufacturers to help pay the cost of the program: Panasonic and Compaq Computers.



## 6. Are There Social Goals for the Program?

Unlike most other materials that your community collects, the decisions you make about how to manage electronics presents the opportunity to have social impacts. Some of the social goals that you can affect are:

- ☞ Job training and unskilled labor employment.
- ☞ Providing computers to low income children or families.
- ☞ Supporting a local business or non-profit by using their services.

Partnering with a charity or using a vendor that includes reuse, repair, or refurbishing as their business priority will help achieve these goals.

## 7. What Will Be the Fate of the CRTs?

CRTs are often the most difficult and expensive material for recyclers to handle because the options are limited. Usually, CRTs will have one of four fates:

- ☞ Sent to a lead smelter,
- ☞ Sent to a glass-to-glass recycling facility,
- ☞ Reused or resold, or
- ☞ Exported.

☞ **Lead smelter.** CRTs are used as a replacement material for flux in the burning process. So, the CRT replaces a virgin material (silica) for the production of lead. Currently, this is the most common fate for CRTs. Federal requirements pertaining to beneficial reuse may apply.

☞ **Glass-to-glass recycling facility.** These facilities (and there are very few in the United States) melt the glass for use as feedstock for making new CRTs.



☞ **Reused or resold.** This generally occurs through charities or vendors who have repair/refurbishing as a business priority.

☞ **Exported.** This is an increasingly common practice. Some of the countries that receive large volumes of materials are China, Russia and Mexico. It is believed that the CRTs sent to Russia and Mexico are repaired and reused. What their ultimate disposal fate is remains unclear. There is little factual information about what becomes of the CRTs sent to China. They may be repaired and reused, melted down and used in consumer glassware such as food containers and glasses, or the gold precipitated from circuit boards in unlined acid pools in the ground. We cannot vouch for what happens in any of the overseas exports, but certainly you should consider whether you feel comfortable with materials that are considered hazardous waste in the United States being shipped overseas where environmental scrutiny may be less strict.

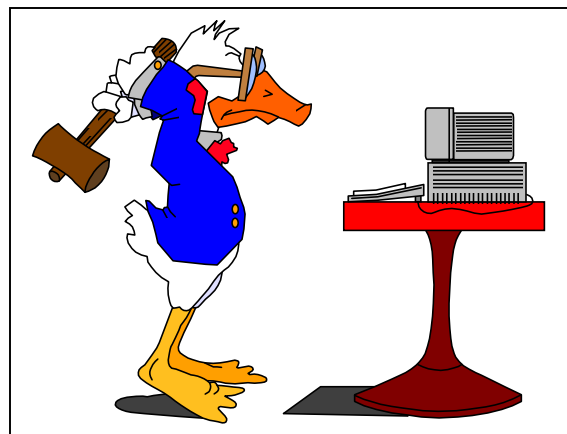
Some vendors only export “certified repairable” monitors and televisions that are bubble-wrapped and individually manifested by make, model, year and condition. They are tested before shipping to ensure reuse potential. This increases the likelihood that the materials are being repaired or reused.

It is important to note that in some cases you can actually be paid for CRTs when they go overseas, whereas when they stay within the United States, in almost every case the cost for recycling a CRT will range from \$5 - \$12 each to your program. It should also be pointed out that there are legitimate export markets for CRTs. Almost every recycler in the United States uses export markets for some of the materials at least some of the time.

You should ask potential vendors what they do with their CRTs, or set CRT management requirements in bid specifications. You should also practice due diligence by contacting the export markets that a prospective vendor uses. It is important to ask the ultimate vendor every few months about export business practices, because they can change and vendors are unlikely to inform you on their own of a change in management strategy.

### ***Certificate of Recycling***

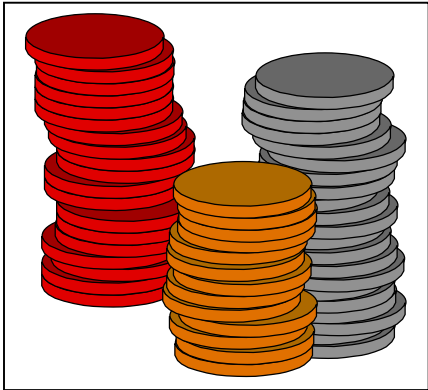
Requiring, and receiving, a certificate of recycling from a recycler can help to promote the credibility of your program, to provide a degree of quality assurance from the vendor, and to provide a comfort level to the non-residential sector about long-term legal liability for the disposal and end-of-life management of electronics. In addition, if your program is open to businesses and government customers, they may need a certificate of recycling. There is a sample on page 58 of the Appendix.



## 8. What is Your Budget?

The size and limits of your program budget will naturally have a significant impact on your program details. There are four key cost areas that you should examine: staff, publicity and outreach, transportation, and recycling fees.

In order to maintain control over your budget, it is important to know:



- ✓ Your budget limitations,
- ✓ The fees you will be paying for transportation,
- ✓ The recycling fee for recycling/reuse,
- ✓ Fees for gaylords, pallets, stretch film, other supplies,
- ✓ Staff related expenses,
- ✓ Storage expenses,
- ✓ Any other anticipated expenses, and
- ✓ Whether you will charge a fee.

Once you have this information and have assessed it, you can project approximately the degree of public response that you can absorb. If the budget can handle the impact, then early advertising can be an important tool for reaching a wide and disparate audience. It is also an opportunity to promote cooperation in bringing materials to the site – in order to limit the number of vehicles and increase the tonnage, to awaken the public to the need to recycle electronics, and to promote the availability of the new program.

## 9. How to Minimize Costs?

With a limited budget it is worth considering whether to use all the funds in a special event, or whether there is adequate infrastructure and funding to offer a more regularly scheduled collection program. As a general statement, ongoing collection programs cost about the same as special events and receive about two-and-half times more material by weight.

☞ **Staff** – Under some circumstances, having someone else handle most of the program arrangements can minimize staff costs. Partners, such as a recycler, retailer or charitable organization can assume primary responsibility for the program, and the government becomes a partner through intention, publicity, and possibly some recycling fee cost sharing.

