# Final Report on
# The Mid-Atlantic States'
# Electronics Recycling Pilot

October 1, 2001 - December 31, 2002



## A Shared-Responsibility Approach
## to Residential End-of-Life
## Electronics Management

**U.S. Environmental Protection Agency**
**Mid-Atlantic Region**
**Philadelphia, PA 19103**
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# Acknowledgments

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## 1. Executive Summary

### Introduction
Electronic waste encompasses a broad and growing range of electronic devices ranging from large household appliances to cellular phones, stereo equipment, and personal computers.  Currently, electronic waste makes up roughly 2% to 5% of the U.S. municipal solid waste stream, and is the fastest growing category of the municipal solid waste stream.  The U.S. Environmental Protection Agency estimated that in 1997 more then 3.2 million tons of electronic waste ended up in U.S. landfills.  Experts estimate that by 2005, the number could reach more than 12 million tons, more than four times greater.

### What's Wrong With This Picture?
With the current rate of growth of the electronic waste stream and the current management practices, we could end up with a situation like this. Primarily because of their rapid obsolescence, toxicity, and management cost, personal computers and televisions are the electronic products of greatest concern in the electronics waste stream.  The computer industry introduces new technologies and upgrades to market on average of every 18 months, with the average lifespan of a personal computer cut in half from roughly four years to approximately two years.  (Picture courtesy of the Silicon Valley Toxics Coalition.)

In 1999, the National Safety Council reported that only 11% of all discarded computers were recycled compared to 28% of overall municipal solid waste.  Furthermore, by 2007, the number of stockpiled obsolete and unused personal computers will reach nearly 500 million.  What this means is that the majority of these wastes could end up in municipal landfills or incinerators that are not equipped to properly manage the amount of toxic material expected to come from this growing electronic waste stream.  Rather than disposing of obsolete and unused electronics, the nation would be better served by recycling electronics at the end of their useful lives.  The purpose of the Mid-Atlantic States Electronics Recycling Pilot was to collect as much data and information as possible over a multi-State jurisdiction on the feasibility of a large scale electronics recycling program.

### Overview
In 2000, the U.S. Environmental Protection Agency in Philadelphia (EPA Region 3), and the environmental agencies of the Mid-Atlantic States (Delaware, Maryland, Pennsylvania, Virginia, and West Virginia) and the District of Columbia (DC) joined forces with electronics manufacturers to find a sustainable approach to remove end-of-life computers and televisions from the municipal waste stream.  Through the Region 3 eCycling Pilot (eCycling), government and industry collaborated to demonstrate the feasibility of a multi-State, public/private, residential electronics collection, reuse, and recycling program that is based on a model of shared responsibility among government, industry, and consumers.

**Partners**
The eCycling partners included:

- Panasonic
- Sony
- Sharp
- Canon
- Hewlett Packard
- JVC
- Kodak

- Nokia
- Philips Consumer Electronics North America
- Thomson Multimedia
- Envirocycle, Inc.
- Elemental, Inc.
- Polymer Alliance Zone of West Virginia

**Purpose**
The intent of eCycling was to collect empirical data about the cost of managing end-of-life electronics as well as to:

- Divert electronics from the waste stream for recycling and reuse,
- Help spur the growth of electronics recycling markets,
- Demonstrate the feasibility of a multi-State electronics collection and recycling program,
- Learn how to harmonize regulations across States boundaries, and
- Test the use of a third-party organization to manage private-sector contributions.

**Collection Results**
At its conclusion on December 31, 2002, the eCycling Pilot resulted in:

- 58 residential electronics collection events,
- 9 permanent collection programs
- Over 2,700 tons (5.5 million pounds) of end-of-life electronics diverted from the municipal waste stream, and
- More than 26,000 cathode ray tubes (CRTs) from televisions and computer monitors diverted from the municipal waste stream.

**Collection Costs**
The two largest recyclers for the eCycling Pilot were Envirocycle, Inc. of Hallstead, Pennsylvania and Elemental, Inc. of Philadelphia, Pennsylvania. The EPA-contracted electronics recycler was Envirocycle, Inc., while Elemental, Inc. provided recycling services for the Delaware drop-off program.

Envirocycle's Costs

- Average collection, transportation, and recycling costs were 6 cents per pound, 4 cents per pound, and 14 cents per pound, respectively;
- The contracted rate was 25 cents per pound
- The contracted rate included "turnkey" electronics collection and recycling services, ensured domestic dismantling, and ensured the use of safe environmental and human health management practices.

Overall Pilot Costs

- Approximately $1.1 million, and
- An average price of 20 cents per pound.

**Lessons Learned**

Key lessons learned from the 58 one-time events, 1 state-wide/permanent collection program, and 8 county-wide permanent collection programs held over the 14-month period were that:

- Aggressive advertising was critical to the success of all the eCycling events and programs.
- The residents who attended the collection events expressed a willingness to pay a small end-of-life fee of $2 or $5 per item.
- Permanent collection programs were more cost-effective than single-day events.
- The eCycling Pilot was a catalyst in expanding electronics collection opportunities for residents and small businesses in the Mid-Atlantic States. One local government in Pennsylvania and one in Maryland each started a permanent collection program as a result of eCycling.
- The permanent collection program in Delaware demonstrated that a consistently high volume of residential and small business electronics is available for collection and recycling. Delaware's monthly pickups exceeded 100,000 pounds each month and averaged 160,000 pounds per month.

**Accomplishments**

The major accomplishments of the Region 3 eCycling Pilot were:

- Development of a unified application of hazardous waste regulations for end-of-life electronics across State boundaries in the five Mid-Atlantic States and DC,
- Partnerships with electronics companies who helped cover some of the costs to operate the Pilot,
- Partnership with a third-party organization who managed the financial contributions from the private-sector, and helped with data management and analysis,
- Establishment of a contract vehicle (via the U.S. Army Corps of Engineers) through which 4 States and the District of Columbia could use public-sector funding, and
- Expansion of the electronics recycling infrastructure throughout the Mid-Atlantic region.

## 2. Background

### 2.1. Problem Statement

Keeping pace with advancements in technology leaves many consumers wondering what to do with outdated computers, televisions, cell phones, and other electronics. Consequently, the disposal problem that results rests largely on the shoulders of state and local government. Compounding the size of the electronics disposal problem are the potential toxicity of the discarded materials and the use of increasing amounts of virgin raw materials to manufacture new electronics.

Electronics may contain large amounts of toxics and other materials that can harm human health and the environment if they are improperly managed. Some of these materials include lead, cadmium, mercury, brominated flame retardants, chromium, and arsenic. In fact, the picture tubes from computer monitors and televisions, called cathode ray tubes or CRTs, are the single largest source of contaminants in electronics, and one of the largest sources of lead in municipal waste.

In addition to the problem of toxics, valuable commodities such as plastics, metals, and glass are wasted when municipalities dispose of consumer end-of-life electronics in landfills or incinerators. Without effective recycling of these materials, we will continue to depend on limited virgin materials that consume more energy to extract and process than recycled materials. Collection and recycling electronics from consumers and small businesses is an excellent example of how to address environmental, natural resource, and economic needs, simultaneously. This focus on the nation's environmental, natural resource, and economic needs is part of EPA's new Resource Conservation Challenge initiative

([http://www.epa.gov/epaoswer/osw/conserve/plugin/index.htm](http://www.epa.gov/epaoswer/osw/conserve/plugin/index.htm)) to identify and use innovative, flexible, and protective ways to conserve natural resources and energy.

At the corporate level, the vast majority of large and mid-size companies lease electronic equipment and hire asset management companies to help them manage the disposition of purchased equipment.  This approach provides these companies with an effective solution to the challenge of rapid obsolescence.  Large businesses are able to work through asset management companies to replace their electronics well before they reach the end of their useful lives and while there is still considerable value remaining for other users.  Consequently, large businesses refurbish and resell a large percentage of their unwanted electronics, significantly minimizing the amount that is recycled.  For the electronics that must be recycled, the stream is usually homogeneous enough to make the recycling process efficient and cost effective.

On the other hand, consumers and small businesses, academic institutions, and organizations often do not have an effective, long-term way to manage their unwanted electronics.  There are several reasons for this.  First, the average consumer and small business owner tend to use their computers and televisions until there is little value remaining for resale or refurbishment.  As a result, unwanted electronics from this segment of the population are usually disposed.  Second, the cost for consumers to return end-of-life electronics to the manufacturer is prohibitively expensive.  Finally, because consumers tend to use electronics well beyond the useful life of the equipment, the composition of the resulting material stream for recycling at any point in time is quite heterogeneous.  As a result, current recycling processes that use these materials operate inefficiently when compared to a more homogeneous equipment stream from large businesses and large organizations.

## 2.2.  Proposed Solution

In order to keep pace with the obsolescence caused by rapidly advancing technology and, at the same time, meet environmental protection goals, the Mid-Atlantic Region sought a sustainable solution to the residential end-of-life electronics management challenge.  The Federal and State environmental agencies in the Mid-Atlantic States leveraged their limited resources and worked with the electronics industry to:

(1)  Develop a regional collection and recycling program;
(2)  Determine how to share collection, transportation, and recycling costs; and
(3)  Encourage a large number of electronic companies and electronics retailers to help cover transportation and recycling costs.

## 2.3.  The eCycling Vision

The vision for eCycling is based on four principles:  (1) sharing responsibility among industry (electronics companies, electronics retailers, and electronics recyclers), government, and consumers;  (2) returning materials to productive use in commerce; (3) establishing protective, consistent, and flexible environmental regulations; and (4) ensuring domestic dismantling and reuse of electronics.

### 2.3.1. Shared Responsibility

eCycling operated on the principle that electronics manufacturers, electronics retailers, consumers (residents), the government, and other businesses that rely heavily on and benefit from technological innovation should share the financial and operational responsibility for environmentally-sound management of consumer end-of-life electronics.  What follows are some examples of how these stakeholders could share the financial responsibility in future residential electronics collection programs:

- Manufacturers can pay to recycle their own brands,
- Retailers and manufacturers can share some of the transportation and recycling costs,
- Retailers and other businesses can advertise collection events or permanent drop-off locations by purchasing air time or print advertisement,
- Retailers can offer sales-related incentives to participating electronics manufacturers,

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- Residents and small businesses can pay modest drop-off fees, and
- Other businesses (e.g., internet providers, utility companies, software makers) can assist with promotion.

### 2.3.2. Returning Materials to Productive Use in Commerce

The eCycling Team believed that it was critical to implement a system that would encourage the return of materials from electronics dismantling processes (e.g., plastic, glass, metals, precious metals, etc.) to productive use in commerce. In order to achieve this vision for the project, the eCycling Team sought to:

(1) Refurbish and reuse collected electronics to the greatest extent possible, and
(2) Help expand recycling capacity across the region by helping to increase secondary markets for commodities from recycled electronics.

The eCycling Team also sought to ensure that materials collected during the Pilot were processed domestically and not sent overseas to developing countries that might not ensure proper management practices, and thus, threaten human health and the environment in those countries.

### 2.3.3. Regulatory Flexibility

The final aspect of the vision for eCycling was to establish regulatory consistency across all the Mid-Atlantic States and DC, and regulatory flexibility to help lower the barriers to entry into the regional electronics recycling market. Given that States are allowed to impose more stringent environmental regulations than the Federal government, businesses operating within EPA Region 3 could potentially face 6 different sets of environmental regulations that cover collection, transportation, and recycling of electronics from the eCycling Pilot. The eCycling Team sought to remove the potential regulatory uncertainty and the increased liability this situation presented in order to encourage greater participation in the Pilot. In addition, eCycling sought to reduce the operating costs for those handling end-of-life electronics by excluding these materials from regulation under the Resource Conservation and Recovery Act for the duration of the Pilot.

### 2.4. The eCycling Objectives

The eCycling Team sought to accomplish the following objectives through the eCycling Pilot:

(1) Increase opportunities for residents and small businesses to recycle their unwanted electronics,
(2) Take advantage of the synergies created from a multi-state program, and
(3) Identify infrastructure development needs that could inform the development of a national system.

## 3. eCycling Implementation

Key to the success of the eCycling Pilot was the strong Region 3 State-EPA Team (Appendix B) and the commitment of the Team to the shared-responsibility approach to managing residential end-of-life electronics. The eCycling Team formed in October 2000 by consensus among the waste program directors from the 6 state environmental agencies, and EPA Region 3. The impetus for creating a regional Team was the rapidly-growing electronics waste stream in each State and the anticipation of high-definition television that would potentially create a flood of television discards in the coming years.

The goal of the Team was to develop and implement jointly an electronic waste management strategy that would divert end-of-life consumer electronics from the municipal waste stream in the Region 3 States using a combination of recycling, reuse, and industry take-back efforts. The Team agreed to a three-pronged approach for the regional electronic waste management strategy:

(1) Hold a regional forum with the electronics manufacturing, retail, and recycling industries to establish a public-private partnership;

(2) Influence State legislative and environmental policy to support the Region 3 strategy; and

(3) Conduct education and outreach to consumers in Region 3.

### 3.1. Partnering with the Electronics Industry

A critical first step in implementing the eCycling approach was to join forces with electronics manufacturers, recyclers, and retailers who were industry leaders in addressing the residential electronics management challenge. In behalf of the eCycling Team, the EPA Regional Administrator invited a group of stakeholders to explore mutual interests and the opportunities that eCycling could offer all partners. The stakeholders included corporate decision–makers from industry (Appendix B), and senior managers from the state and local government environmental agencies. Three multi-stakeholder meetings followed: June 6, 2001; August 29, 2001; and October 9, 2002.

#### 3.1.1. June 6, 2001 Stakeholder Meeting: Defining the Scope of the eCycling Pilot

The purpose of the first stakeholder meeting on June 6, 2001 was to gain consensus on and define the scope of a Region 3 multi-State Pilot. The meeting covered:

- The vision, goals and objectives of eCycling,
- The benefits of eCycling to all stakeholders,
- Some financial commitments each stakeholder could make to help implement eCycling, and
- The establishment of four Action Groups to develop the eCycling Implementation Strategy (Operations / Cost, Public Relations / Outreach, Regulatory Flexibility, and Data Collection and Analysis).

The multi-stakeholder group that convened on June 6, 2001 agreed strongly that it was important to work collaboratively to move residential electronics management to the next level—the multi-state level—in trying to develop a national solution to the problem. In addition to senior managers from EPA Region 3, EPA Headquarters, and the Mid-Atlantic States environmental agencies, the following industry and non-profit stakeholders also participated in the June 6, 2001 meeting: Sony, Panasonic, Sharp, JVC, Philips, the Electronic Industries Alliance, Best Buy, Envirocycle, Waste Management, Elemental, Techneglas, Mission West Virginia, DMC, the Solid Waste Authority of Cumberland County (Pennsylvania), the Product Stewardship Institute, the Northeast Recycling Council, Minnesota Office of Environmental Assistance, and the Polymer Alliance Zone of West Virginia.

Significant outcomes of this first stakeholder forum were that:

- eCycling would move very quickly and hold its official kick off on October 1, 2001,
- Sony, Panasonic, and Sharp would cover the cost to collect and recycle their branded products,
- The government (federal, state and local) would cover all collection costs, and
- The Electronic Industries Alliance would meet with its constituents to determine how to help financially with transportation and dismantling costs.

#### 3.1.2. August 29, 2001 Stakeholder Meeting: Presentation of the eCycling Pilot Implementation Strategy

The purpose of the second stakeholder meeting on August 29, 2001 was for the eCycling Team to present and finalize the draft eCycling implementation strategy developed by the Action Groups. Significant outcomes of this second stakeholder forum were the following:

- The environmental agencies of the Mid-Atlantic States would work with local governments to schedule eCycling collection events during the 14-month Pilot period.
- EPA Region 3 would select an electronics recycler that many participating local governments would utilize.
- The selected electronics recycler would meet the criteria set by the manufacturers who would help with transportation and recycling costs.
- All Mid-Atlantic States environmental agencies and the participating local governments would use uniform promotion, outreach, and education messages (e.g., the eCycling logo, messages about the purpose of the events, and messages about the scope of the Pilot).
- The eCycling Team would develop a regional regulation to exempt from hazardous waste regulations electronics that were collected for the purpose of recycling and reuse.
- Each eCycling event would collect the same types of data to help determine costs, the amount of electronics collected and recycled, the composition of the residential electronics stream, and the willingness of residents and small-businesses to pay an end-of-life fee.
- Participating manufacturers would help to recruit additional manufacturers to participate in the eCycling Pilot.

### 3.1.3. October 9, 2002 Stakeholder Meeting: Presentation of eCycling Pilot Results

The purpose of the third stakeholder meeting on October 9, 2002 was to report the results of the first year of the eCycling Pilot, present the lessons learned, and encourage all the government and industry stakeholders to continue to support the eCycling Pilot in its final year of operation.

## 3.2. Establishing Regulatory Flexibility

A significant concern that participating manufacturers and the recyclers raised repeatedly during the first stakeholder meeting concerned how EPA would ensure uniformity and consistency across the Mid-Atlantic States in how hazardous waste regulations were enforced for companies managing, transporting, and dismantling electronics from the eCycling Pilot. To eliminate this concern that transporters and recyclers would face a number of different regulations as they crossed State borders, senior managers from EPA and from the State environmental agencies agreed to implement consistent regulations for the duration of the Pilot. In addition, they agreed to pursue a new regional regulation to exclude from hazardous waste requirements those electronics from the Pilot that were destined for recycling and reuse.

Through a Memorandum of Understanding that became effective in December 2001, EPA Region 3, the Mid-Atlantic States, and DC proposed to conditionally exclude from classification as a hazardous waste end-of-life electronics destined for recycling and reuse. The exclusion would apply to the generation, transportation, collection, accumulation, storage, and dismantling of end-of-life electronics only when they were managed as part of the eCycling Pilot.

In July 2001, the Region 3 State environmental agencies submitted a joint proposal to the EPA Regional Administrator requesting approval to pursue this regulatory exclusion.

In August 2001, the EPA Regional Administrator accepted the proposal, in principle, and the resulting Memorandum of Understanding outlined the expectations and commitments of EPA Region 3 and the State agencies to further the goals of eCycling.

The benefits of the Memorandum of Understanding were to eliminate the added cost of managing these materials as a hazardous waste, and to assure industry that both Federal and State government in the Mid-

Atlantic States and DC would apply any needed compliance and enforcement decisions consistently across Region 3.

In April 2002, the EPA Regional Administrator submitted the proposal and an accompanying Direct Final Rule to the EPA Administrator for approval. The EPA Administrator approved the proposal, and the regional Direct Final Rule was published in the Federal Register on December 26, 2002. As a result of adverse public comments, however, EPA Region 3 withdrew the Direct Final Rule to await the results of the national EPA Cathode Ray Tube Rule. This Rule is expected in late in 2004.

Appendix C provides a reference for the regulatory flexibility documents. It provides Internet web addresses for the Federal and EPA Region 3 Cathode Ray Tube Rules published in the Federal Register. It also provides a copy of the Regulatory Flexibility Proposal from the Mid-Atlantic States, and the Memorandum of Understanding between EPA Region 3 and the Mid-Atlantic States.

### 3.3. Funding the Pilot

Critical to the success of both the eCycling Pilot and the shared-responsibility approach was obtaining commitment from all stakeholders to share the cost of operating the Pilot. The government / industry group faced critical challenges in its efforts to determine how to cover the costs of the Pilot. The first was how to spread all Pilot costs equitably across all participating stakeholders. The second was how to make the residential collection and recycling system sustainable. The third was how to gain meaningful participation from a large majority of electronics manufacturers to help with transportation costs from collection / consolidation points to the recycling facilities.

The eCycling stakeholders were unable to overcome these challenges before the scheduled kick-off date. At the end of three months of intensive effort and negotiation, the eCycling Team acquired the following resources to pilot test a multi-State, residential electronics collection program from October 1, 2001 to December 31, 2002:
- $100,000 from the EPA Office of Air and Radiation,
- $50,000 from EPA Region 3,
- $50,000 from 10 members of the Electronic Industries Alliance (Panasonic, Sony, Sharp, Canon, Hewlett Packard, JVC, Kodak, Nokia, Philips Consumer Electronics North America, and Thomson Multimedia),
- $10,000 from Sony, Panasonic, and Sharp for the recycling costs of their respective brands of equipment,
- Approximately $900,000 in transportation and recycling costs from State environmental agencies and local governments,
- $500,000 in in-kind services from the State environmental agencies,
- $200,000 in in-kind services from EPA,
- Approximately $100,000 in advertising costs from State and local government, and
- Collection sites, in-kind services, and operations from local governments.
- *NOTE:* We were unable to quantify the costs borne by the eCycling recycler to help make the Pilot a success

The residential collection events fell into two categories. The principle category of events used "eCycling funding" from EPA and the Electronic Industries Alliance (EIA). The second category of events used money solely from State and local government agencies. While the initial intent of eCycling, and of this Report, was to capture the results of the EPA / EIA-sponsored pilot, this Report also highlights the results of numerous,

independent programs that took place across the Region 3 States at the same time.  These efforts, many of which continue even after the eCycling Pilot has ended, are integral to the mission and goals of eCycling.

### 3.3.1. <u>State-Specific Approaches to Using the eCycling (EPA/EIA) Funds</u>

The state environmental agencies in Maryland, Virginia, and West Virginia each received approximately $42K in eCycling funding.  Pennsylvania received approximately $50,000 in eCycling funding.  The Delaware Solid Waste Authority used its own funds to run a State-wide collection and recycling program for Delaware residents.  As a result, they did not use eCycling funding.

Pennsylvania, Maryland, Virginia, and West Virginia each used their eCycling funding differently.  Each State first surveyed its local governments to determine which localities would participate in the Pilot.  Based on the survey, each State selected local governments that were both able to share the costs of running electronics collection events, and willing to collect the required data.  Table 4-1 shows these local governments in bold/black font.  Appendix E provides a copy of the Local Government Survey that the eCycling Team used to select the participating localities that would use eCycling funding.

- The Pennsylvania Department of Environmental Protection, through its Household Hazardous Waste grants to counties, covered one-half of all transportation and recycling costs incurred by most of its participating jurisdictions.
- The Maryland Department of the Environment gave each selected jurisdiction approximately $7,500 to help with their electronics collection events.  These local governments were responsible for all transportation and recycling costs they incurred above the eCycling funding.  Other jurisdictions that did not receive eCycling funds, but that were included in the Pilot, fully covered their collection, transportation and recycling costs.
- The Virginia Department of Environmental Quality selected several counties who demonstrated their ability to partner with the State agency.  The other jurisdictions that did not receive eCycling funds, but that were included in the Pilot fully covered their collection, transportation and recycling costs.
- The West Virginia Department of Environmental Protection collaborated with the West Virginia Solid Waste Management Board to offer financial support to each of eight participating Solid Waste Authorities based on 1/3% (0.33%) of the population served by the particular Solid Waste Authority.

## 3.4.  Deploying Financial Contributions from the Electronic Industries Alliance

Determining how to put into use the cash contributions committed to the Pilot by the Electronic Industries Alliance was a major hurdle in implementing eCycling.  Because government agencies are prohibited from receiving money from the private sector, the eCycling Team had to identify an appropriate vehicle by which the Pilot could utilize the private sector contribution.  At the request of the eCycling Team, the Polymer Alliance Zone of West Virginia (PAZ) agreed to play the role of a third-party organization that would receive and manage any private-sector contribution in behalf of the eCycling Pilot.  PAZ performed this service free of charge.

The Electronic Industries Alliance transferred the funds collected from the ten electronics companies to PAZ.  At the completion of an eCycling collection event, the local government agency that hosted the event would send an invoice to PAZ to be reimbursed for the collection, transportation, and dismantling services performed by the eCycling Pilot contractor selected through a competitive bidding process.

### 3.4.1. <u>What is the Polymer Alliance Zone of West Virginia?</u>
The Polymer Alliance Zone of West Virginia (PAZ) is a public-private partnership among the plastics industry, academia, and government, and is funded by public and private sector sources. The Polymer Alliance Zone was created by Executive Order by West Virginia Governor Gaston Caperton on March 8, 1996. The Executive Order linked Jackson, Mason, and Wood Counties' economic development efforts into a concentrated focus on the polymers industry. PAZ has established growth and development of strong electronics and plastics recycling industries as a major economic development goal in the West Virginia and Ohio Valley region. In addition, PAZ works closely with both the U.S. Environmental Protection Agency and the Electronic Industries Alliance to help advance the development of the end-of-life electronics management infrastructure in the United States.

### 3.5. Promoting and Advertising eCycling Electronics Collection Opportunities
Advertisement is critical to informing the public of available opportunities to recycle their unwanted electronics, and to educating them about how to make environmentally sound decisions about electronics purchasing and management of those electronics at the end of their useful lives. In order to use the available eCycling resources most effectively to promote eCycling opportunities, the Pennsylvania Department of Environmental Protection hired an advertising agency to develop uniform messages and advertising materials for the Pilot, and create a logo to make the eCycling Pilot easily recognizable by the public. In addition, with financial support from the EPA Region 3, the Maryland Department of the Environment (MDE) produced and aired a television commercial about electronics recycling and the eCycling Pilot. MDE made copies of the commercial available to each State environmental agency. To view the video, go to http://www.epa.gov/reg3wcmd/eCycling.htm.

Below are other approaches the eCycling Team used to promote electronics collection opportunities to residents.
- Worked with utility companies to place eCycling messages on utility bill stuffers (see Appendix H for an example from Baltimore Gas & Electric);
- Worked with television and radio stations to run news stories and advertisements about upcoming eCycling collection events;
- Developed an EPA eCycling website at http://www.epa.gov/reg3wcmd/eCycling.htm
- Issued press releases and held press events at collection events; and
- Collaborated with utility companies and communications companies to place eCycling information on the companies' websites.

### 3.6. Selecting an Electronics Recycler
Based on the discussions from the June 6, 2001 stakeholder meeting, the goal of the eCycling Team was to identify and select an electronics recycler that would meet the audit criteria specified by the manufacturers who would help with some of the Pilot costs. Manufacturers wanted to limit their liability under environmental laws, avoid contributing to future Superfund sites, and ensure that they are associated with environmentally and socially sound electronics management practices.

EPA Region 3 reviewed its national contracting resources to identify a contractor who could provide either turn-key electronics recycling services (i.e., electronics collection, transportation, dismantling, recycling, and/or reuse services), or who could contract with and oversee the activities of such a recycler. Because of the nature of the EPA national contracts, EPA Region 3 was not permitted to use a private-sector contractor that supplied services resembling industrial operations. In addition, the tight time frame for kick-off of eCycling did not allow the Regional office to consider a sole-source selection process. EPA Region 3 determined that the best option was to work with the United States Army Corps of Engineers, who were able to supply, via a

subcontract, all of the necessary electronics collection, transportation, dismantling, and recycling/reuse services.

Through an Inter-Agency Agreement, the U.S. EPA Region 3 arranged with the U.S. Army Corps of Engineers (the Corps) to select an eCycling recycler. The Corps solicited bids from interested recyclers to run eCycling collection events, and to transport, dismantle, and recycle or refurbish the collected electronics in an environmentally-sound manner. The eCycling Team specified requirements and performance criteria that were consistent with the vision, goals, and objectives of the Pilot. The selected recycler would demonstrate the ability to:

- Run the collection events, including providing equipment, materials, labor, and transportation.
- Package collected equipment in either Gaylord boxes or shrink-wrapped on pallets.
- Remove collected end-of-life equipment within 24 hours after a collection event.
- Prepare, and arrange for demanufacture and processing of all materials collected.
- Process all equipment primarily using recycling, reuse, and refurbishment so as to minimize landfilling and incineration.
- Ensure demanufacture of all whole, intact electronic equipment within the continental United States and/or Canada.
- Ensure no direct sales of intact equipment overseas.
- Process computer monitors and televisions, and all glass within the United States and/or Canada.
- Comply with all Federal and State policies, regulations, and requirements for transporting and processing waste electronic products.
- Complete and submit within 30 days after a collection event the appropriate eCycling Data Collection Forms for transportation and recycling activities.

In addition to meeting the above criteria, the selected recycler had to provide proof of:
- Experience and reputation with respect to electronic goods recycling,
- Capacity to provide services of the scope specified in the solicitation,
- A market for each commodity,
- A contractual arrangement with each vendor, and
- The method of recycling and written documentation of end user(s).

The U.S. Army Corps of Engineers selected Envirocycle, Inc. of Hallstead, Pennsylvania.

### 3.7. Holding Electronics Collection Events
The State environmental agencies and local governments worked together to identify locations for single-day and on-going electronics collection events in the Mid-Atlantic States and the District of Columbia from October 2001 through December 2002. Residential electronics collection events took place generally on a Saturday at locations such as fair grounds, municipal landfills, school parking lots, and, to a limited extent, retail store parking lots. County and city residents drove to collection events where recycler employees unloaded electronics and placed them in large cardboard boxes called Gaylord boxes. Computer monitors and televisions were placed on wooden pallets and shrink-wrapped with plastic wrap. All boxes and pallets were loaded onto tractor trailers for transportation to the recycling facility.

Table 4-1 in Appendix A provides detailed information about the eCycling events held from October 1, 2001 through December 31, 2002. The map in Appendix F shows the location of the eCycling events.
For all the events, the event sponsors were responsible for publicity, data collection at the collection location, staffing (for traffic control and survey distribution), and other collection-related expenses.

- The Maryland Department of the Environment focused on the State's smaller, rural counties, but was able to offer electronics collections in almost every county in the State.
- The Virginia Department of Environmental Quality offered collection opportunities to rural, suburban, and urban, areas.
- The Pennsylvania Department of Environmental Protection focused on a mix of rural, suburban, and urban counties.
- The Delaware Solid Waste Authority covered the entire State of Delaware.
- The West Virginia Department of Environmental Protection and the West Virginia Solid Waste Management Board offer electronics collection opportunities in six of ten Solid Waste Authority jurisdictions.
- The District of Columbia held one one-day event in the District.

### 3.8. Collecting and Managing eCycling Data

The overall goal of the data collection effort for the eCycling Pilot was to provide varied stakeholders with valuable insights about the cost to collect, transport, and dismantle consumer electronics, and the amount of electronics available for collection and recycling from residents living in rural, suburban, and urban locations. Furthermore, the eCycling Team anticipated that the data collection effort would also provide insights about:

- Whether and to what extent residents are willing to pay end-of-life fees,
- Who consumers believe should help pay to collect and recycle residential electronics, and
- The overall composition of the residential end-of-life electronics stream.

To facilitate the collection of the wide variety of eCycling data requested by both Pilot partners and other stakeholders, the eCycling Team developed data collection forms to capture both quantitative and qualitative data. Appendix D contains a copy of each type of eCycling data collection form used during the Pilot. The event sponsors who used eCycling funding and the Corps-contracted recycler were required to complete their respective forms and to send the completed form to either their State contact or to the EPA Regional Office in Philadelphia.

Through the use of a participant's questionnaire, the eCycling Team gathered qualitative information from residents, and small businesses and organizations on the following:

(1) The effectiveness of advertisement,
(2) Participants' willingness to pay a drop-off or end-of-life fee,
(3) The amount participants are willing to pay to recycle old electronic equipment,
(4) Who participants feel should pay for recycling electronics,
(5) How much end-of-life electronics are in households waiting to be recycled, and
(6) How far participants traveled to attend the collection events.

The eCycling Team partnered with the Polymer Alliance Zone of West Virginia (PAZ) to obtain assistance managing and analyzing the large amount of eCycling data generated by the Pilot. PAZ developed an online eCycling data management system for the eCycling Pilot, provided data entry support, and provided data analysis expertise. This gratis support was invaluable and enabled EPA Region 3 and Mid-Atlantic States to substantially reduce the operating cost of the eCycling Pilot. In return, the eCycling Pilot provided PAZ with empirical data to test the capabilities of its proprietary data system, Green Online™, and to support their efforts to expand the use of Internet-based information exchanges for electronics recycling.

The eCycling database is located at www.electronicsrecycling.org/EPA/EPALogin/index.aspx. Through this website, visitors are able to look at the results of specific eCycling events. The Draft eCycling Database User Guide is in Appendix I.

### 4. eCycling Results

#### 4.1. Overview

eCycling data were difficult to collect and analyze. While event hosts who used eCycling funding submitted complete data via the required eCycling data collection forms, event hosts who used their own money did not submit the same amount of data. Therefore, to enable us to analyze the data and make comparisons across all the collection events, we present data from eCycling events in three different ways, which are described below.

##### 4.1.1 eCycling Events Detailed Information

Table 4-1, eCycling Events Detailed Information (in Appendix A), provides the most comprehensive data, showing up to nine data points for every eCycling data collection event and program. Table 4-1 presents the following data by event and by State:

    (1) Event location
    (2) Population
    (3) Pounds
    (4) Tons collected
    (5) Number of CRTs collected
    (6) Pounds per person collected
    (7) Event participation rate
    (8) Advertising costs
    (9) Processing (i.e., dismantling transportation, and recycling) costs

The eCycling Team gathered these data via the eCycling data collection forms, phone interviews, and email requests.

##### 4.1.2 Illustrations of eCycling Data

Figure 4-1 through Figure 4-15 illustrate important findings that are based on eCycling data collected at events run by Envirocycle, Inc., and paid for using EPA and EIA funds. The eCycling Team gathered these data via the Recycler Data Collection Form and the Participants' Survey Form.