Some collections have been quite ingenious in finding ways to staff programs with minimal staffing costs:

- ✓ Use inmates or people serving community service sentences.<sup>18</sup>
- ✓ Donations of labor from sponsors or communities.





- ✓ Have a solid waste hauler, recycler or charity operate the program.
- ✓ Hold the collection on a weekday.

The cost of staffing for the day(s) of the event or program will be a function of the number of on-site staff that are paid for their work, contributed labor, community service staff, or vendor staff. As some programs have learned, it is also a function of which day of the week the collection takes place. In Hamilton County, Ohio, one of the program recommendations for future events is to hold the collection on a weekday to limit overtime costs. That program, however, is focused on businesses and not households.

As might be expected, there is a significant difference in staff time for the first time a special event, ongoing program or curbside event is held. Indications are that the time necessary for organizing the first event (from finding a vendor and site, to securing partners, arranging for necessary equipment and staffing, doing advertising, etc.) is in the 20 – 40 hour range. However, in Lincoln, Nebraska, a special business computer-recycling event took more than 400 hours to plan. This project included preliminary surveys to determine the need, the potential volumes, development and presentation of educational workshops, and careful data collection and analysis.



**Portland, Maine**

🗑️ **Publicity and Outreach** - Take advantage of free or already existing communication systems to reduce these costs by utilizing:

- Community cable television,
- Press releases,
- Interviews in the local paper,
- Articles in local newsletters,
  
- Inserts in tax or utility bills (sometimes free, sometimes the cost of copying only),
- Public service announcements on radio and television,
- Promotional efforts of others – i.e., electronics retailers, commercial haulers, charitable organizations,
- Donations of printing for posters, fliers, etc.,
- Community service printing programs, such as prisons and vocational schools (both require more lead time than commercial enterprises might),
- Speaking opportunities at events or gatherings: clubs, schools, and “Town Meeting,” and



- For curbside or on-going collection programs, include information on electronics recycling on your annual recycling information mailers to households.

☞ **Transportation** costs can be limited by:

- Using municipal trucks and staff to move materials to the recycler or reuse organization. However, municipal staff can be expensive as well. Be clear whether costs will be charged back to the solid waste management program and how much they will be, especially as compared to other strategies.
- Finding nearby vendors.

☞ **Recycling fees** are harder to contain, but can be limited by:

- A sound procurement (or bidding) process,
- Limiting the types of materials that are collected (i.e., excluding televisions),
- Thoroughly sorting materials,
- Providing the packing materials (gaylord boxes, pallets, and stretch film). A gaylord box is a three or four cubic yard box that sits on a pallet. It is usually cardboard.
- Providing the labor for loading trucks, and
- Allowing materials to be shipped overseas.



**Best Buy, Framingham, Massachusetts**

## 10. What Are Your Data Needs?

Data collection should be a fundamental part of all programs. Be clear about what you want to know about your program before you contract with a vendor or develop a survey instrument. The National Electronics Product Stewardship Initiative (NEPSI) survey, found in the Appendix on pages 53 - 56, is a good starting point.

As you evaluate what data you would like, consider what information you will need to:

- ☞ Justify the continuation of the program.
- ☞ Estimate what volumes of materials can be expected in the future.
- ☞ Determine which form of outreach was the most effective to ensure that future promotion is as cost effective as possible.
- ☞ Determine if the approach you used is the best one for your community, or would a different strategy work better.
- ☞ Determine the cost of the program.





## Chapter 2 - Which Program Model to Choose?

Once you have answered the general program questions, it is time to move on to the next level of detail: selecting a program model and understanding the resources that it will take to succeed. There are three principal collection models currently in use, with an almost limitless number of variations on the theme. The principal models are:

- ☞ Special event collection,
- ☞ Ongoing collection, and
- ☞ Curbside pick-up.

The fundamental question is which program model can allow you to achieve your program goals. Ultimately, it is your knowledge of your community and financial realities that are likely to determine the final selection. The information provided in this document will provide you with the confidence and the tools to design and operate a successful program.



Wake County, North Carolina

### 1. Why Hold a Special Event Collection?

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

Almost half of all programs are special event programs. There are many reasons for this, including:

- ☞ It provides an opportunity to test how the community will respond to an electronics recycling/reuse program.



- ☞ It can serve as a “clean-out” of materials in storage and then permit a more predictable ongoing program model.
- ☞ If you do not have a recycling center or other location that electronics can be added to on an ongoing basis, then a special event might be the best option.
- ☞ If there is a tradition of one-day events for handling “problem materials,” such as household hazardous waste, furniture swaps, bulky wastes, etc., then this model might be the best tool for your citizens.
- ☞ There is potential to limit the cost because it is time constrained.
- ☞ You may be able to have a recycler/reuse organization run the collection.
- ☞ Advertising and promotion may be less expensive.
- ☞ There might be a sponsor, a retailer for example, who will host a one-day event.

## 2. Why Hold an Ongoing Collection Program?

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

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.



### 3. Why Use Curbside Collection?

It is possible to collect electronics as a curbside commodity, just as you might bulky waste. In fact, that is the model for how most curbside collection of electronics works. As with any other recyclable, the public generally prefers curbside; and this is confirmed by the data. Curbside collections are the least expensive per ton to operate, in part because they enjoy the highest collection rate.

Many of the curbside collections, however, are combined with other program offerings. Therefore, we recommend that if you can offer curbside collection you certainly should, but ideally there will be an ongoing collection program or special event also available. Our survey found low participation rates among strictly curbside programs, but greater participation in programs that combined curbside with another collection method.










## Chapter 3 - Getting to the Details





### Overview

No matter which program you select, there are consistent needs and program costs that must to be addressed to ensure success. They include:




#### Planning

-  Vendor Selection and Contracting
-  Site Selection
-  Schematic
-  Staff
-  Partnerships
-  Determining a Collection Fee
-  Publicizing the Program

#### Program Implementation

-  Supplies
-  Collecting, Sorting, & Packing
-  Handling CRTs
-  Data Collection

#### Follow Up

-  Ongoing Public Education/Outreach
-  Data Analysis
-  Program Improvements

## Planning

### 1. Vendor Selection & Contracting

One of the most critical pieces of any collection design is selecting and securing a vendor. State, and possibly local, procurement laws bind public officials to certain procedures and requirements. Be sure to keep these fully in mind, and to comply, as you venture into this enterprise.