##### 4.1.3 eCycling Database

The eCycling database, located at [http://www.electronicsrecycling.org/EPA/EPALogin/index.aspx](http://www.electronicsrecycling.org/EPA/EPALogin/index.aspx), makes available the raw data from the events managed by Envirocycle, Inc. The eCycling Team gathered these data via the Recycler Data Collection Form from each event. As a result, these events have the most complete data.

#### 4.2. Interpreting the Processing Cost Data in Table 4-1

The data on collection, transportation, and processing costs (hereafter referred to as 'processing costs'), shown in the last column of Table 4-1, comprise two types of data:

- Actual data reported by an environmental agency (data are shown in black font), and
- Extrapolated data based on an average price per pound from all reported cost data (data are shown in bold/green font).

Where an environmental agency did not report processing costs from their collection event, we used an extrapolated value of 20 cents per pound based on the average price per pound for all events that reported processing cost data. The processing costs shown in bold/green font are those extrapolated costs. The extrapolated costs totaled approximately $326,897. To collect and present actual processing cost information for all of these events would require research beyond the scope of this effort.

The electronics collection events shown in bold/black font in the first column of Table 4-1 used primarily eCycling funding. There are several cases, however, where the amount of local government funding exceeded the amount eCycling funding spent on the event. The total processing costs covered by eCycling was approximately $200,000.

The processing costs that are shown in regular/black font in the last column of the Table 4-1 were borne solely by the State environmental agencies and local governments. These costs totaled approximately $574,426. More than half of this amount was spent by the Delaware Solid Waste Authority for its State-wide program.

Table 4-1 also distinguishes between ongoing / permanent collection programs (9 programs) and single-day collection events (58 events). The permanent collection programs, which are indicated by the letter 'P' following the location name, are not included in the count of total number of events shown in the Date column of the Table.

### 4.3. State-by-State Description of the Data in Table 4-1
#### 4.3.1. <u>Delaware</u>
- The Delaware Solid Waste Authority (DSWA) paid for the residential electronics collection program for the State of Delaware. This program used neither EPA nor EIA money.
- The DSWA also accepted electronics from all small businesses, small academic institutions, and small organizations.
- DSWA uses landfill tipping fees to fund electronics collection and recycling.
- Processing costs for the DSWA events totaled almost $386,000 to pickup, transport, and process 1,203 tons of electronics. These costs included both operational and contractor costs. DSWA used Elemental, Inc. of Philadelphia, Pennsylvania to pick up and dismantle electronics.
- Advertising costs for the DSWA events totaled almost $39,000.
- DSWA set up 6 drop-off locations through the State. Three (3) in New Castle County, two (2) in Kent County, and one (1) in Sussex County. See Appendix G for the addresses of the DSWA drop-off sites.
- The per capita collection rate for electronics collected in Delaware was approximately 3 pounds per person.

#### 4.3.2. <u>Maryland</u>
- The Maryland Department of the Environment (MDE) submitted data on 23 one-time events and 4 permanent collection programs. Six of the 23 one-time events and 1 permanent program (shown in bold in Table 4–1) used eCycling funds totaling approximately $36,000. They each received approximately $7,500 in eCycling funding.
- The City of Baltimore spent an additional $5,000 to cover collection, transportation, and recycling costs for their event.
- Actual processing costs reported by MDE totaled approximately $80,000. When we added extrapolated processing costs, the total estimated processing cost for collection events in Maryland came to approximately $343,861.
- Advertising costs reported by MDE totaled approximately $37,000.
- MDE partnered with utility companies and with a local television station to provide advertising for its eCycling events.
- MDE focused heavily on providing recycling opportunities to its rural communities.
- The jurisdictions that comprise the Mid-Shore Region are the counties of Caroline, Kent, Queen Anne's, and Talbot.

### 4.3.3. Pennsylvania

- The Pennsylvania Department of Environmental Protection (PADEP) reimbursed all counties that participated in the eCycling Pilot for 50% of the total cost of their electronics collection events. As a result, the actual amount of eCycling funding used by the counties shown in bold in Table 4-1 is one-half of the actual amount shown.
- There are four exceptions.
  - Lackawanna County charged a collection fee of $5 per person to offset its share of the collection costs. As a result, Lackawanna County's reimbursement from the eCycling Pilot is less than half of the amount that is shown. It is approximately $1,100.
  - Cumberland County used $18,291 in eCycling funding and the County spent $50,600. PADEP spent $32,309.
  - The cost for the Dauphin County event on September 22, 2001 is the collection and transportation cost only. The processing was free because the County donated the collected equipment to a sheltered workshop.
  - There was no cost to the eCycling Pilot for the processing costs from the Dauphin County event on October 5, 2001.
- The total amount spent on the six events that used eCycling funding was $49,222.
- PADEP's grants to local governments for eCycling totaled about $97,000.
- PADEP uses landfill tipping fees to help fund its Household Hazardous Waste reimbursement program.
- PADEP submitted data on 14 one-time collection events and 2 permanent collection programs.
- Actual processing costs reported by PADEP totaled more than $212,000. When we added the extrapolated processing costs, the total estimated processing costs for collection events in Pennsylvania came to approximately $233,796.
- Advertising costs reported by PADEP totaled approximately $23,000. In addition to these costs borne by the participating counties, PADEP spent approximately $62,000 for a public relations firm to develop promotional materials for the Pilot, and to provide public outreach and education.
- Lebanon County began offering a permanent, curbside electronics collection program on June 30, 2002.
- Dauphin County and Franklin County began offering a curbside electronics collection program that started prior to the start of eCycling.
- The Northern Tier Solid Waste Authority comprises Bradford, Sullivan, and Tioga counties.

### 4.3.4. Virginia

- The Virginia Department of Environmental Quality (VADEQ) submitted data on 13 one-time collection events and 2 permanent collection programs.
- Two of these events used eCycling funding: Virginia Beach City and the Central Virginia Waste Management Authority (CVWMA). These were the only events that reported processing cost data.
- eCycling funds spent on these events totaled $34,538.
- When we added the extrapolated processing costs, the total estimated processing costs for collection events in Virginia came to approximately $74,338.
- Advertising costs reported by VADEQ events totaled approximately $15,000.
- VADEQ provided $8000 in grants to localities to promote eCycling.
- The Central Virginia Waste Management Authority (CVWMA) includes the following jurisdictions: (1) the cities of Colonial Heights, Hopewell, Petersburg, and Richmond; (2) the

town of Ashland; and (3) the counties of Charles City, Chesterfield, Goochland, Hanover, Henrico, New Kent, Powhatan, and Prince George.  The CVWMA spent $5,800 on advertising.
- Frederick County spent $700 on advertising.

### 4.3.5. West Virginia
- The West Virginia Solid Waste Management Board (WVSWMB) submitted data on 7 one-time collection events.
- All of these events used eCycling funding totaling $45,196.
- Actual processing costs reported by the WVSWMB totaled approximately $61,696.
- Four West Virginia Solid Waste Authorities (Ohio, Harrison, Monogalia, and Hancock) had events that exceeded the level of participation they anticipated.  The WVSWMB expected approximately 1/3% of the population in each SWA area to attend each collection event.  As a result of this higher-than-expected turnout, these SWAs incurred processing costs of approximately $16,500 that were not covered by the eCycling project.
- Advertising costs reported by the WVSWMB totaled approximately $3,000.
- Advertising costs were minimal because the Solid Waste Authorities took advantage of offers of free advertising from local television stations and newspapers.
  - The Berkeley County SWA purchased banners ($250), made fliers ($20), received a free newspaper article from the Martinsburg Journal, and received free airtime on two (2) local talk-radio stations to promote its eCycling event.
  - The Harrison County SWA paid for newspaper advertisement ($415) and signage for their event, and received two (2) free newspaper ads and news spots on two (2) television stations.  This event took place on a Friday and was the most successful event the Authority ever did.
  - The Raleigh County SWA paid for newspaper advertisement ($2,303) and received free talk-radio advertising.

### 4.3.6. District of Columbia
- The Department of Public Works held only one collection event in which it collected 4 tons of electronics.  This event was part of a Household Hazardous Waste collection day that accepted unwanted electronics from residents.  Because the Department was unable to separate the cost to transport and process the electronics from the other costs, we extrapolated the processing cost for this event.  The estimated cost for this event was approximately $1,700.

### 4.4.  Illustrations of eCycling Data
Figure 4-1 through Figure 4-15 illustrate comparative results from selected eCycling data and the results of survey data collected during several events.

### 4.4.1. Volume of Electronics Collected

Figure 4-1 shows the total pounds of electronics collected, by State.  The state-wide electronics collection program run by the Delaware Solid Waste Authority (DSWA) generated 2.4 million pounds of electronics, the largest amount of discarded electronics collected during the eCycling pilot.  DSWA provided continuous, aggressive advertisement prior to and during the Pilot period.  The electronics collection efforts of the other Mid-Atlantic States were primarily single-day events run by individual localities (counties, independent cities, and Solid Waste Authorities), as their resources allowed.  These events yielded a little over 3 million pounds of consumer electronics.

**Figure 4-1  Total Pounds Collected by State**
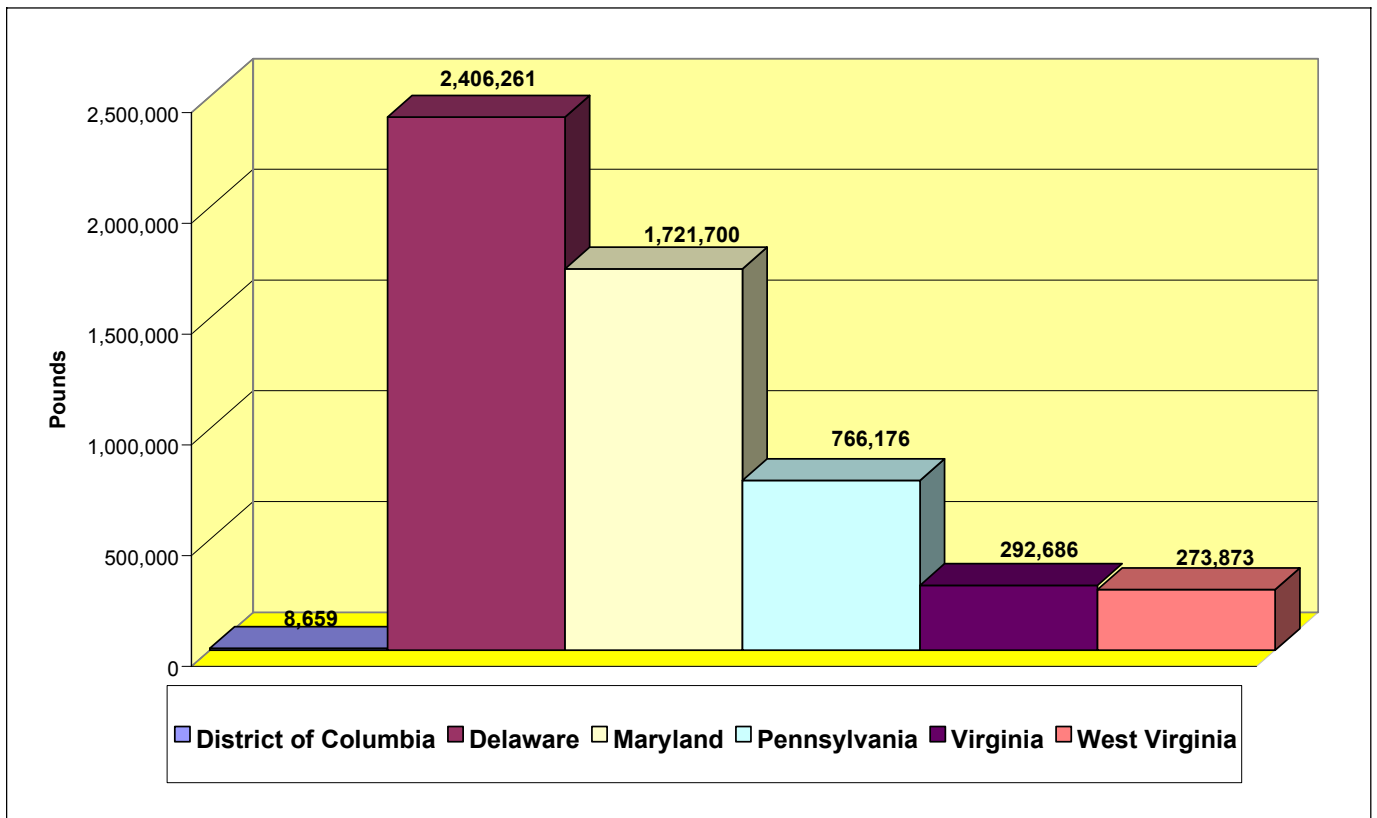


The amount of electronics shown for Maryland is the result of MDE submitting more data from events that did not use eCycling funding than did the other State environmental agencies.

### 4.4.2. Total Pounds Collected From Events That Used eCycling funding

Figure 4-2 shows the total pounds collected, by State, from the events funded by the eCycling Pilot (i.e., the events and pounds that are shown in bold in Table 4-1). The figure shows that Pennsylvania, which is the largest State in the EPA Mid-Atlantic region, generated the largest volume of electronics (444,883 pounds) of the four States that used eCycling funding. West Virginia collected a surprisingly large volume of electronics given that its counties are more rural and less densely populated than those of Pennsylvania, Maryland, and Virginia.

**Figure 4-2 Total Pounds Collected From Events that Used eCycling funding**
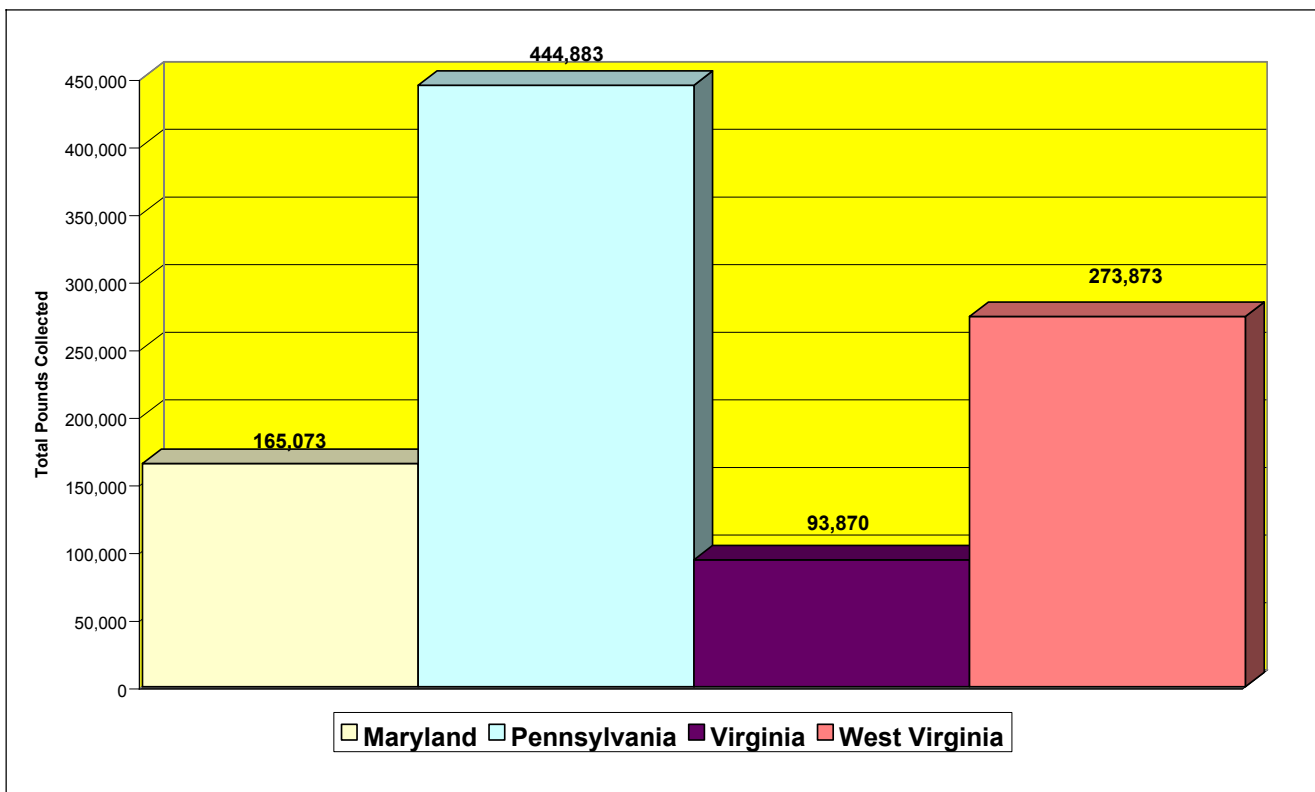
### 4.4.3. Type of Units Collected

For the events and programs that reported data on the number of units collected (primarily events run by Envirocycle, Inc. and Elemental, Inc.), Figure 4-3 provides the percentage of units collected for TVs, monitors, computers, peripherals, fax machines, VCRs, and other products. The 'Peripherals' category includes equipment such as printers, mice, and keyboards. The "Other" category includes other consumer electronics such as stereos and cell phones. The figure shows that televisions were slightly more prevalent in the residential stream, followed by computers (i.e., CPUs), and monitors.

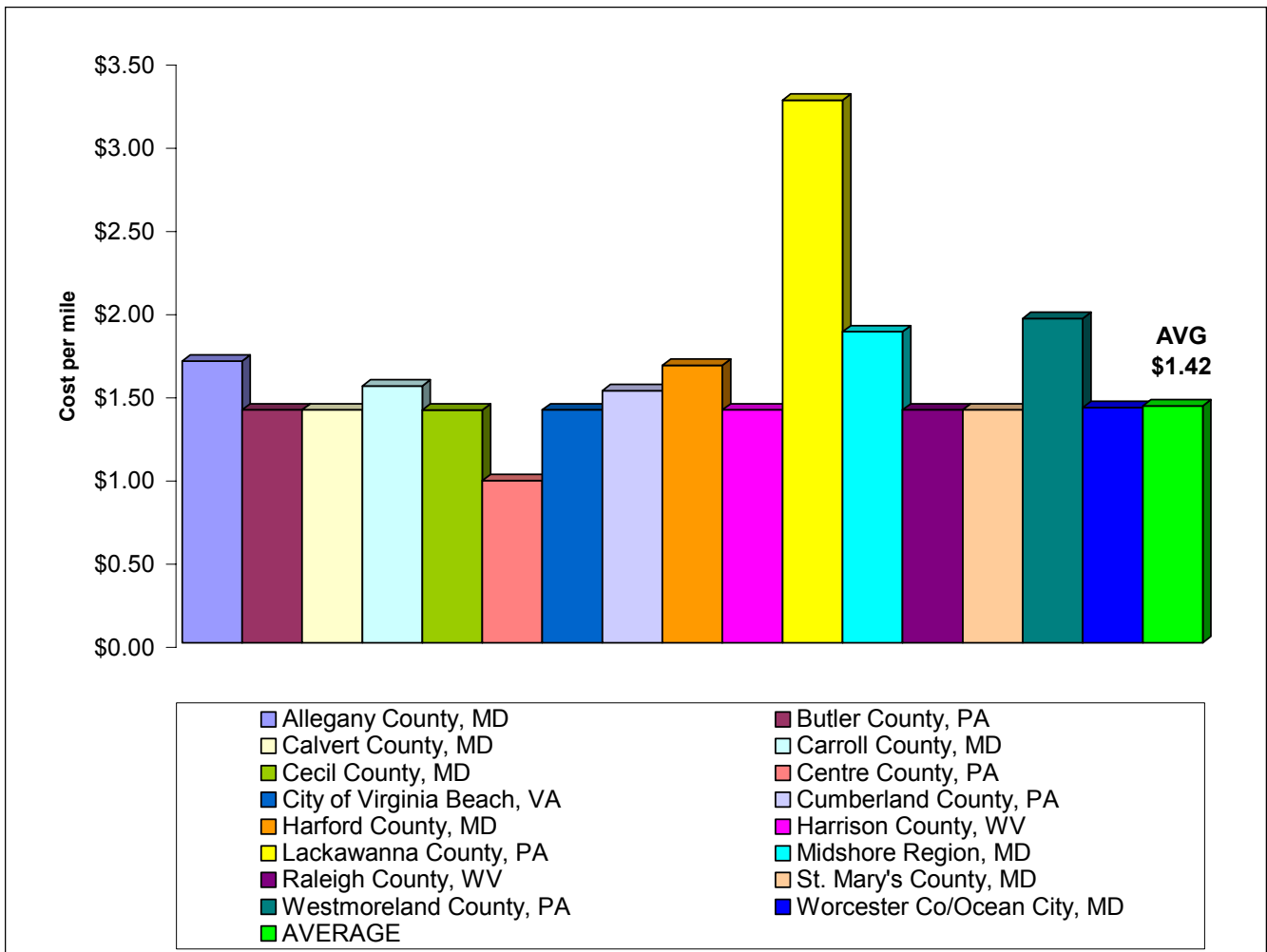**Figure 4-3 Type of Units Collected, by Percentage**
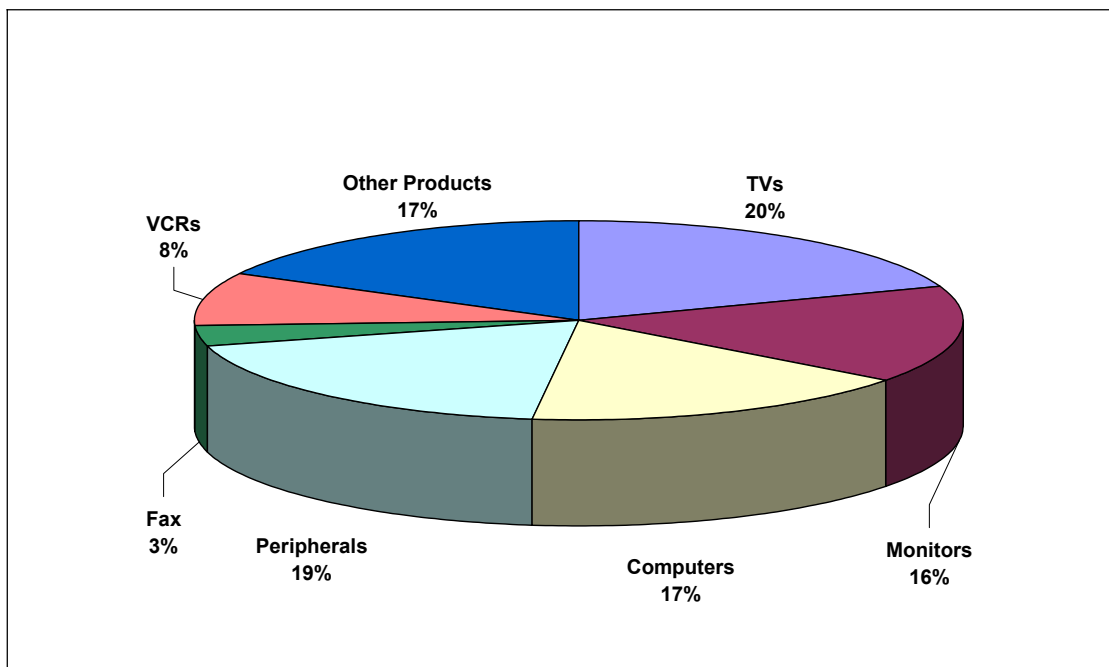
### 4.4.4. Transportation Costs

According to the eCycling database, actual eCycling transportation costs were reported for 16 eCycling collection events. These costs are shown in Figure 4-4 through Figure 4-7 in three ways: Cost per Mile by Event (Figure 4-4 and Figure 4-5), Cost per Pound by Event (Figure 4-6), and Average Cost per Mile by State (Figure 4-7).

Transportation Costs Per Mile

Across the eCycling events that reported Total Transportation Costs, transportation costs averaged $1.42 per mile from the collection event site to the processor. This works out to $0.04/lb. The cost per mile for Lackawanna County appears extremely high (nearly $3.50 per mile) because this event location is relatively close to the recycling facility and the recycler charged a base or minimum rate for providing collection and transportation services.
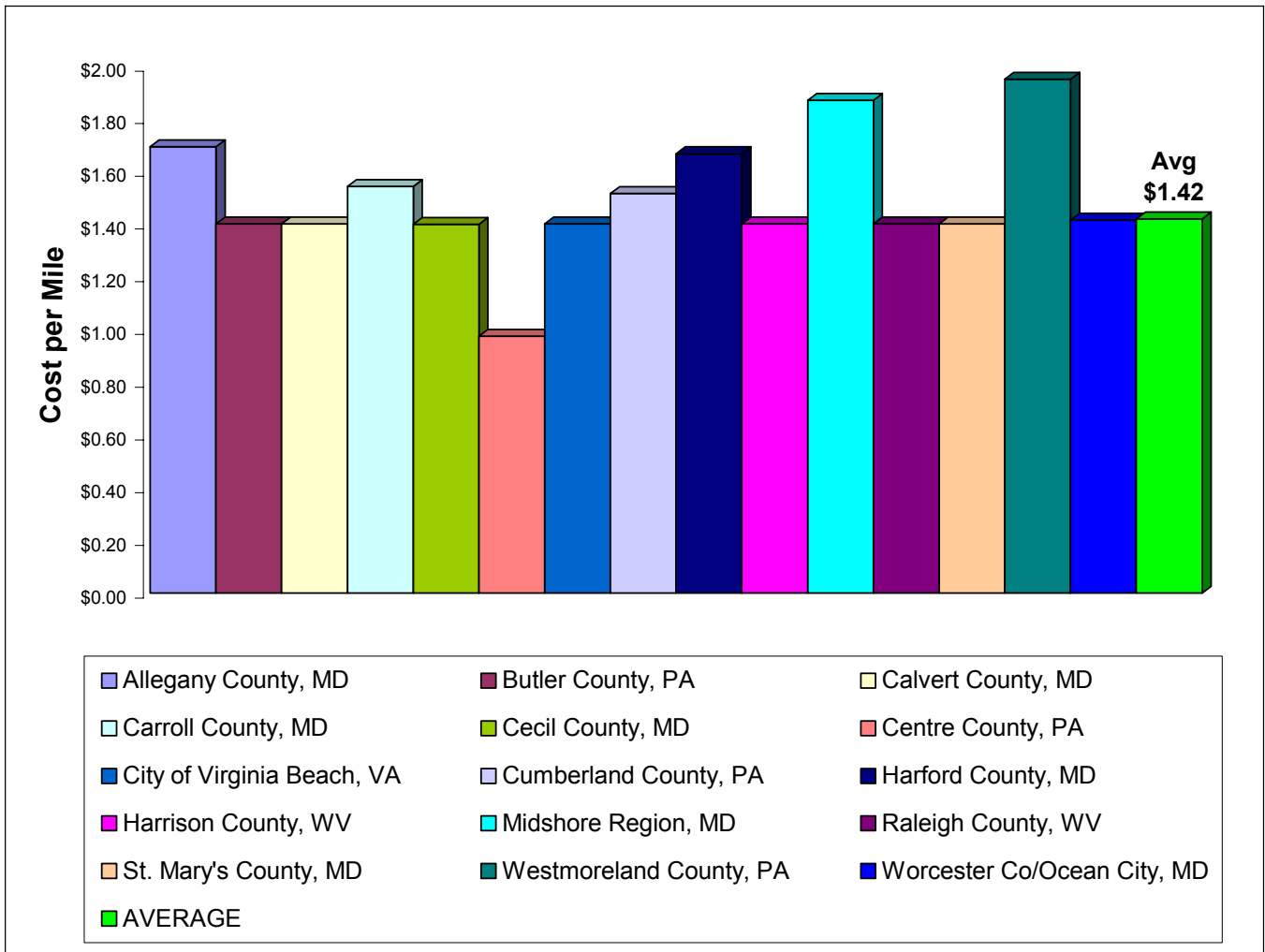
**Figure 4-4  eCycling Event Transportation Costs Per Mile**

When we removed the cost per mile for the Lackawanna County event (Figure 4-5) and recalculated the average cost per mile for all the events, the average cost per mile remained the same.

**Figure 4-5  eCycling Event Transportation Costs Per Mile without Lackawanna County**

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The average transportation cost per pound ($0.04 per pound), calculated from the events in the eCycling database, is consistent with the cost information collected and provided by Envirocycle, Inc. We show Envirocycle's average cost / pound information below.

| | |
|---|---|
| Average Collection Cost | 6 cents/ pound |
| Average Transportation Cost | 4 cents/ pound |
| Average Recycling Cost | 14 cents/ pound |
| Average Other Cost | 0.7 cents/ pound |

**Figure 4-6  eCycling Event Transportation Costs Per Pound**
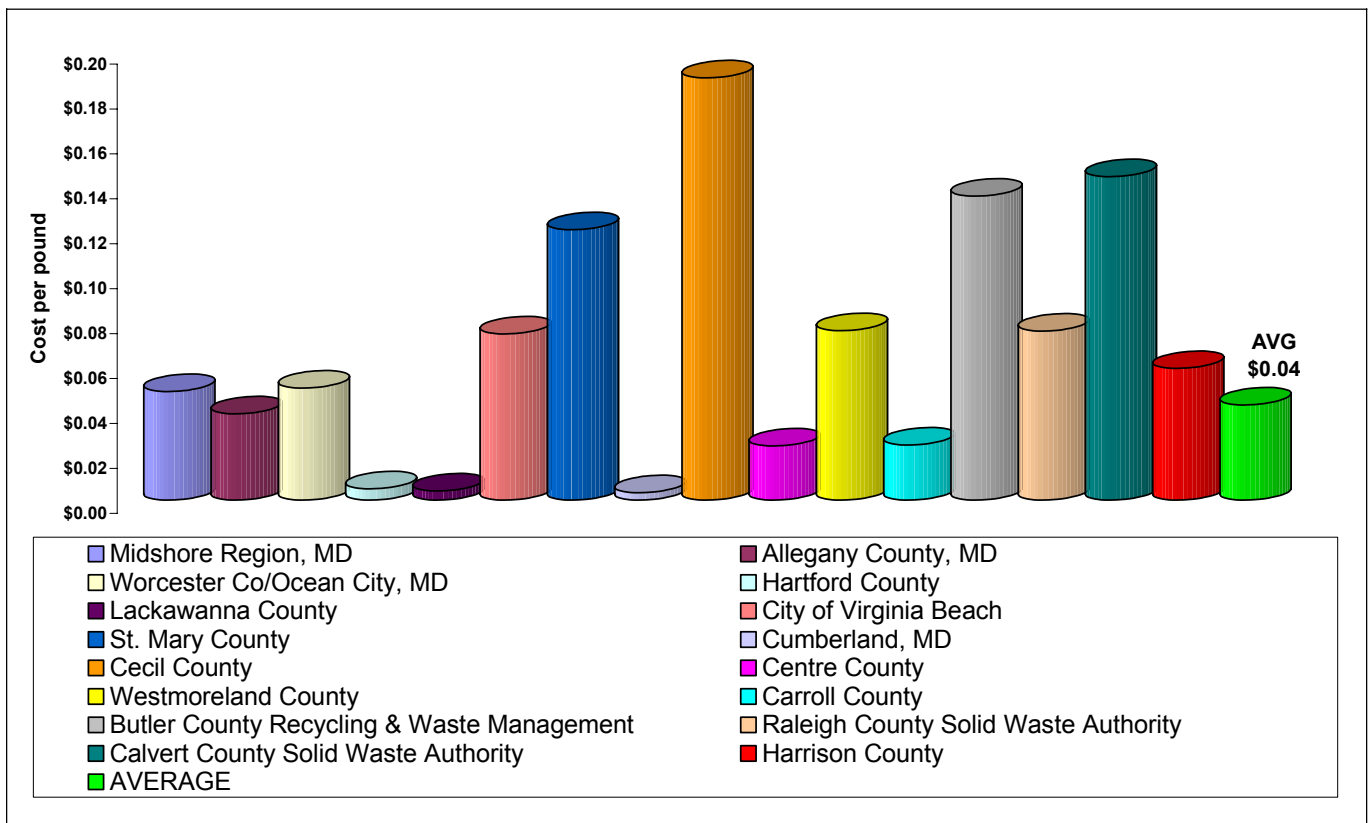
Transportation Cost Per Mile by State

Pennsylvania's average transportation cost per mile was higher than that of the other States because of two events: the Lackawanna County event and the Cumberland County event. As described earlier, the recycler charged Lackawanna County a flat or minimum rate because the county is located close to the recycling facility. Cumberland County negotiated an unusually high rate with its recycler that greatly exceeded the eCycling rate of 25 cents per pound. This made the cost per mile for Pennsylvania greater than for the other States. Figure 4-7 presents the average transporation cost per mile per State.