Currently, Rhode Island, Massachusetts, Maine, Maryland, New York, Delaware, and Pennsylvania have state contracts for electronics recyclers. Using this strategy has many benefits. Before selecting a vendor you should consider and answer the fundamental questions described in Section Two, page 34.

“Web-based Directories for Finding Local Electronics Recyclers and Reuse Organizations,” on page 22 of the Appendix, lists public sources of Internet-based information available for finding vendors.



In addition, consider:

- ☞ Asking your State environmental agency for information on "licensed" vendors, and
- ☞ Finding out if your state has electronics recyclers on state contract.

#### ☐ **Does the Vendor Meet Relevant Requirements?**

Once you have identified potential vendors, determine the federal, state and local requirements to which they are subject:

- ☞ Does the vendor possess necessary permits?
- ☞ Are there any federal, state or local enforcement actions against the vendor?

#### ☐ **Evaluate Vendor Practices to Manage Equipment**

There are significant choices to be made when selecting a vendor to manage the collected equipment. You'll want to determine that the vendor meets the goals and objectives of your program. For example,

- ☞ Is there a reuse or remanufacturing component?
- ☞ Does the vendor have a zero landfill policy?
- ☞ What are the end markets for each material?
- ☞ Is overseas export part of the management strategy?
- ☞ Which elements of the electronics are recycled and which are managed as solid waste?
- ☞ What types of processes are done in house?
- ☞ Are the electronics shredded?
- ☞ How are items stored, where, and for how long?
- ☞ Does your vendor allow third party audits of their facilities?
- ☞ Is employment training or economic development a component of the vendor's business?
- ☞ Will the vendor provide you with the names of other customers for references?

## **2. Site Selection**

If you will be responsible for designing and running an ongoing collection or special event program, identifying a suitable collection-site will be one of the key considerations.



The site should have the following features:

- Cover for the materials collected. This can be a garage bay, a tent, a shed, a 40-yard trailer, etc.
- Capacity to handle a line of cars and not back up into a roadway.
- Maneuvering space for the transporter or vendor.
- A location that is familiar to residents.
- Access to a phone (a cell phone is fine if it will work at the site).
- Depending on the arrangement with the recycler/reuse organization/hauler, storage space may be required.
- A loading dock or pallet jack.
- Depending on state laws, you may need a permit if you are accepting material from businesses.

Pavement is not a requirement.

What locations are likely to satisfy these characteristics?

- A recycling center.
- A public or private transfer station.
- A permanent household hazardous waste collection facility.
- A charity.
- An electronics recycling facility.
- A fairground.
- A parking lot.

In most cases, ongoing collection programs are located at recycling centers, transfer stations, or DPW Yards. These sites have many attributes. They often have storage capacity, are staffed, have dealt with the traffic flow concerns. All that may be necessary is additional signage and a dedicated location for the collection and storage of the electronics.



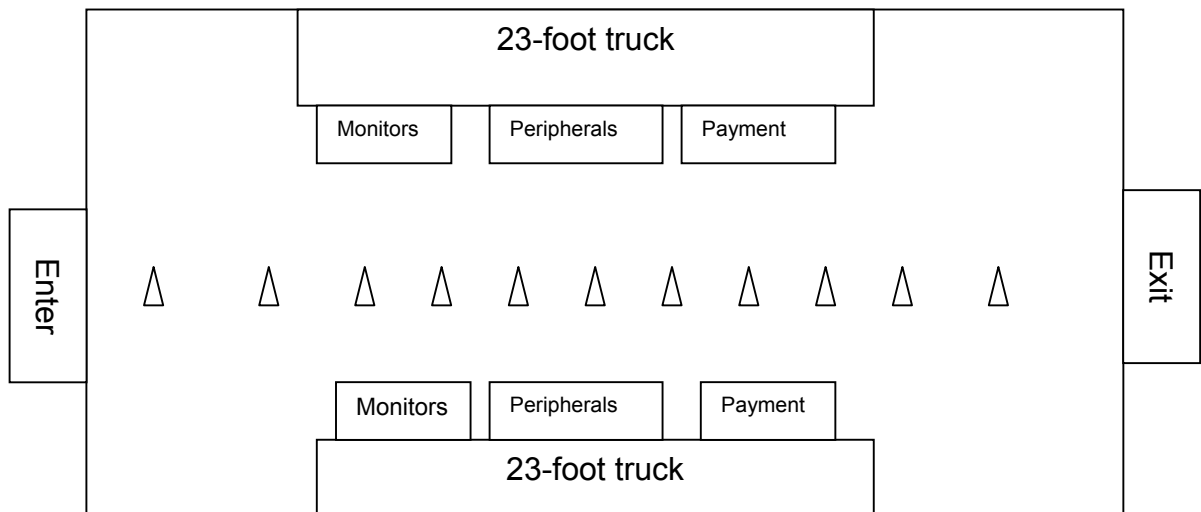
### 3. Schematic

If the site is not one with which you have extensive experience (i.e., the collection will take place in the parking lot of a local business rather than at the recycling center) it is a good idea to make a simple sketch of the site to determine where:



- The traffic flow will be, including entrances and exits,
- Lines of traffic will be and how many there will be,
- The packing area(s) will be and how many gaylords or other containers there will be in use at any one time,
- Extra packing materials will be stored,
- The vendor will park its truck(s) or roll-offs,
- Signage is necessary and what the signage will say at each location,
- To station staff and traffic control,
- To locate trash and recycling containers,
- To locate rest areas for staff,
- Parking for event staff, and
- Other relevant siting issues for the particular site.