**Figure 4-7  Average Transportation Cost Per Mile by State**
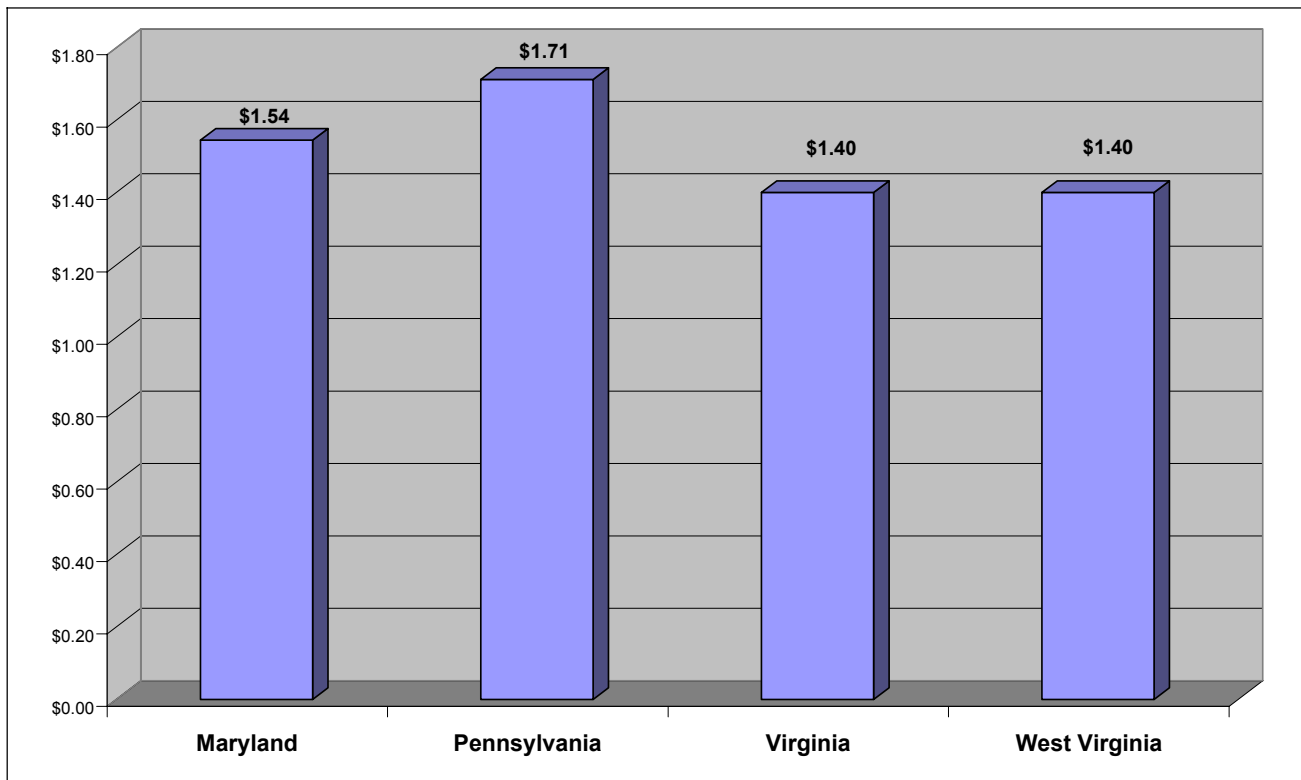
### 4.4.5. Events and Programs with End-of-Life Fees

Several counties assessed drop-off fees to help offset the cost of their events.
- Lancaster County, Pennsylvania (ongoing program since July 1, 2001)
  - The event host submitted data on the total fees collected. The per unit fee calculated from these data are shown below

|  | Monitors | Peripherals |
|---|---|---|
| Total Amount of the Fee | $9,864 | $4,095 |
| Total Number of Units | 1,370 | 27,300 lbs |
| Calculated Cost | $7 per unit | $0.15 per lb |

- Lackawanna County, Pennsylvania (April 27, 2002)
  - The event host charged $5 per CRT for the 464 CRTs collected during the event

- Allegany County, Maryland (April 20, 2002)
  - The event host charged $.25 to $.75 per item

### 4.4.6. Volume of Sony, Sharp and Panasonic Electronics Collected

Envirocycle, Inc. collected equipment brand data for three major OEMs from the 23 they managed for the eCycling Pilot. The OEMs were Sony, Sharp, and Panasonic. Figure 4-8 shows that Sony, Sharp, and Panasonic equipment accounted for roughly 16% of all brands of electronics collected at the 23 eCycling events managed by Envirocycle, Inc. The volume of Sony products collected was slightly higher than that for Panasonic and Sharp.
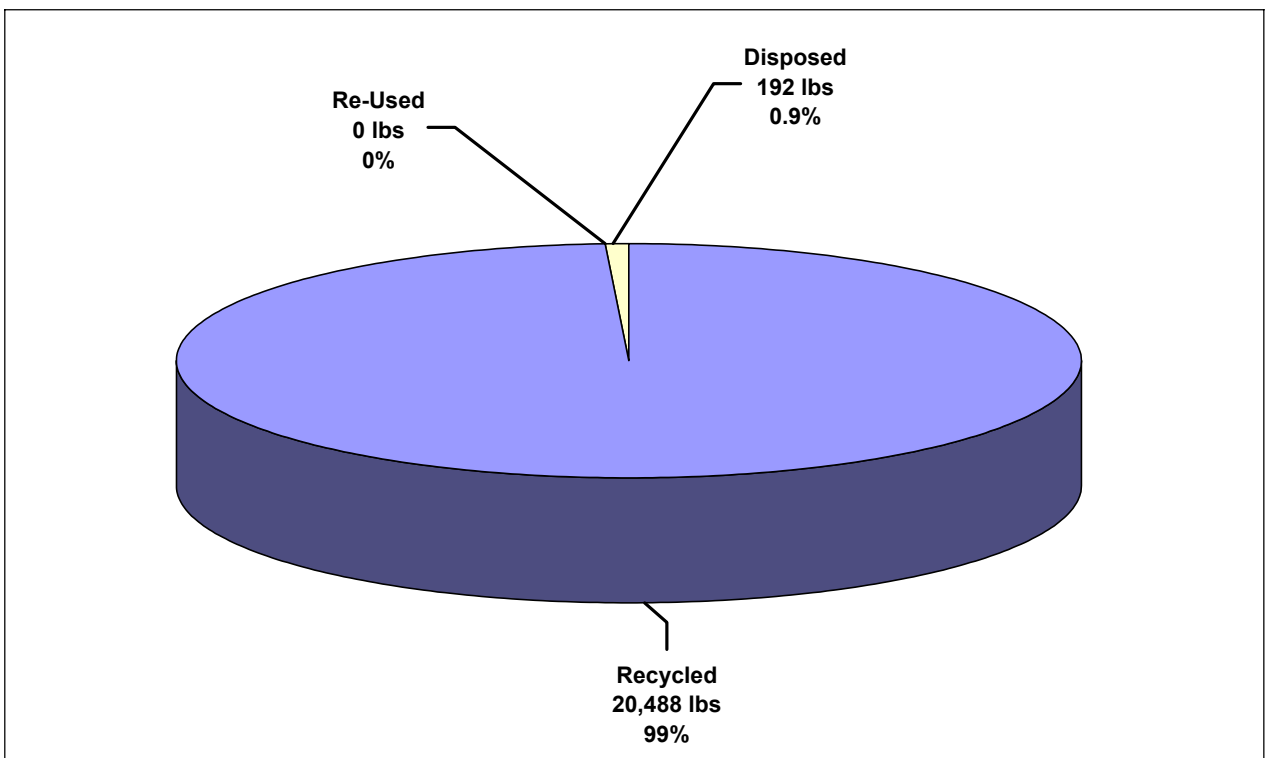
**Figure 4-8  Volume (in pounds) and Percentage of Sony, Sharp, and Panasonic**

**FINAL REPORT - EPA Region 3 eCycling Pilot**
**April 2004**
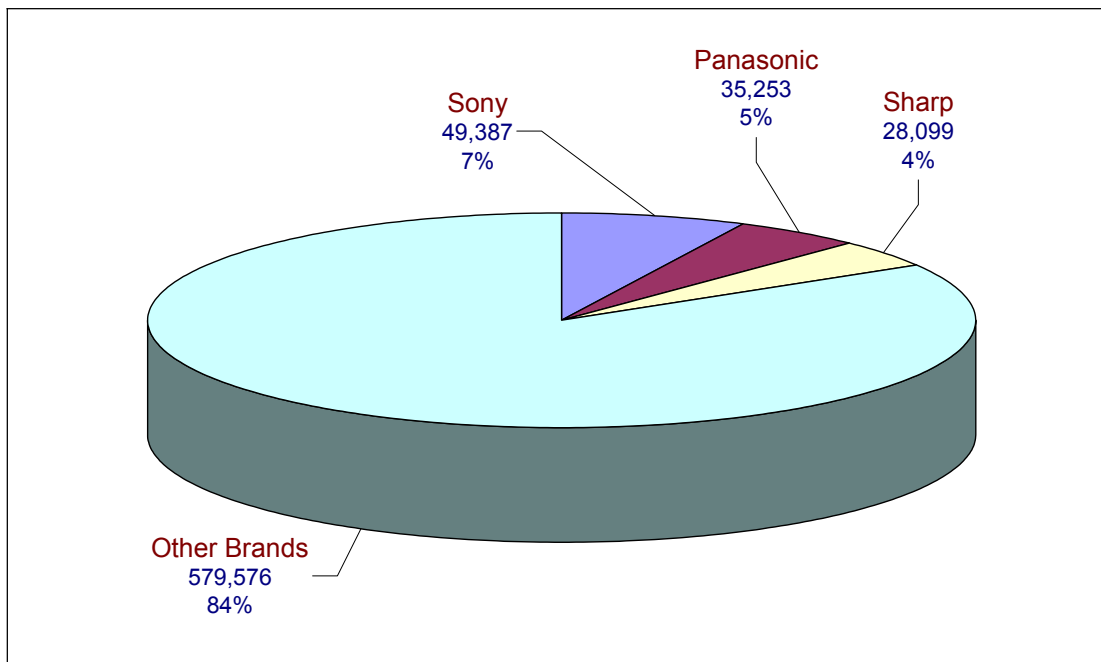
### 4.4.7. Amount Reused, Recycled, and Disposed

The eCycling Pilot collected some data on how much of the collected electronics was recycled, reused, and disposed. This was an important part of the data collection effort because an important goal of the Pilot was to recycle or reuse all of the electronics that were collected. For approximately 40% of the materials collected (these are events for which we have complete data), approximately 20,488 pounds were recycled, 192 pounds were disposed, and none was reused. This result is consistent with findings that consumer electronics are typically too old to be either refurbished or resold cost effectively.

**Figure 4-9  Volume of Electronics Recycled vs. Reused vs. Disposed**



Re-Used
0 lbs
0%

Disposed
192 lbs
0.9%

Recycled
20,488 lbs
99%

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**4.4.8. Results of eCycling Participants' Survey**

We received survey data from 4 eCycling drop-off events in addition to one independent, residential collection event. These 5 events were conducted at the following locations:

- Berkeley County, WV
- Philadelphia, PA
- Washington, DC
- Harrison County, WV
- Raleigh County, WV

The Philadelphia event was not an official eCycling event, however, the event host collected survey information that we believe provides additional useful information on residents' preferences. More than 500 eCycling participants responded to the survey questions, and the results are presented below. The questions covered the following topics (not all questions were asked at every location):

- **Source of Collected Electronics**
- **Distance Traveled to the Recycling Event**
- **Most Money Willing to Pay**
- **Who Should Pay**
- **Most Convenient Way to Recycle**
- **Include Recycling Cost in Product Price**

**Source of Collected Electronics**

Of the 607 responders to this question, event participants brought equipment, overwhelmingly, from homes (83%), then from businesses (13%) and other establishments (4.5%).
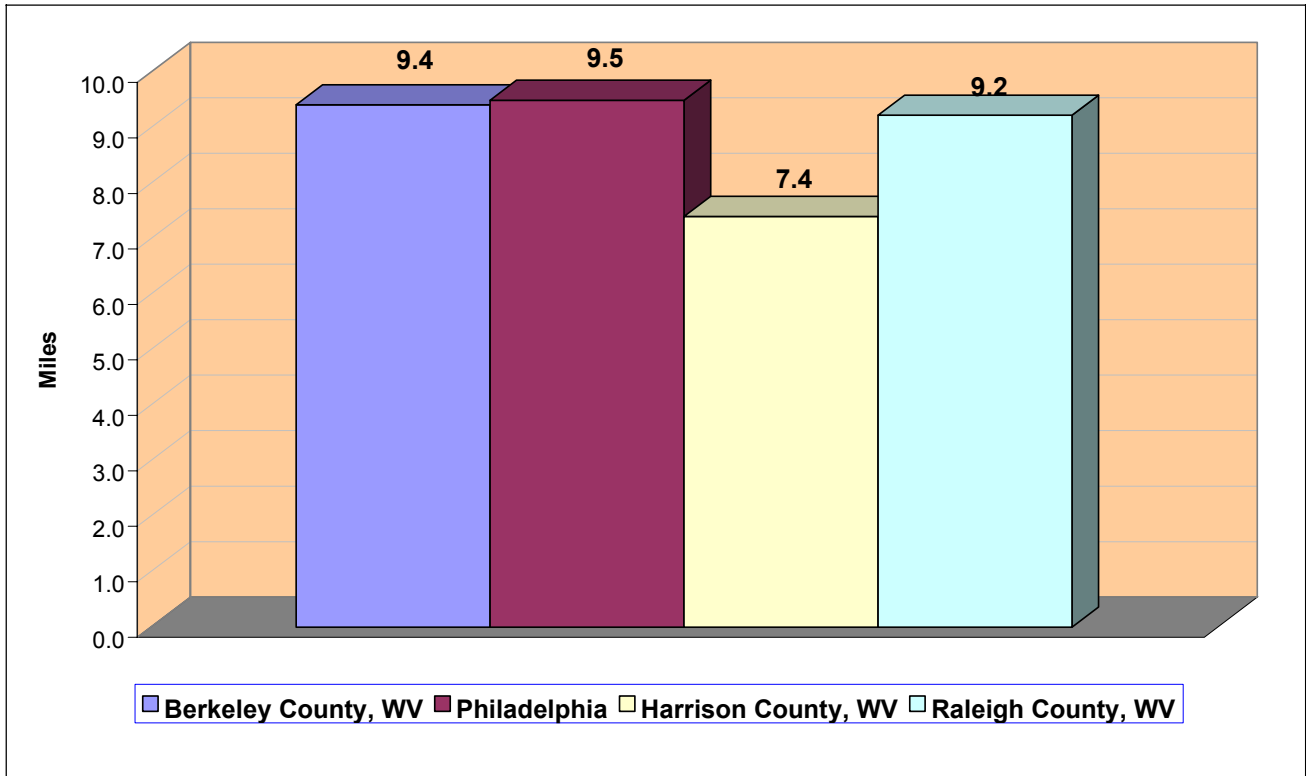
**Figure 4-10  Source of Collected Electronics**
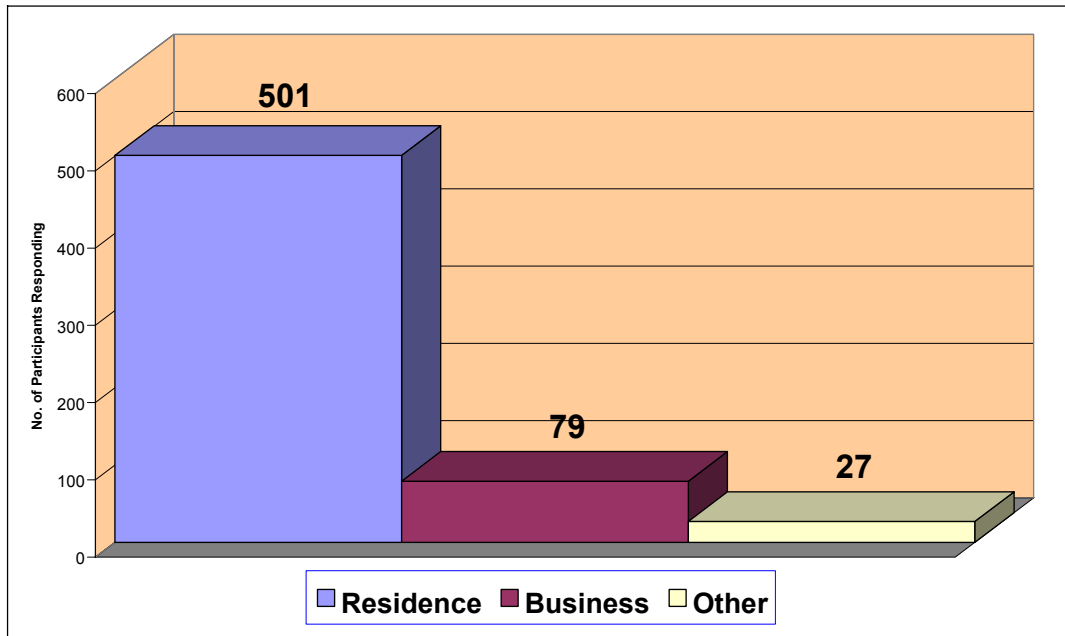
**Distance Traveled to the Recycling Event**