**Proposed Site Map**<sup>19</sup>



**Figure 39: Preliminary Schematic**

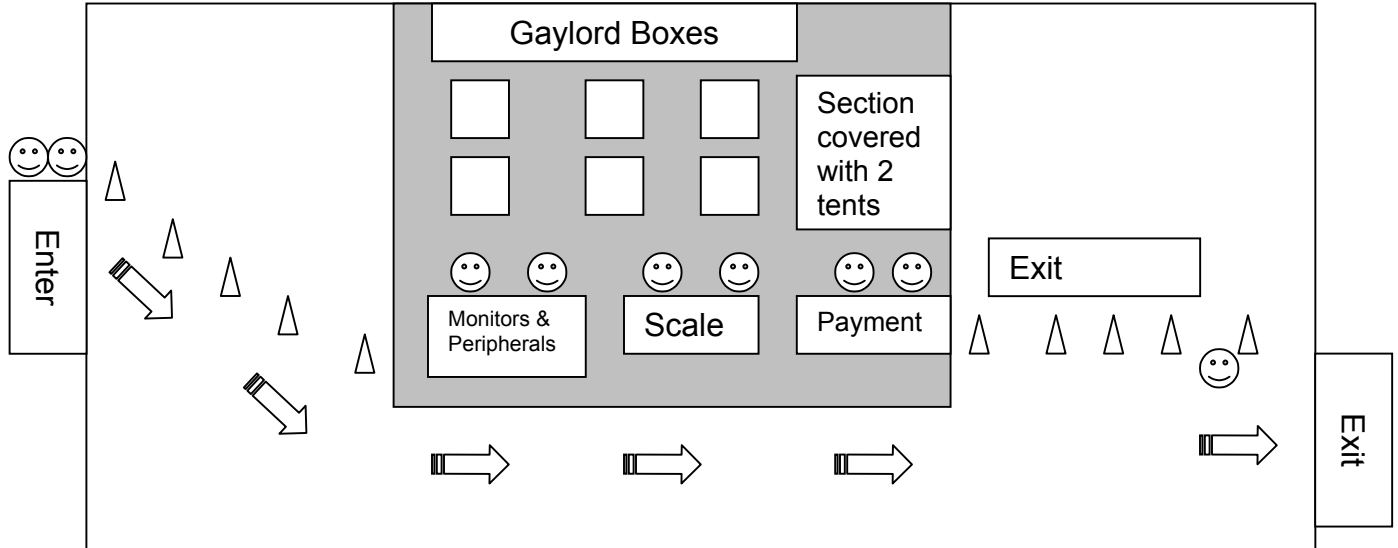
Ideally, you will visit the site before finalizing the schematic. You may need to measure distances or spacing for the layout of traffic and packing materials, to determine where to best locate the unpacking area to ensure that traffic does not back-up onto a roadway, and to problem solve. This may result in the site plan changing. The





following schematic is for the same site as the one above, but revised after reconsidering the collection-site.

### Actual Site Setup<sup>20</sup>



**Figure 40: Final Schematic**

Once the schematic is drafted, share it with the vendor, the police, the site host, and others who will be affected by the site design to see if any alterations are necessary.

Once the schematic is finalized, the information should be shared with staff, vendors, and volunteers who will be on-site. This helps to ensure that everyone knows where they should be and where others will be located. It is particularly important for traffic control and signage.

It may seem obvious that the schematic should be used to set up on the day of the event or an ongoing collection program, but it is actually easy to forget. Using the schematic will help to make the set up process smooth and efficient.

## 4. Staff

There are many jobs that need to be handled in developing, implementing, and following-up on the collection. For ongoing collections and special events, it is important to be sure that there is adequate staff on-site at all times.



The major task areas are listed below with suggested staffing.

Job	Program Type	Suggested Staff
Program development & design	All	Solid waste manager
Program management & oversight	All	Solid waste manager
Contracting with vendor	All	Solid waste manager
Site set up & close-down	Ongoing & Special Event	Solid waste manager
Greeter	Ongoing & Special Event	Volunteer
Traffic control	Ongoing & Special Event	Police or Municipal employee
Unloading & packing	Ongoing & Special Event	Two or three strong & trained individuals per line of traffic
Fee collection	Ongoing & Special Event	Solid waste manager/Municipal employee
Data collection	Ongoing & Special Event	Volunteer
Equipment operator	Ongoing & Special Event	Someone who knows how to safely handle a pallet jack, bobcat and other relevant machinery. This is <i>not</i> suitable for volunteers or inexperienced individuals.
“Gopher” - Communicating between different parts of the collection, getting water and food, checking on signage, etc	Ongoing & Special Event	Volunteer

**Figure 41: Key Collection Jobs**

For ongoing and special event collections, we recommend that at least one person be on-site at all times who has experience with similar events.

It is important that all staff and volunteers be properly trained and prepared for the collection. In Lincoln, Nebraska

“Each volunteer was asked to attend a brief training session. In this session, WasteCap of Lincoln and the Contractor attempted to answer any potential questions before they arose. The volunteers were given a brief history on computer recycling, the hazardous components of computer and television monitors, and why there is a cost involved in



remanufacturing the equipment. In addition, volunteers were given a brief demonstration on proper lifting techniques and were provided with written information about preventing back injuries. [It was] suggested that volunteers only carry equipment if the participant asked for assistance. This helped to remove some of the liability for injury. Volunteers were also required to complete a release form, removing liability for injuries from WasteCap of Lincoln and the Contractor.”<sup>21</sup>

### **Key Staff Roles at Collection**

- The program manager has significant responsibilities concerning preparing staff for the event.
- Be very sure that each staff person understands their responsibilities and the expectations of the day. You might even provide a job description.
- Be sure that each person is properly trained and attired for the job that they will be performing.
- Have emergency contact information, including life-threatening allergy information, on-site for each staff person.
- Volunteers should be asked to sign liability waivers developed by your municipal attorney. See page 44 of the Appendix for a sample. Beware, however, that release forms are not always foolproof. In Prince George’s County, Maryland, “Our volunteers are county employees who get comp time for working special events, therefore, in this case, liability waivers need not be signed.”<sup>22</sup>
- Be sure that your municipality or government has insurance that covers non-employees in case of injury or accident during the event.
- Have one or two back-up people that you can call in case extra or replacement staffing becomes needed.

The site organizer and primary assistant should plan on being on-site for at least two hours more than the operating hours. Another consideration is “early birds.” It is typical for some people to show up more than an hour before the start of the program and expect to be accommodated. On occasion people show up the day *after* the event as well.

In general, staffing for traffic flow, unloading, greeting, packing, etc., is necessary for the hours of operation only. If, however, the number of participants or the volume of materials far exceeds expectations, the hours can be very long to ensure that all materials are safely packed and stored before the site is left for the day.



For example, in Northern Cook County, Illinois, there was a one-day event in 2000 that necessitated workers to be on-site until 11 p.m. to pack and load all of the materials collected.

□ **Traffic control** – As has been discussed before, having someone responsible for directing traffic is very important. While this can be a volunteer or a staff person, we recommend that it be a police officer, where practical.

□ The reasons:

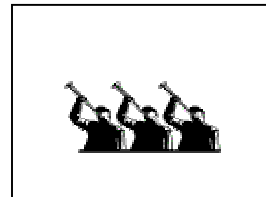
- ✓ They are trained for this type of work.
- ✓ If a problem does develop they are best equipped to handle it.
- ✓ If an emergency takes place, they are well situated to ensure a speedy and efficient response time.



Lincoln, Nebraska

□ **Greeting prior to arrival at unloading area** -

Most programs have someone (and this could be a volunteer) greet participants.



Their job is to:

- ☞ Count vehicles - use a mechanical clicker or tick marks on a sheet of paper.
- ☞ Note the general time blocks for traffic flow (e.g. 9 – 10, 10 – 11, etc.). This may help you in the future to plan for the necessary hours for collection and level of staffing needed.
- ☞ Survey participants - if you are doing data collection. See page 49.
- ☞ Tell people to stay in the car and that the materials will be taken out for them.
- ☞ Either have the person unlock the trunk or have them give the greeter the keys so that they can unlock the trunk.
- ☞ Tell them when they can pull forward to be unloaded and answer questions about which materials are being accepted and the fees being charged.
- ☞ If you're handing out any educational materials, this is the time to do it.



- ☞ If you're charging a fee, you could opt to have the greeter collect the fee and give a receipt (if requested).

## 5. Determining a Collection Fee

The decision whether to have a fee can be influenced by a number of factors. Some of them include:

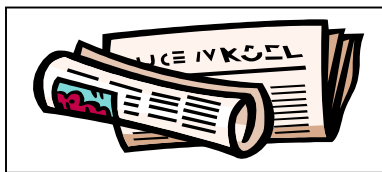
- ☞ Are your residents used to paying for disposal of bulky items, e.g. tires, or appliances?
- ☞ Can you afford not to charge a collection fee?
- ☞ Do you have a system already in place to accept fees and have it be dedicated to paying the program costs?
- ☞ Are there political or policy reasons why or why not to charge fees?

If you decide to charge a fee, then the question becomes the amount of the fee. The vendor can help you determine the likely cost per item, but you will have additional costs that you might want to address through the fee, for example:

- ☞ Advertising,
- ☞ Equipment and supplies,
- ☞ Insurance,
- ☞ Packing materials,
- ☞ Police,
- ☞ Signage,
- ☞ Staff,
- ☞ Transportation costs, and
- ☞ Recycling fees.

Or you might just want to defray the costs, so the actual program cost is not as significant. Forty-nine percent of programs collect some user fees for electronics. In 35% of the programs that charge fees, they only charge for CRTs. The common price structure ranges from \$5 - \$15 per CRT. See figure 16. Of course, there will be cases where you may choose to waive a user fee, or to have a "no user fee" day to ensure that people with limited financial resources have the ability to participate.

## 6. Publicizing the Program



As with any recycling/reuse program, outreach is essential to ensure a successful program. Success includes the attributes of having the number of participants or amount of material that you planned for, as well as more than you planned for.

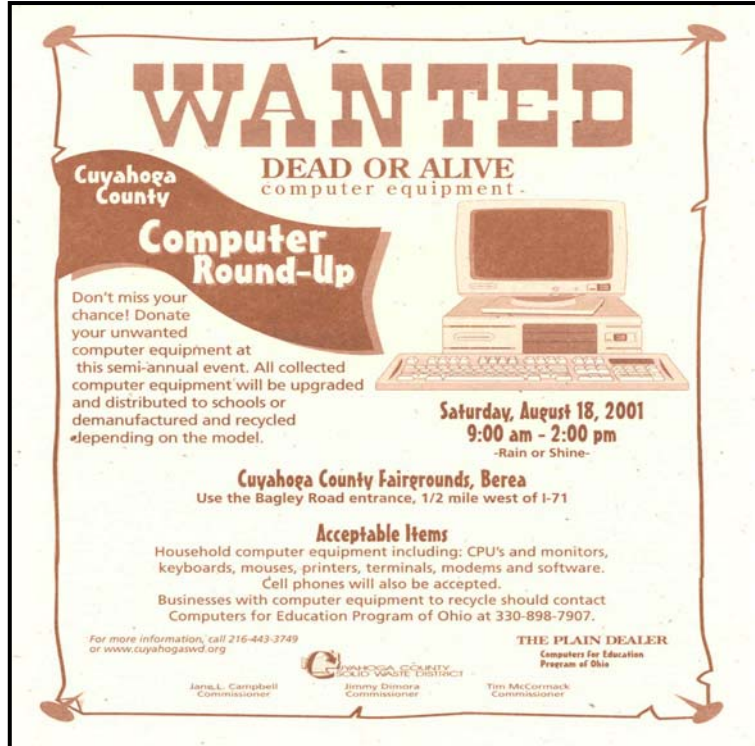
To ensure the participation of the target number of households, use strategies similar to those that have worked for you in the past. There is nothing magical about collecting



used electronics. What tends to be different is the volume of material that a household will bring. Because of the amount of electronics many households have in storage, the initial collection period often results in very high volumes of materials per participant. As was stated previously, special events are averaging 23 tons per year, but ongoing events are averaging 56 tons, and curbside an impressive 71. Some in the industry believe that the higher numbers of console televisions that are managed in curbside programs relative to ongoing or special event programs influences the higher figures from curbside.

The basics of publicity need to include:

- ☞ What is and isn't being accepted for collection,
- ☞ When (date and time) and where the collection is taking place,
- ☞ Why someone should participate,
- ☞ Any fees, and
- ☞ Contact information for questions.



If you are partnering with someone, that should be acknowledged in all publicity.