Participants who were surveyed traveled under 10 miles to attend eCycling events.
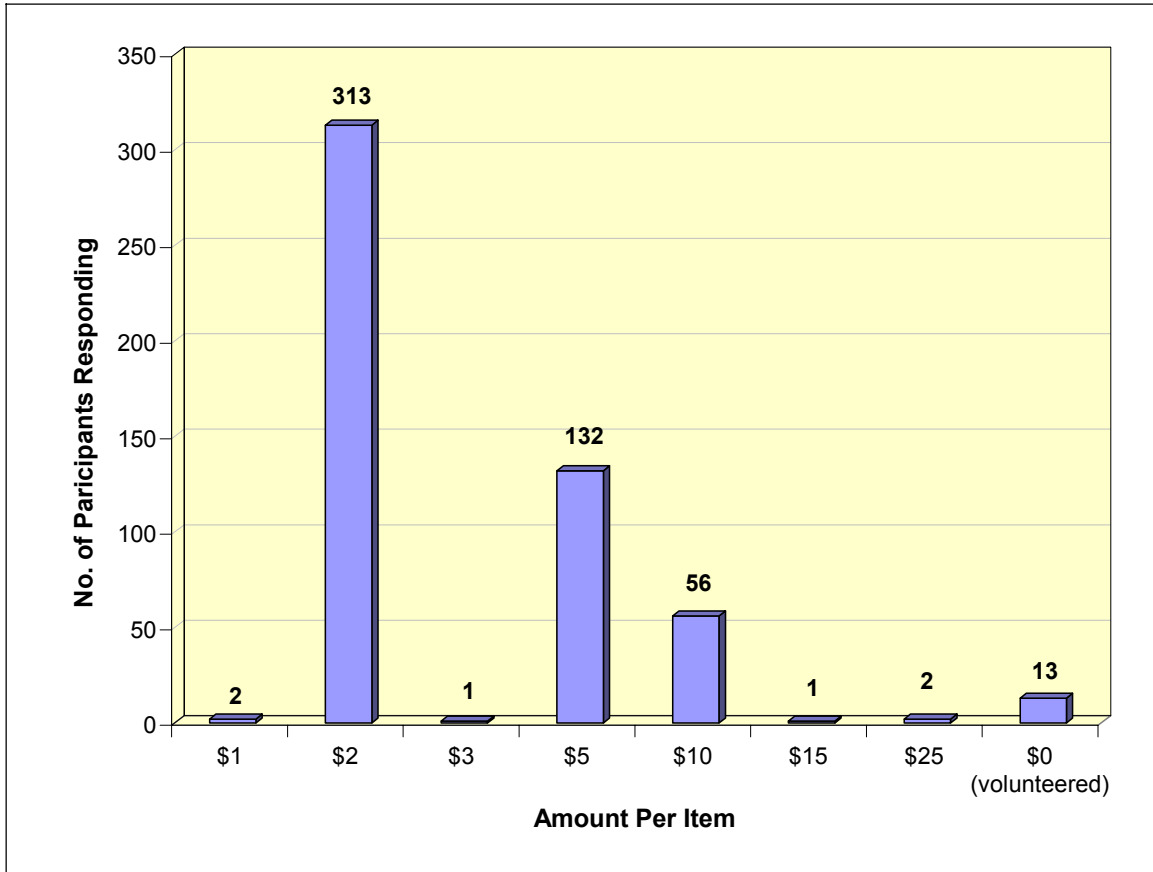
**Figure 4-11  Distance Traveled to the Recycling Event**

**Most Money Willing to Pay**

Of the 520 responses to this question, 60% were willing to pay a drop-off fee of $2 per item, 25% were willing to pay $5 per item, and 11% were willing to pay $10 per item.

Figure 4-12  Most Money Willing to Pay

**Who Should Pay**

From 613 responses, participants feel that both consumers (34% of participants surveyed) and Original Equipment Manufacturers (31% of participants surveyed) should pay to collect and recycle old electronics. Less than 20% of them felt that it was government's role, and even fewer felt that it was the role of the retailer to help pay to collect and recycle old electronics.

**Figure 4-13 Who Should Pay**
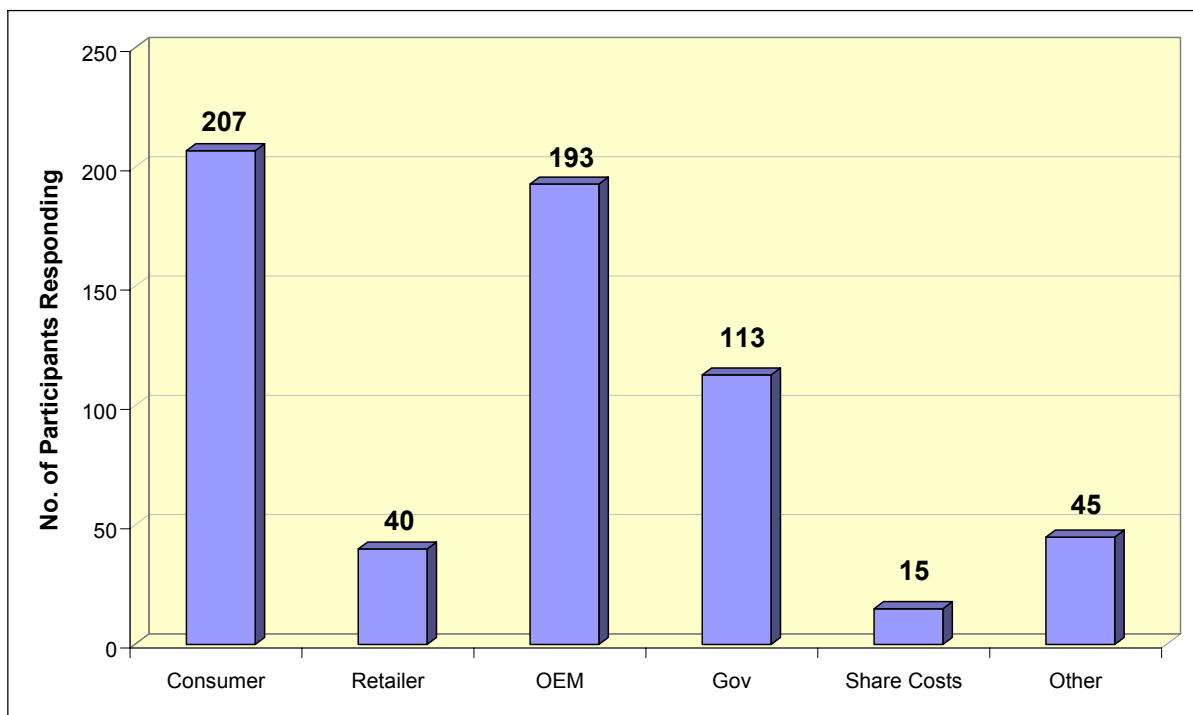
**Most Convenient Way to Recycle**

The most convenient way for the 601 responders to recycle was to go to a municipal recycling facility or landfill (74%), followed distantly by donating to a local charity (12%), taking electronics to a retailer (8%), some other method (4.7%), and mailing it back to the manufacturer (1.5%). The survey did not distinguish between the consumer paying to return electronics to the manufacturer versus the manufacturer covering either a portion or all of the mailing cost.

**Figure 4-14  Most Convenient Way to Recycle**
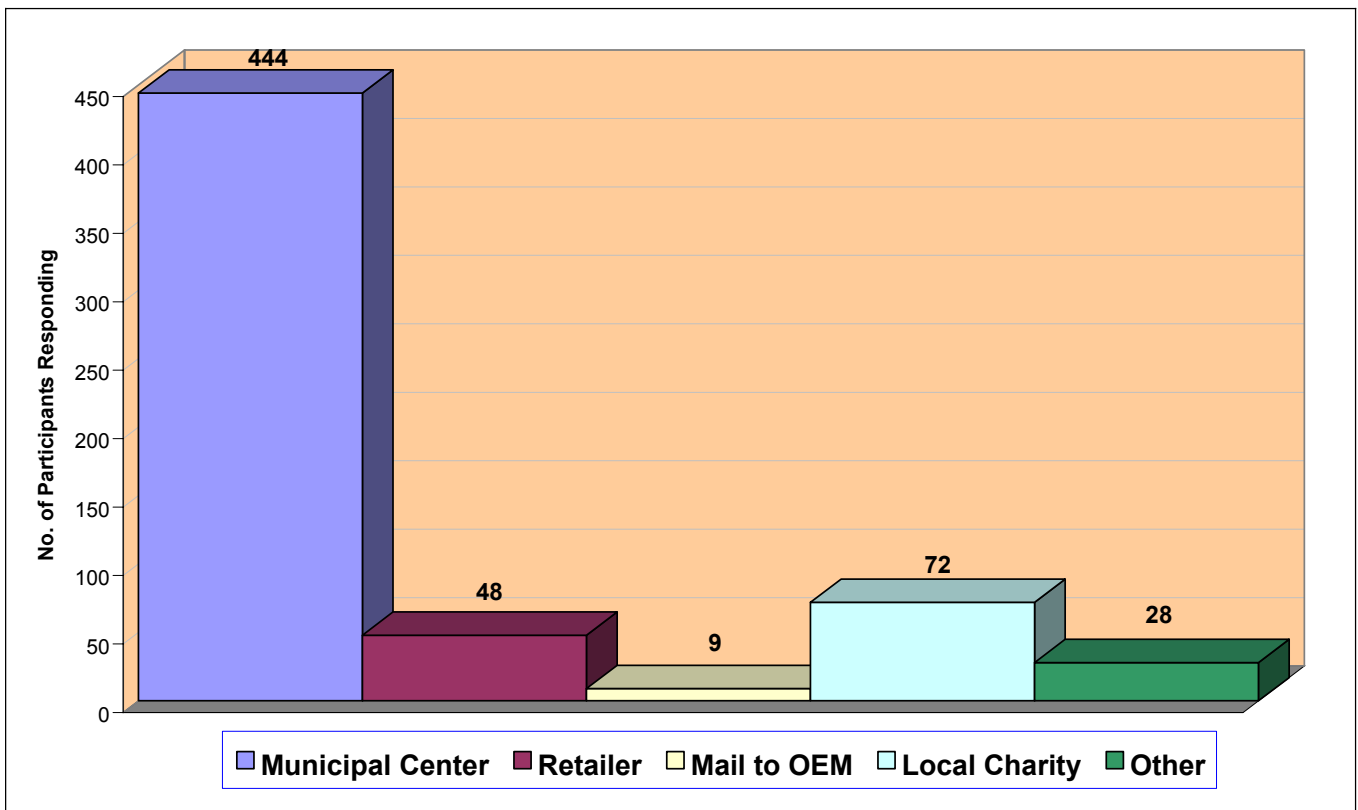
**Include Recycling Cost in Product Price**

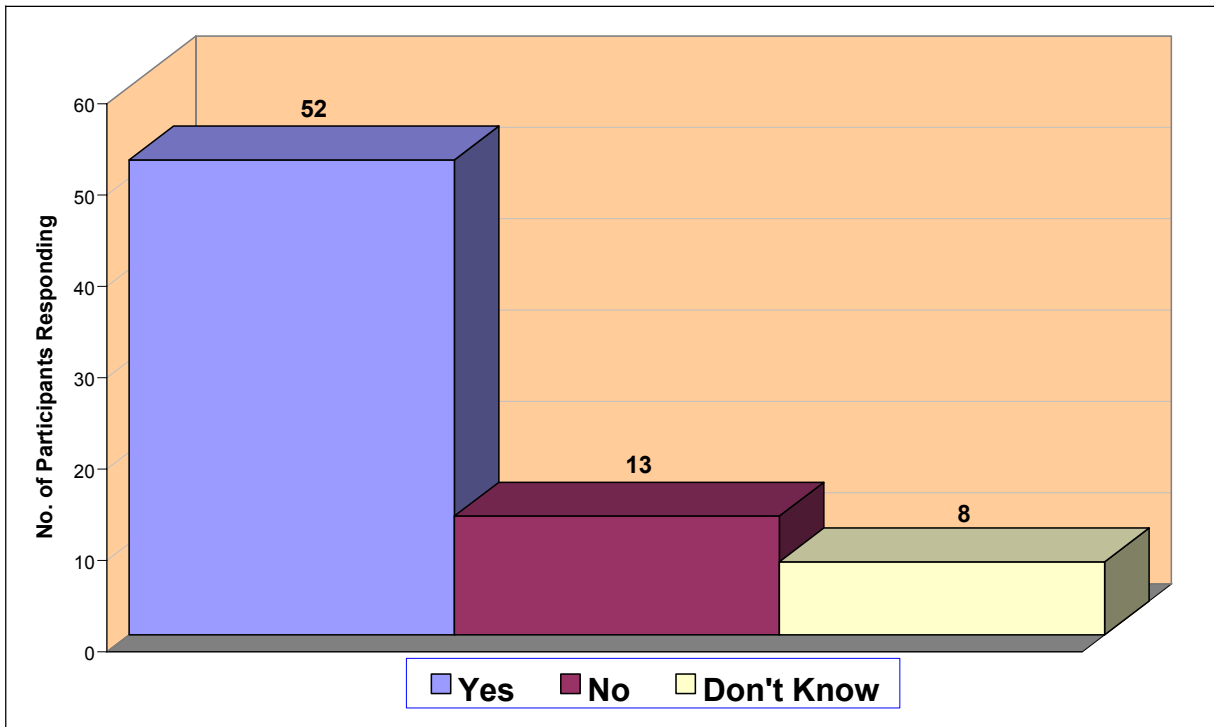71% of the 73 respondents felt that the cost to recycle used electronics at the end of its useful life should be included in the purchase price of the equipment. 18% said "No", and 11% did not know.

**Figure 4-15  Include Recycling Cost in Product Price**

## 5. Summary of Findings and Key Lessons Learned

eCycling provides valuable insight and information about the financial resources, management tools, and partnerships needed to establish and run a multi-state residential, electronics collection system. The eCycling Team believes that the information that the eCycling Pilot generated is crucial to the development of a national, post-consumer electronics collection and recycling system. This section summarizes the important findings from planning and implementing the multi-state eCycling Pilot (Section 5.1), and the key lessons learned from the 58 collection events and 9 collection programs (Section 5.2).

### 5.1. Summary of Findings

#### 5.1.1. <u>Multi-State Electronics Collection Programs are Feasible</u>

eCycling was a critical next step in learning what it would take to move from the current patchwork of local government programs and events nationwide to a sustainable, national system. The Pilot demonstrated that it is feasible to operate a regional program encompassing multiple, contiguous States. The key infrastructure elements that made this system work were the following:

(1) The Region 3 State environmental agencies were willing to partner with each other and with the EPA regional office,

(2) The State environmental agencies agreed to apply enforcement tools in a harmonious manner, and

(3) The government agencies set aside funding to encourage widespread public and local government participation in the Pilot.

Overall, the eCycling Team ran a successful regional electronics collection and recycling Pilot by establishing a strong federal / state partnership, harmonizing the use of enforcement tools across the States, and employing different ways to cover collection, transportation, and recycling costs.

#### 5.1.2. <u>Shared Responsibility is Critical to a Successful Residential Collection System</u>

Shared responsibility in the context of eCycling means that electronics manufacturers, electronics retailers, consumers, the government, and other businesses that rely heavily on and benefit from technological innovation all share the financial and operational responsibility for environmentally sound management of consumer end-of-life electronics. eCycling succeeded in getting the majority of its stakeholder groups to share the financial responsibility of the Pilot; however, the Pilot did not succeed in gaining participation from a large number of electronics manufacturers and electronics retailers. For a program like eCycling to be successful, it needs commitment from a majority of electronics companies to help cover the transportation and recycling costs of not only their individual brands, but also the transportation and recycling costs for orphan products. In addition, a program like eCycling needs electronics retailers to play an integral role in helping with program costs, and more local governments to collect end-of-life fees —especially from small businesses and organizations — to help with program costs.

#### 5.1.3. <u>Multi-State Programs Help to Expand Overall Recycling Capacity</u>

eCycling provided local governments with a relatively low-risk way to determine if they could offer these services to their residents on an ongoing basis. By putting the infrastructure for transportation and recycling, data collection, and event advertisement in place for a short period of time, the multi-State Pilot helped local governments to increase electronics recycling opportunities for residents and small businesses without a significant financial burden to their municipal waste management budgets.

### 5.1.4. Multi-State Programs Produce Important Synergies

eCycling allowed the Region 3 States to take advantage of important synergies. The most important synergistic effect that came out of the Pilot was the use of a single contract across 4 States and the District of Columbia to collect and recycle electronics. This enabled the Pilot to operate at a lower overall cost than using independent, single-use contracts in each State.

Even though the Delaware Solid Waste Authority used a different contractor than the rest of the Region, the lower cost per pound negotiated by the DSWA showed the advantage of a single, multi-jurisdictional contract. Two Maryland lower Eastern Shore counties utilized the DSWA contract with Elemental, Inc. to lower their transportation costs. The eCycling Pilot made this synergy possible.