You should start advertising at least three full weeks ahead, and ideally have some articles and other press coverage about the upcoming event approximately four weeks before the event and one week before the paid advertising. Start with normal press channels and expect to get some free publicity, especially at first.

Do not rely on free publicity, however, to be the sole promotion for the program. While these tools are important, use display advertising, radio advertising, and if appropriate in your setting, television advertising. However, a recent study by Skumatz Economic Research Associates indicates that print communication is the most effective for promoting and sustaining recycling.



The Skumatz study drew the following conclusions<sup>23</sup>:

Outreach strategies that resulted in <i>increased</i> recycling & diversion	Outreach efforts that did <i>not</i> result in increased recycling & diversion
<ul style="list-style-type: none"> <li>▪ Newspaper ads or articles in urban areas</li> <li>▪ Bill stuffers in urban areas</li> <li>▪ Brochures in suburban areas</li> <li>▪ Direct mail in rural areas</li> <li>▪ Billboards in rural areas</li> </ul>	<ul style="list-style-type: none"> <li>▪ Television promotion in rural or urban areas</li> <li>▪ Billboards in urban areas</li> <li>▪ Point-of-purchase promotion in urban areas</li> <li>▪ Door-to-door promotion in urban areas</li> <li>▪ Bill stuffers in rural areas</li> </ul>

As you know from other recycling program efforts, the public needs to be informed often, repetitively, and in a variety of forms. Even then people will complain that they “didn’t know anything about it.”

Heavy early advertising can work against you, prompting a stronger turnout than you want at this time. It is better to be overly cautious with publicity or overly prepared for a flood of material than to create an enormous line and negative experiences for participants.

Because the electronics recycling/reuse program will present a new recycling/reuse opportunity, be prepared for questions and phone calls. The timing of the publicity needs to take this into consideration.

***The Importance of the “Why” Message***

In a recent *Resource Recycling* article, Rebecca Davio reports on the results of a study in Austin, Texas, that considered age, race and a belief in the benefits of recycling as it related to curbside recycling. Among other very interesting results was the finding that “[f]orty-two percent of respondents who participate at a low level . . . feel the lack of information about the benefits of recycling limits their participation. Further, data suggest a significant relationship between a person’s intensity of belief regarding the benefits of recycling and program participation.”<sup>24</sup>

This indicates that it is particularly important to make clear in the education and outreach efforts the environmental value of recycling used electronics. Similarly, if there is a charitable aspect to the program, make that clear in the advertising and press





contacts. It is important to credit the partner and to make clear to the public that the charity is involved. People hoard electronics because they believe that they have value, that they are still usable and there's no reason to just throw them out. Making clear that there is a societal value, in addition to the environmental benefit, adds a motivation to participate.

And finally, a word of advice from WasteCap of Lincoln, Nebraska: don't use the word 'refurbish.' WasteCap of Lincoln decided that it would advertise its collection event as a computer-refurbishing collection event rather than a computer-recycling event. They considered it important to promote the monitors as "still usable products" and not accept any monitors that were broken. They found, however, that the word "refurbish" was very confusing to the general public.<sup>25</sup>

## Program Implementation

### 7. Supplies

Any program, other than a purely curbside one, will require a number of items in order to ensure that the site functions safely and efficiently. Don't be intimidated by the following list! Most of the items are things you are likely to already have or can easily borrow, or in the worst case, rent. Or, the vendor may provide the supplies if it was described in the procurement process and the contractual agreement. An opportunity to save on the collection costs is to have your own packing materials. They might be



Lincoln, Nebraska

- Pallets.
- Gaylords (if applicable).
- A bobcat with forks, pallet jack, fork truck or other machinery to move gaylords or pallets to a truck.
- Stretch film if you are using pallets alone.
- Supplies for labeling (depending on your circumstances, this might be as simple as a felt pen to mark the outside of a gaylord).

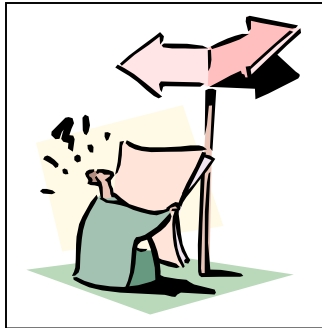
donated or your municipality may already have these materials.

Equipment and supplies, most of which you would have on hand for a typical household hazardous waste collection event, include:<sup>26</sup>

Portland, Maine



- Rechargeable Battery Recycling Corp. (RBRC) battery recycling container.
- Tents to keep the equipment and staff out of the weather. More than one tent might be needed.
- Chairs.
- Tables – 8 foot, several.
- Garbage dumpster.
- Recycling container for cardboard.
- Weighted signs (i.e., stop, no smoking).
- Barricades to block off driveways (if necessary).
- Extension cords for a scale (if one is on-site), for a laptop and a coffee pot for staff.
- Electrical or duct tape to hold down extension cords for safety.



- Orange traffic cones to direct traffic to correct places.
- Handheld radios to communicate among workers if it is a large or spread out area.
- Clipboards with attached pens for completing surveys.
- Certified scale if any charges will be based on weight. This should be the contractor's responsibility as part of the contract.
- Laptop computer to give receipts and keep track of information and contacts. The laptop allows for immediate tracking of incoming equipment.
- Bill of lading to track the volume of materials. (Contractor should provide).
- Receipt books and invoice pads.
- Office supplies, including pens, pencils, markers, staplers, staple removers, paper clips, tape.
- Something to collect the money in - a cash box, aprons with pockets, a cash register, envelopes, etc.
- Safety vests, gloves, and other personal protective equipment for all site workers, including volunteers.
- And a camera for photos. Don't forget the film!

WasteCap of Lincoln, Nebraska, offers a word of caution: their special event collection-site was on cement. Setting up two tents took about 2 hours and there were additional fees for drilling and filling holes for the stakes in the concrete. The tents were placed end to end to create a covered space of 20'X 6'.

It is important to be sure that all necessary equipment and supplies are on-site at least one hour before the event is scheduled to begin. In the case of essentials, such as packing supplies, tents, phones, and signage, this margin may not be sufficient. Ideally, everything will be on-site the night before, if secure storage is available.