The multi-state Pilot allowed the Region 3 States to take advantage of the following additional benefits:
    (1)  Share promotion and outreach materials,
    (2)  Work more effectively with the industry partners,
    (3)  Negotiate a lower recycling rate,
    (4)  Increase the bargaining power in garnering financial support from the Electronic Industries Alliance,
    (5)  Generate a large, consistent stream of consumer electronics,
    (6)  Offer stakeholders more opportunities to participate in and gain recognition from a high-visibility program, and
    (7)  Collect a large amount of empirical data on the cost to operate a large-scale program.

### 5.1.5. Multi-State Programs Provide Valuable Insights About How to Build a National System

In addition to the important synergies they create, multi-state electronics collection and recycling programs provide valuable insights about how to scale up to a national collection system. In particular, eCycling provided insights about:
    (1)  How to pay for electronics collection programs,
    (2)  The different ways to use a third-party organization,
    (3)  Collecting and managing collection program data,
    (4)  How to partner with the electronics industry,
    (5)  Selecting a recycler who would practice safe recycling, and
    (6)  The importance of publicly recognizing the contributions of program partners.

A major challenge of the eCycling Pilot was how to put into use the cash contributions from the members of the Electronic Industries Alliance (EIA), given that government agencies are not permitted to accept cash contributions from the private sector. By working through this process, the eCycling Team not only gained valuable experience, but also provided useful insight about multi-state collection programs that use a shared-responsibility approach with industry could use third-party organizations to help operate their programs more effectively.

eCycling demonstrated that electronics companies and electronics retailers are interested in learning how they can contribute in meaningful ways to helping to solve this problem, given their individual business models and business challenges.

eCycling is likely the first large-scale, consumer electronics collection program to make domestic dismantling and processing a requirement for obtaining a government electronics recycling contract. The eCycling Team was extremely concerned about the potential to contribute, inadvertently, to human health and environmental abuses in developing countries. Furthermore, the eCycling Team is

committed to helping to develop the domestic electronics recycling infrastructure and expand electronics recycling capacity in the United States.

The eCycling Pilot highlighted, again, the value of providing public, high-level EPA recognition to industry and government partners.   For instance, the eCycling Team organized a recognition ceremony and photo opportunity with the U.S. EPA Administrator Christine Whitman for the industry partners. Local television stations and newspapers provided press coverage as the Administrator presented individual signed certificates to eCycling industry partners.  In addition to the recognition ceremony, the eCycling Team and local governments used eCycling collection events as venues to recognize the efforts of industry partners.  We also arranged press events, media coverage of collection events, press releases, and promotional materials mentioning industry partners to inform the public of the partners' contributions.

### 5.1.6. Multi-State Programs Help to Define the Composition of the Residential Stream
Information on the composition of the end-of-life electronics stream is important to municipalities and to Solid Waste Authorities.  With composition information, municipalities can (1) better estimate the cost of future collection programs and events, (2) assess per-unit collection fees, and (3) determine how many televisions, for instance, could escape collection if they choose to collect only computers, monitors, and peripherals.  Composition numbers also help recyclers to estimate processing costs and revenues more accurately.  Based on the data collected, the eCycling electronics collected comprised televisions (20%), peripherals (19%), computers (17%), and monitors (16%).

## 5.2.   Key Lessons Learned
The Region 3 eCycling Team learned important lessons from the eCycling events and programs.  They are highlighted below.

### 5.2.1. Aggressive Advertisement is Key to a Successful Program or Event
The advertising medium and the amount of advertising conducted for each eCycling event was critical to the success of the event.  The primary form of advertisement used by event hosts were newspaper and television.  Anecdotal information from eCycling event hosts and from eCycling Team members indicate that where there was a modest to high level of advertising (in terms of both dollars spent and the various advertising media used), the residential turnout was high relative to those events that were not well advertised.  For example, the Delaware Solid Waste Authority spent approximately $40,000 on advertisement during the 15-month Pilot period.  Their advertising campaign covered a wide variety of media: television, newspaper, websites, children's educational programs, and public outreach materials such as fliers, posters, and utility bill inserts.  As a result, knowledge of the program among Delawarians was widespread, which helped to generate a steady stream of electronics (exceeding 50 tons per month) month after month.

In contrast, anecdotal information about the Virginia Beach City, Virginia event indicated that this event was not aggressively advertised.  For the size of southeastern Virginia, residential participation was relatively low.  Slightly more than 200 residents out of a target population of over 425,000 residents participated in the Virginia Beach City event.  This reflects a participation rate of 0.05%.  One reason for the low rate was that the event sponsor feared being deluged by area residents.

According to information from Envirocycle, Inc., event hosts, in general, would expect that a modest advertising campaign would yield about one-third of a percent (0.3%) of the target population for a one-day collection event.  Based on this generalization, the Virginia Beach event could have yielded a minimum of about 1,400 residents.  The average residential participation across all eCycling events for

which we have participation data was approximately 0.17%.  We show participation rates in Appendix A – Table 4-1 eCycling Events Detailed Information.

Overall, the experiences of the State environmental agencies and local governments hosting and managing the events showed the following:
- There is a direct correlation between the level of advertising (dollars and advertising medium chosen) and the level of residential participation in the eCycling event.
- While aggressive advertisement is critical for widespread residential participation, government and other organizations hosting the events should have certainty of funding to support their collection events fully in order to deliver the desired level of residential participation.
- Insufficient funding and uncertainty of future funding dampened the willingness of participating local governments to advertise because they feared attracting too many participants and being unable to pay the extra processing costs.
  - West Virginia experienced greater-than-anticipated residential participation in four of its eCycling events.  As a result, the Solid Waste Authorities (SWAs) who hosted events incurred additional costs that totaled more than $16,500.   The SWAs and the costs they incurred are:  the Ohio SWA - $1,144, the Harrison SWA - $9,920, the Monongalia SWA - $2,953, and the Hancock SWA - $2,852.
- Advertising was most effective during the week prior to and the day before an electronics collection event, as opposed to 2-3 weeks prior to the event.

### 5.2.2. Permanent Collection Programs are More Efficient than Single-Day Collection Events
While the eCycling Pilot did not gather data on the relative effectiveness of permanent collection programs versus one-day collection events, eCycling event hosts and State eCycling project managers reported the following anecdotes.

- Permanent collection programs were less expensive to operate than one-day collection events, and they collected larger volumes of electronics, on average.
- Permanent collection programs do not require as much labor as single-day events, which require labor at each event to unload cars, load Gaylord boxes and trailers, and manage traffic flow.
- The major advertising outlay for permanent collection programs can be spread over a longer period of time, the advertising campaign can target high disposal times of the year, and can be carried out in conjunction with other advertising and outreach efforts.
- Permanent collection programs reported a decrease in the cost per pound as the amount of equipment collected increased.

### 5.2.3. Residents are Willing to Pay a Drop-Off Fee
The results of over 1500 surveys collected during the course of eCycling showed that those who attended the events are willing to pay a modest recycling fee of $2 to $5 per item when they drop-off used electronics.  More than twice as many participants are willing to pay only $2 per item than are willing to pay $5 per item.  These results indicate that local governments could use residential end-of-life fees to defray some of the costs to provide eCycling services to its residents.  An almost equal number of residents who responded to the survey believe that both consumers and manufacturers should help pay to collect and recycle unwanted residential electronics, and the majority of those who responded believe that the cost to collect and recycle should be included in the product price.

Further research outside the scope of this project to determine the willingness to pay an end-of-life fee among the general public would be beneficial in helping to design the most effective collection, and

education, outreach, and advertising programs at the national level. This effort would capture the responses of those residents who might not have the same level of environmental awareness as those who recycle or attend recycling events.

### 5.2.4. The Pilot Helped to Expand Recycling Opportunities for Mid-Atlantic Residents
In addition to offering expanded recycling opportunities to more than 2.3 million people during the operation of eCycling, the eCycling Pilot spurred the operation of new programs and events.
- In Pennsylvania, Lebanon County began offering its residents a permanent, curbside electronics collection program in June 2002 as a result of the eCycling Pilot.
- In Maryland, after a positive experience with their first eCycling event, Wicomico County expanded their one-day event to a permanent collection program for its residents.
- Seeing the success of and expressed need for the eCycling events, Anne Arundel County, Maryland held several events without receiving any funding from either the EPA or the State government. One of the events was sponsored by the Department of Public Works and another was sponsored by the county Community College.
- In Virginia, after its first successful event, Frederick County offered ongoing events to Frederick County residents.

### 5.2.5. Local Businesses Will Partner with Local Government to Help with Program Costs
There are numerous opportunities for retail establishments, communications firms, and utility companies to participate in eCycling events. These businesses are eager to contribute to programs like eCyling and can receive public recognition and positive press for helping local governments and other non-profit organizations to reduce program costs. For example, these businesses can offer to:
 (1) Run media advertisements,
 (2) Post information on their publicly-accessible websites,
 (3) Include collection event information on billing inserts, store circulars, or store receipts, and
 (4) Offer incentives to encourage residents to drop off used electronics.


## 6.  Recommendations

EPA Region 3 and the environmental agencies from Delaware, Maryland, Pennsylvania, Virginia, West Virginia, and the District of Columbia shared a common vision that drove the success of the eCycling Pilot. That vision was to:
 (1) Test shared responsibility among industry, government, and consumers;
 (2) Return materials to productive use in commerce; and
 (3) Apply protective, consistent, and flexible environmental regulations across the Region 3 States.

In order for this vision to result in a successful national approach, the large-scale, multi-State collection efforts that we anticipate will follow eCycling, must be able to:
 (1) Acquire greater financial support and involvement from companies that make, market, and sell computers and televisions.
 (2) Increase consumers' willingness to drop off old electronics and to pay an end-of-life fee,
 (3) Ensure safe electronics management practices, and
 (4) Collect high quality, useful data.

Success in these areas will foster the growth and sustainability of end-of-life management programs, inform the development of a national system, and motivate greater industry participation in and support for large-scale, long-term, residential electronics collection programs.

### 6.1 Increase Industry Support and Participation

Computer and television makers and retailers benefit significantly from the sale of and strong demand for consumer electronics. As a result, electronic companies and electronics retailers should share the responsibility to properly manage end-of-life consumer electronics. Government and industry should work together to expand and promote the benefits to electronic companies and electronics retailers of participating in end-of-life electronics management. Some of these benefits might include avoiding or significantly reducing future environmental liability, expanding brand recognition, and expanding brand loyalty. Furthermore, increased public awareness and understanding of corporate electronics stewardship efforts can translate into additional benefits to industry. Finally, broad manufacturer and retailer involvement in crafting a national solution to the end-of-life electronics management challenge can help to mitigate some of the negative impacts of national and state legislation.

### 6.2 Increase Consumer Participation

Consumers (e.g., residents, small businesses, small organizations, and schools) continue to demand faster, smaller, and more powerful electronic equipment. As a result, consumers, too, should play an integral role in efforts to properly manage end-of-life computers, televisions and other consumer electronics. Both government and industry can do more to educate the public about:

- Returning old electronics for reuse and recycling
- The importance of helping to pay to properly manage their unwanted electronics,
- Why they should be concerned about proper end-of-life electronics management, and
- The power of their purchasing decisions to influence the growth and development of a sustainable national system.

Public education and outreach are critical elements in:

- Establishing a substantial and consistent stream of consumer electronics for recycling,
- Increasing recycling opportunities in communities across the country,
- Increasing the demand for manufacturer product take-back and stewardship programs,
- Increasing the demand for more recycled-content (greener) products, and
- Building greater acceptance of and willingness to pay either advanced recovery fees or end-of-life fees.

### 6.3 Ensure Safe Electronics Management Practices

Critical to engaging electronics companies and electronics retailers in the operation of large-scale, electronics collection programs is the ability to assure them that collected materials bearing their brand, and for which they are arranging and paying for transportation and recycling, will be managed in an environmentally safe manner. Additionally, program developers must be able to ensure that any recycler they select incorporates manufacturer-specified management criteria in their processes.

At a minimum, large-scale collection programs and initiatives must be able and willing to:

- Utilize reuse, refurbishment, and recycling techniques to the greatest extent practicable in order to minimize incineration and land disposal;
- Ensure documentation of the fate of materials;
- Use only facilities that demonstrate they practice environmentally sound management; and
- Assure that recycling facilities meet all applicable federal, state, local, and international requirements pertaining to electronics recycling, reuse, and/or disposal.

7. **List of Appendices**

**Appendix A – Table 4-1: eCycling Events Detailed Information**

**Appendix B – Project Partners**
- The eCycling Team
- EPA HQ - OSW, Office of Air and Radiation
- Envirocycle
- Polymer Alliance Zone of West Virginia
- Sony
- Panasonic
- Sharp
- Contributing Electronic Companies of the Electronic Industries Alliance: Panasonic, Sony, Sharp, Canon, Hewlett Packard, JVC, Kodak, Nokia, Philips Consumer Electronics North America, and Thomson Multimedia
- Electronic Industries Alliance

**Appendix C – Regulatory Flexibility Documents**
- Internet website addressess for:
  o The National EPA Cathode Ray Tube Rule
  o The Region 3 eCycling Pilot Rule
- Environmental Council of States (ECOS) Regulatory Flexibility Proposal
- Memorandum of Understanding between EPA Region 3 and the Region 3 States

**Appendix D – eCycling Data Collection Forms**
- Program Organizer
- Recycler
- Transporter
- Participant Survey

**Appendix E – Local Government Survey**

**Appendix F – Map of eCycling Collection Locations**

**Appendix G – Drop-Off Locations in the State of Delaware**

**Appendix H – Utility Bill Stuffer from Baltimore Gas and Electric**

**Appendix I – User Guide to the eCycling Database**

# Appendix A – Table 4-1 eCycling Events Detailed Information

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# TABLE 4-1 - eCycling Events Detailed Information[1]
## October 1, 2001 through December 31, 2002

| Location | Population | Rural/ Suburban/ Urban | Date | Material Collected | | | Particpant Data | | | Cost | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pounds | Tons | CRT Units | Parcipants | Pounds/ Particpants | Particpation Rate | Advertising | Processing |
| **Delaware (P)** | | | | | | | | | | | |
| *Permanent Sites* | | | | | | | | | | | |
| DSWA | | | 31-Oct-01 | 157,100 | 78.55 | 500 | N/A | N/A | | N/A | N/A |
| DSWA | | | 30-Nov-01 | 138,700 | 69.35 | 413 | N/A | N/A | | N/A | N/A |
| DSWA | | | 31-Dec-01 | 107,120 | 53.56 | 432 | N/A | N/A | | N/A | N/A |
| DSWA | | | 31-Jan-02 | 143,580 | 71.79 | 420 | N/A | N/A | | N/A | N/A |
| DSWA | | | 28-Feb-02 | 154,760 | 77.38 | 381 | N/A | N/A | | N/A | N/A |
| DSWA | | | 31-Mar-02 | 125,280 | 62.64 | 423 | N/A | N/A | | N/A | N/A |
| DSWA | | | 30-Apr-02 | 192,421 | 96.21 | 547 | N/A | N/A | | N/A | N/A |
| DSWA | | | 31-May-02 | 164,020 | 82.01 | 416 | N/A | N/A | | N/A | N/A |
| DSWA | | | 30-Jun-02 | 185,460 | 92.73 | 529 | N/A | N/A | | N/A | N/A |
| DSWA | | | 31-Jul-02 | 234,540 | 117.27 | 758 | N/A | N/A | | N/A | N/A |
| DSWA | | | 31-Aug-02 | 185,140 | 92.57 | 639 | N/A | N/A | | N/A | N/A |
| DSWA | | | 30-Sep-02 | 177,660 | 88.83 | 612 | N/A | N/A | | N/A | N/A |
| DSWA | | | 31-Oct-02 | 225,420 | 112.71 | 666 | N/A | N/A | | N/A | N/A |
| DSWA | | | 30-Nov-02 | 100,460 | 50.23 | 404 | N/A | N/A | | N/A | N/A |
| DSWA | | | 31-Dec-02 | 114,600 | 57.30 | 607 | N/A | N/A | | N/A | N/A |
| **TOTAL** | 783,600 | | | 2,406,261 | 1,203 | 7,747 | N/A | N/A | N/A | $38,711 | $385,902 |
| **Maryland** | | | | | | | | | | | |
| Harford County | 218,590 | suburban/rural | 27-Oct-01 | 15,980 | 7.99 | 233 | 150 | 107 | 0.07% | $2,000 | $1,596 |
| Worcester County | 46,543 | rural | 17-Nov-01 | 6,000 | 3.00 | 143 | 56 | 107 | 0.12% | $1,700 | $960 |
| Wicomico County | 84,644 | rural | 17-Nov-01 | 5,280 | 2.64 | 73 | 39 | 135 | 0.05% | $1,250 | $845 |
| Harford County | | suburban/rural | 19-Jan-02 | 14,607 | 7.30 | 322 | 200 | 73 | 0.09% | $2,000 | $2,308 |