## 8. Traffic Signs & Cones

It is important that the public be clearly informed of the correct traffic flow. Having signs and traffic cones is essential. Also be sure that there is clear signage about how to exit



the site. It is a common problem to find people attempting to exit the same way that they came in: thus encountering oncoming cars head-on.



Cuyahoga, Ohio

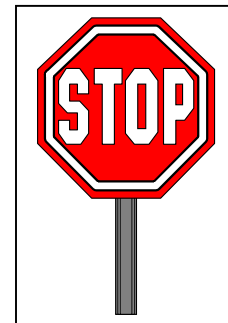
Depending on the anticipated turnout for special events, consider having more than one line for unloading – but this will require having additional packing areas as well. You do not want anyone crossing traffic to put materials in containers.

## 9. Signage Instructing the Public

In order for the event to go smoothly, it is not only staff and volunteers who need to know what is expected, but the public as well. In particular, be sure that signage clearly indicates to stay in line, stop behind a certain point to wait until signaled forward, if desired, and, very importantly, to stay in the vehicle at all times.

Signage is also important for:

- ☞ Announcing the event location,
- ☞ Prohibiting scavenging, if you decide to do so, and
- ☞ Thanking sponsors.



## 10. Miscellaneous Site Amenities & Suggestions

- Toilets and a phone - - this is important.
- Shelter from the weather in the form of a tent or other accommodation.
- Trash and recycling containers on-site for dealing with whatever comes in plus arrangements made for removing these materials after the collection. You can reasonably expect to receive a number of cardboard boxes that will need to be flattened and recycled. Many people will bring items in cardboard boxes, and almost no one wants to take their box home with them.
- Food and beverages.
- Emergency contact information for the vendor on-site, in case extra supplies, staffing, or significant questions or concerns arise.



- ❑ Inform police, fire, and if relevant, site security in advance about the dates, times, and purpose of a special event.
- ❑ Have emergency contact information for the owner or manager of the site or facility that is being used.
- ❑ If you can have a dedicated pre-sort location and a trained staff person, have RBRC containers on-site to separate and collect rechargeable batteries. You will want to remove batteries from laptops and cell phones, as well as from portable telephones and other devices.

## 11. Collecting, Sorting, & Packing

In some ways, collecting used electronics is wonderfully simple. It gets put in a gaylord or stacked on pallets and wrapped with stretch film. In some cases, it will simply get piled on the ground and the recycler/reuse organization will pack it for you. Or the vendor will be on-site and do all the handling and collecting of the materials. Whatever the circumstances, it is essential that you clearly understand what the vendor expects of you in terms of packing, sorting and labeling.



Also of great importance, you must be in possession of, or arrange for the vendor to provide, the necessary packing and labeling materials. You are likely to need a pallet jack, bobcat with forks, forklift and/or a loading dock. You will need to label the containers or packages. The labeling requirements will be dependent on state law. If you are working with a charity other options might be offered – for example putting the electronics in with textiles, or not packaging them but having them all in one location for collection.



Lincoln, Nebraska

Gaylords and pallets with stretch film are the most common packing techniques. When using pallets and stretch film, the first step is to stack the materials – generally no more than chest height – being sure to balance them carefully. Finally, you walk around the stack and wrap it with stretch film. Beware that equipment can shift when it is being lifted onto the truck, so be sure to wrap the pallets very tightly.







**Stretch film on pallets. Portland, Maine**

Gaylords are safer and easier to use because the materials are simply placed in large boxes that are seated on pallets and then moved with heavy equipment. However, using gaylords can be very difficult for average to short height people. As one experienced program coordinator says, “for short people it’s a long way to the bottom of a gaylord.”

All of these materials are heavy and awkward. Handling them can easily result in back injuries, cuts and bruises. So, be sure that the staff is trained in the use of personal protective equipment (PPE), and in the safe lifting and handling of heavy materials. They should wear safety equipment such as heavy gloves, hard toe shoes, and back supports. Wearing reflective gear and readily visible clothing will also help to prevent traffic mishaps.

In addition, there should be more than one person for each line of traffic. Be sure that the people unloading are clear on which materials are being accepted in the program, which are



**Gaylords being loaded onto a tractor-trailer, Ohio**



not, and how you want the materials sorted in the packing process; i.e., what goes in what container.

If you are charging a fee, you may want it done at this point. Ideally, the people unloading the vehicles are not responsible for assigning and collecting fees. This means that someone else needs to be shadowing the unloading, counting products, assigning and collecting the fee, and issuing a receipt if requested.

When packing the gaylords, pallets or other containers:

- ✓ Be sure that the containers are as close to the unloading area as can be safely arranged. This is to minimize the distance that materials have to be carried – thus making it less likely that workers will be injured, that they will get exhausted, and that breakage or dropping will occur.
- ✓ Data collection, as you know, is a very important component of collection events. The moment of packing is a key opportunity for data gathering. Someone – and it should not be the people unloading the vehicles – should be keeping count of what goes into each container; for example, 12 televisions, 6 monitors.
- ✓ Be sure that someone is paying attention to when containers are getting full and need to be moved and replaced with empty ones.
- ✓ In addition, someone needs to be responsible, in a timely manner, for notifying the vendor or hauler if truck trailers are filling up and need to be replaced.

## 12. Handling CRTs

Because of the wide size range for computer screens and televisions, it is not possible to accurately tell the reader how much one weighs. However, a general estimate is that a 15” computer monitor or 21” television weighs between 35 and 50 pounds. A console television can weigh more than 125 pounds.<sup>27</sup>

As stated above, it is important that the staff handling these materials be adequately trained and wearing appropriate safety gear. The risk



Portland, Maine



of harm is to the person, not to the CRT. A CRT is very hard to break or damage if it is in its original case. Every once in awhile, however, someone will actually remove the



CRT from its housing. This happens most often in the case of console televisions. There are generally two reasons why this happens -- it's too heavy to move in the case, or the console is going to be used as furniture.

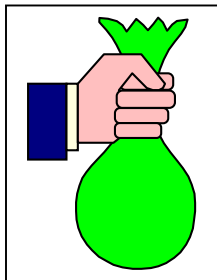
“Bare” CRTs present real safety hazards. While it is rare for an injury to occur, the health and safety dangers are:

1. By touching the unprotected glass it is possible to receive a serious shock. The CRT carries a latent charge of up to 25,000 volts for up to a year.

#### Cuyahoga, Ohio – Personal Protective Equipment

2. Parts of the glass are very sharp and can cut skin. If mishandled or broken, the glass tube can implode. The tube is under vacuum pressure; while difficult to break, broken glass is dangerous and safety glasses designed for exposure to exploding particles should be worn when handling bare CRTs.
3. Like all appliances the cathode ray tube is heavy. Improper lifting can result in serious back or foot injuries, or even implosion. A sample safety instruction sheet is in the Appendix at page 49.

### 13. Collecting Fees



The public needs to be well informed in advance about fees.

- ☞ Be sure to make clear in all outreach and publicity what the fees will be, and to whom they will apply. For example, some programs (7%) charge businesses a fee but not residents.
- ☞ Make clear what form payment may be made in: checks, local checks only, no out-of-state checks, cash, no credit cards, etc.
- ☞ Be sure to have change on-site. Anticipate that you may need to give \$15 change to the first 10 people.





- ☞ A receipt is important to some people, so be prepared. Keep duplicates of the receipts in case there is ever a challenge to bookkeeping or funds turned over.
- ☞ Be sure that the person(s) handling the money is a municipal employee or otherwise covered in case of theft or loss of the funds.
- ☞ Be prepared to secure the funds until they can be deposited. Keeping careful track of the revenues received and keeping them safe until they are turned over to accounting or a bank is an important responsibility.
- ☞ If you are intending to divert the materials to reuse, you may provide a receipt to the program participants for a charitable donation (for federal income tax purposes and in some cases for state income tax purposes as well). Have your municipal attorney provide you with the appropriate language. A partnering charity might provide a donation receipt, as well.

## 14. Surveying Participants

To collect fundamental information about the success and characteristics of your collection, data collection is essential. Surveying participants is a key first step. The National Electronics Product Stewardship Initiative has developed a “standard” survey it would like all collection programs to use for data collection from their participants, as well as a survey for collection organizers. It is hoped that with this consistent data on collection systems, a new picture of the evolution of electronics collections can be captured. A copy of that survey, as well as from two programs, are found in the Appendix.



Lincoln, Nebraska



Vancouver, Washington



## 15. Scavenging

At the same time that people are bringing in materials to be recycled/reused, people will ask if they can take any of the materials brought in – or not ask and just take them. Establish your scavenging policy head of time. There are pro and con reasons for allowing scavenging. In general, however, it should be discouraged.

**Figure 42: Scavenging – “To be or not to be”**

### **Pro**

- ✔ You will pay less because materials will be diverted.
- ✔ Scavenging can be a source of revenue: if you’re charging a fee, you collect the fee but the material is not sent to the vendor.

### **Con**

- ✔ You will not get weight or item count data for the scavenged materials from the vendor.
- ✔ Ultimately, the same materials will need to be managed as solid waste or a recyclable.
- ✔ The original user is not expecting the computer to pass into someone else’s hands: there could be privacy and confidentiality concerns.
- ✔ There is a risk to the public if you allow them to handle, or dig for, materials.
- ✔ There is no guarantee that the scavenged material will be recycled. Scavengers often are looking for specific parts from CPUs and may not bother to recycle the parts that they didn’t want (particularly the plastic housings).

## Follow-Up

### 16. Ongoing Public Education/Outreach






Advertising the program only at its inception is not enough. An ongoing public education and outreach campaign is essential to ensure that the program is sustained and grows over time. Naturally, for special events this is not as critical, but if you are likely to want to repeat that special event, ongoing outreach will be important for you as well.

The ongoing outreach effort should emphasize the same key points that were used in the initial promotion of the program: what is being accepted, where it is being collected, why they should participate, any fees, and contact information for questions. This is also an opportunity to address any changes in approach or information that are necessary based on the experience with the collection program.



## 17. Data Collection





Data collection is important because:

-  It helps to evaluate the success of your program, its strengths and weaknesses, and whether you've met your program goals.
-  It enables you to be sure that the vendor is charging you the correct amount.
-  Your peers would like to learn from your experience.
-  It enables you to share what happened with the public.
-  Allows accountability to supervisors.

As discussed above, this is an easy element of the program to let slip, but if you do, then you will not be able to determine if it was cost effective, whether fees were adequate, and whether to modify the program in the future.

## 18. Program Improvement

Many programs that collect data use it and their on-site experiences to evaluate the program and make recommendations for future changes. In several of the case studies in the following chapters, you will see these recommendations. They include suggestions such as:

-  Use a different vendor,
-  Change the type of publicity,
-  Change what is being collected, and
-  Change the location.

Each of these is of fundamental importance. Without data and evaluation of the program, it would be difficult to critique what happened and to substantiate the need for recommended changes.

Lessons learned should be incorporated into the program. For example, you might not have said in the early publicity that CRTs must be in their original housing, assuming that no one would actually go to the bother of removing the CRT from its casing. But then, there they were, "bare" CRTs. You do not want to accept bare CRTs. You'll want to make that clear and explain what participants should do if they have a bare CRT, e.g., bring it to you in a box. Or maybe you discovered that people assumed that printers were part of computers and they brought them in. Then when others saw that they were being accepted they were frustrated because they didn't realize that they could bring printers. You'll want to change the language about what to bring to make that situation clear.

You may also want to do a simple survey of participants to determine how they learned of the program. This will help you to determine which strategies were most effective in the area and can help you to re-focus the outreach efforts and funds. It will also enable



you to publicize how much was collected and where it went in the first event – in order to promote the next event.

Staff time for follow-up tends to be in the ten-hour range. Program follow-up includes:

- ❑ Analyzing collected data,
- ❑ Being sure that the vendor fully complies with contractual or other arrangements, including providing the requested data, accurate billing, and certificates of recycling,
- ❑ Handling calls from individuals who have materials to recycle and missed the event,
- ❑ Handling press calls,
- ❑ Publicizing the program success,
- ❑ Sending thank you letters to volunteers and sponsors.
- ❑ Challenges and lessons learned. Once the event is over and you have all the program data, have a follow-up meeting with a few participants, site staff, sponsors, and other organizer to evaluate the collection and determine changes for the future.