[1]County data in bold/black font used eCycling funding.
  Actual cost data reported by the environmental agencies are shown in black font.
  Extrapolated cost data, based on the average price per pound from all reported data, are shown in bold/green font.

| Location | Population | Rural/ Suburban/ Urban | Date | Material Collected | | | Particpant Data | | | Cost | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pounds | Tons | CRT Units | Parcipants | Pounds/ Particpants | Particpation Rate | Advertising | Processing |
| Allegany County | 74,930 | rural | 20-Apr-02 | 35,229 | 17.61 | 590 | 300 | 117 | 0.40% | $466 | $6,084 |
| Cecil County | 85,951 | rural | 20-Apr-02 | 2,806 | 1.40 | 27 | 30 | 94 | 0.03% | $493 | $787 |
| Harford County | | suburban/rural | 20-Apr-02 | 39,589 | 19.79 | 843 | 800 | 49 | 0.37% | $4,000 | $6,486 |
| Worcester County | | rural | 20-Apr-02 | 10,578 | 5.29 | 138 | 82 | 129 | 0.18% | $1,972 | $1,651 |
| Midshore Region | 123,344 | rural | 21-Apr-02 | 13,943 | 6.97 | 146 | 185 | 75 | 0.15% | $1,396 | $1,878 |
| Baltimore County | 754,292 | suburban | 27-Apr-02 | 36,324 | 18.16 | 766 | 450 | 81 | 0.06% | $4,930 | $6,118 |
| Carroll County | 150,897 | rural/suburban | 27-Apr-02 | 21,481 | 10.74 | 332 | 250 | 86 | 0.17% | $387 | $3,506 |
| Federick Co (Best Buy) | 195,277 | suburban/rural | 28-Apr-02 | 13,856 | 6.93 | 0 | 150 | 92 | 0.08% | | $2,768 |
| Anne Arundel County | 489,656 | suburban | 8-Jun-02 | 35,568 | 17.78 | 437 | 654 | 54 | 0.13% | $7,500 | $3,558 |
| St. Mary's County | 86,211 | rural | 15-Jun-02 | 31,401 | 15.70 | 310 | 109 | 288 | 0.13% | $75 | $7,301 |
| Baltimore City | | urban | 10-Aug-02 | 42,999 | 21.50 | 322 | 402 | 107 | 0.05% | $4,267 | $15,024 |
| Calvert County | 74,563 | rural | 24-Aug-02 | 6,184 | 3.09 | 62 | 47 | 132 | 0.06% | $555 | $3,040 |
| Harford County | | suburb./rural | 14-Sep-02 | 42,000 | 21.00 | | 875 | 48 | 0.40% | | $8,392 |
| Charles County | 120,546 | rural | 28-Sep-02 | 26,542 | 13.27 | 221 | 175 | 152 | 0.15% | $675 | $6,216 |
| Dorchester County | 30,674 | rural | 5-Oct-02 | 529 | 0.26 | 6 | 5 | 106 | 0.02% | $0 | $2,302 |
| Carroll County | | suburban/rural | 19-Oct-02 | 12,773 | 6.39 | 219 | 174 | 73 | 0.12% | $681 | $1,893 |
| Worcester County | | rural | 26-Oct-02 | 9,963 | 4.98 | 154 | 82 | 122 | 0.18% | $1,700 | $1,677 |
| Midshore Region | | rural | 2-Nov-02 | 18,270 | 9.14 | 263 | 175 | 104 | 0.14% | $1,200 | $4,072 |
| Baltimore County | | suburban | 23-Nov-02 | 32,600 | 16.30 | | 365 | 89 | 0.05% | | $6,513 |
| Sub-Total | 2,536,118 | | | 474,502 | 237 | 5,607 | 5,755 | 105 | 0.14% | $37,247 | $94,976 |
| Permanent Sites | | | | | | | | | | | |
| Wicomico County (P) | | rural | Since 2002 | 15,418 | 7.71 | | N/A | N/A | N/A | N/A | $2,776 |
| Prince George's County (P) | 801,515 | suburban | Since 2000 | 111,940 | 55.97 | | N/A | N/A | N/A | N/A | $22,366 |
| Montgomery County (P) | 873,341 | suburban | Since 2001 | 867,740 | 433.87 | | N/A | N/A | N/A | N/A | $173,374 |
| Howard County (P) | 247,842 | suburban/rural | Since 1999 | 252,100 | 126.05 | | N/A | N/A | N/A | N/A | $50,370 |
| TOTAL | 4,458,816 | | | 1,721,700 | 861 | 5,607 | 5,755 | 105 | N/A | 37,247 | 343,861 |

| Location | Population | Rural/ Suburban/ Urban | Date | Material Collected | | | Particpant Data | | | Cost | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pounds | Tons | CRT Units | Parcipants | Pounds/ Particpants | Participation Rate | Advertising | Processing |
| **Pennsylvania** | | | | | | | | | | | |
| Northern Tier SWA | 110,690 | | 25-Aug-01 | 25,860 | 12.93 | | 81 | 319 | 0.07% | | $5,167 |
| Dauphin County | 25,798 | | 22-Sep-01 | 8,000 | 4.00 | | | | | $1,500 | $884 |
| **Cumberland County** | 213,674 | urban/rural | 20-Oct-01 | 159,519 | 79.76 | 1,513 | 1,150 | 139 | 0.54% | $3,000 | $101,200 |
| **Westmoreland County** | 369,993 | urban/rural | 1-Dec-01 | 47,590 | 23.80 | 674 | 232 | 205 | 0.06% | $3,000 | $8,683 |
| Dauphin County | | urban/rural | 22-Feb-02 | 106,600 | 53.30 | | | | | $3,000 | $5,657 |
| Chester County | 433,501 | urban/rural | 23-Feb-02 | 40,051 | 20.03 | 605 | 240 | 167 | 0.06% | | $14,672 |
| York County | 381,751 | | 6-Apr-02 | 43,856 | 21.93 | 663 | 458 | 96 | 0.12% | | $8,762 |
| Delaware County | 550,864 | | 18-May-02 | 7,000 | 3.50 | | | | | | $2,500 |
| **Centre County** | 135,758 | urban/rural | 13-Apr-02 | 107,964 | 53.98 | 1632 | 904 | 119 | 0.67% | $3,000 | $31,334 |
| **Lackawanna County** | 213,295 | urban/rural | 27-Apr-02 | 30,725 | 15.36 | 464 | 192 | 160 | 0.09% | $3,000 | $4,241 |
| **Butler Co-Slippery Rock** | 176,083 | urban/rural | 20-Jul-02 | 20,680 | 10.34 | 214 | 150 | 138 | 0.09% | $3,000 | $17,605 |
| **Butler Co-Cranberry** | | urban/rural | 20-Jul-02 | 38,702 | 19.35 | 315 | 165 | 235 | 0.09% | | $7,733 |
| Bucks County | 597,635 | urban/rural | 21-Sep-02 | 22,800 | 11.40 | | 250 | 91 | 0.04% | | $3,750 |
| Dauphin County | | urban/rural | 5-Oct-02 | 39,703 | 19.85 | 342 | | | | | $7,095 |
| *Sub-Total* | 3,209,042 | | | 699,050 | 349.53 | 6,422 | 3,822 | 167 | 0.18% | $19,500 | $219,283 |
| | | | | | | | | | | | |
| *Permanent Sites* | | | | | | | | | | | |
| Lebanon County (P) | 120,327 | | Since 2002 | 1,476 | 0.74 | | N/A | N/A | N/A | | $554 |
| Lancaster County (P) | 470,658 | | Since 2001 | 95,450 | 47.73 | 1370 | N/A | N/A | N/A | $3,000 | $13,959 |
| *TOTAL* | 3,800,027 | | | 795,976 | 398 | 7,792 | 3,822 | 167 | N/A | $22,500 | $233,796 |
| **Virginia** | | | | | | | | | | | |
| **Virginia Beach City** | 425,257 | urban/suburb. | 18-May-02 | 49,004 | 24.5 | 503 | 219 | 224 | 0.05% | $2,000 | $16,050 |
| Frederick County | 59,209 | suburban/rural | 1-Jun-02 | 28,461 | 14.2 | 441 | 153 | 186 | 0.26% | $2,000 | $5,687 |
| Frederick County | | suburban/rural | 5-Oct-02 | 12,000 | 6.0 | 107 | 158 | 76 | 0.27% | $2,700 | $2,398 |
| **CVWMA** | 971,672 | urban/rural | 19-Oct-02 | 44,483 | 22.2 | 372 | 340 | 131 | 0.03% | $7,800 | $18,488 |
| Arlington County | 189,453 | suburban/rural | 20-Apr-02 | 11,266 | 5.6 | 166 | | | | | $2,251 |
| Alexandria City | 128,283 | suburban/rural | 27-Apr-02 | 12,000 | 6.0 | | | | | | $2,398 |

| Location | Population | Rural/ Suburban/ Urban | Date | Material Collected | | | Participant Data | | | Cost | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pounds | Tons | CRT Units | Parcipants | Pounds/ Particpants | Participation Rate | Advertising | Processing |
| Manassas City | 35,135 | suburban/rural | 4-May-02 | 8,400 | 4.2 | 70 | 100 | 84 | 0.28% | | $1,678 |
| Loudon County | 169,599 | suburban/rural | 11-May-02 | 23,000 | 11.5 | 329 | 247 | 93 | 0.15% | | $4,595 |
| Newport News City | 180,150 | urban/suburban | 1-Jun-02 | 2,400 | 1.2 | | 52 | 46 | 0.03% | | $480 |
| Manassas City | | suburban/rural | 12-Oct-02 | 2,006 | 1.0 | 140 | 200 | 10 | 0.57% | | $401 |
| Arlington County | | suburban/rural | 16-Oct-01 | 11,266 | 5.6 | | | | | | $2,251 |
| Newport News City | | urban/suburban | 1-Nov-02 | 8,000 | 4.0 | | 53 | 151 | 0.03% | | $1,598 |
| Loudon County | | suburban/rural | 9-Nov-02 | 26,400 | 13.2 | 320 | 293 | 90 | 0.17% | | $5,275 |
| *Sub-Total* | *2,158,758* | | | *238,686* | *119* | *2,448* | *1,815* | *109* | *0.18%* | *$14,500* | *$63,549* |
| *Permanent Sites* | | | | | | | | | | | |
| Alexandria City (P) | | suburban/rural | Since 2002 | 18,000 | 9.0 | | N/A | N/A | N/A | N/A | $3,596 |
| Falls Church City (P) | 10,377 | suburban/rural | Since 2002 | 36,000 | 18.0 | | N/A | N/A | N/A | N/A | $7,193 |
| *TOTAL* | *2,169,135* | | | *292,686* | *146* | *2,448* | *1,815* | *109* | *N/A* | *$14,500* | *$74,338* |

### West Virginia

| Location | Population | Rural/ Suburban/ Urban | Date | Pounds | Tons | CRT Units | Parcipants | Pounds/ Particpants | Participation Rate | Advertising | Processing |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Kanawha County | 200,073 | suburban | 20-Jun-02 | 46,715 | 23.4 | 377 | | | | | $8,068 |
| Berkeley County | 75,905 | urban/rural | 20-Jul-01 | 40,509 | 20.3 | 338 | 296 | | | $270 | $9,427 |
| Raleigh County | 79,220 | urban/rural | 10-Aug-02 | 58,245 | 29.1 | 470 | 134 | | | $2,303 | $13,554 |
| Ohio County | 47,427 | urban/rural | 24-Aug-02 | 16,832 | 8.4 | 145 | | | | | $3,942 |
| Harrison County | 68,652 | urban/rural | 6-Sep-02 | 60,033 | 30.0 | 579 | | | | $415 | $13,970 |
| Monongalia County | 81,866 | urban/rural | 12-Oct-02 | 29,926 | 15.0 | 250 | | | | | $7,383 |
| Hancock County | 32,667 | urban/rural | 2-Nov-02 | 21,613 | 10.8 | 177 | | | | | $5,352 |
| *TOTAL* | *585,810* | | | *273,873* | *136.9* | *2,336* | *430* | | | *$2,988* | *$61,696* |

### District of Columbia

| Location | Population | Rural/ Suburban/ Urban | Date | Pounds | Tons | CRT Units | Parcipants | Pounds/ Particpants | Participation Rate | Advertising | Processing |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Department of Public Works | | urban | 11-May-02 | 8,659 | 4.3 | 216 | | | | | $1,730 |
| *TOTAL* | *572,059* | | | *8,659* | *4* | *216* | | | | | *$1,730* |
| **TOTALS / AVERAGES** | 12,369,447 | | 58 events | 5,499,155 | 2,750 | 26,146 | 11,822 | 127 | 0.17% | $115,946 | $1,101,323 |

**FINAL REPORT - EPA Region 3 eCycling Pilot**
**April 2004**

# Appendix B – eCycling Team and eCycling Project Partners

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# Appendix C – Regulatory Flexibility Documents

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**National EPA Cathode Ray Tube Rule:**

Hazardous Waste Management System; Modification of the Hazardous Waste Program; Cathode Ray Tubes and Mercury-Containing Equipment  (Federal Register)

http://www.epa.gov/EPA-WASTE/2002/June/Day-12/f13116.htm


**Region 3 eCycling Pilot Rule**

Pilot-Specific Rule for Electronic Materials in the EPA Region III Mid-Atlantic States; Hazardous Waste Management System; Modification of the Hazardous Waste Program; Cathode Ray Tubes  (Federal Register)

http://www.epa.gov/fedrgstr/EPA-WASTE/2002/December/Day-26/f32547.htm

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Delaware, District of Columbia, Maryland,
Pennsylvania, Virginia, West Virginia
Regulatory Innovation Proposal
July 12, 2001

**Title:  Regulatory Exclusion for End-of-Life Electronic Materials That are Dismantled for Recovery of Useful Elements**

OBJECTIVE:  Encourage recycling of electronic goods by conditionally excluding from federal hazardous waste and solid waste requirements the management of end-of-life electronics ("electronics"), when these materials are physically dismantled (i.e., "demanufactured") for the recovery of useful elements.

EXPECTED BENEFITS

Encouraging Recycling:  Private citizens can dispose of electronics at a solid waste facility unless otherwise prohibited by state statute or regulation, or by a policy of the facility.  In states that so allow, generators of very small quantities of hazardous waste may also dispose of their electronics at solid waste facilities (SWFs), even if the waste fails a toxicity characteristic.  Although many solid waste landfills have been constructed with liners and leachate collection systems, the general waste management hierarchy under RCRA encourages recycling and reuse, and discourages disposal when alternatives exist. The availability of a program encouraging the availability of electronics dismantlers for businesses and industry will result in more electronics being reused and recycled by both citizens and businesses. Manufacturers, wholesalers, and retailers may agree to take back electronics as part of their marketing and sales efforts.  Governmental agencies may also offer to collect household electronic devices, either at a solid waste facility or through curbside pickup, for proper dismantling and reclamation.

Expected benefits of an end-of-life electronics recycling program include:

Encouraging beneficial reuse of electronics

Encouraging business activities for brokers and businesses engaged in the recycling of electronics

Reduction in the amount of toxic metals managed in landfills or other SWFs

Reduction of hazardous constituents in the environment

Possible energy savings in using recycled materials to substitute for virgin materials in the manufacture of
new goods

**Environmental Council of States (ECOS) Regulatory Flexibility Proposal**

DESCRIPTION OF ACTIVITIES

The management of end-of-life electronics has become a national issue. Many electronic devices, such as cathode ray tubes, personal computers, televisions, and the like, contain high concentrations of metals and may, upon testing, exhibit a hazardous characteristic. When such items are refurbished or resold, they are not wastes (although waste may be generated in the process of refurbishment). Additionally, if business or industry must dispose of such items, the cost of managing these materials as hazardous waste can be high. Even though private households enjoy an exclusion from hazardous waste requirements, agencies should encourage the recycling of end-of-life electronics. Also, environmental concerns or citizen pressures may eventually result in SWFs no longer accepting (or being allowed to accept) such materials. Complete deregulation is not warranted, however, as several states have seen persons accumulate substantial quantities of electronics, ostensibly for recycling, then abandon the materials in warehouses or trucks.

There are several facilities in existence, and more are planned, that dismantle or "demanufacture" electronics, removing hazardous components, reusable elements, metals, and other recoverable materials. This occurs on a dismantling or disassembly line, much like in a solid waste materials recovery facility. The dismantling facilities may recycle all electronic components or may crush and dispose of unusable residue. Any material from the dismantling process determined to be waste for disposal would still be subject to a hazardous waste determination or management as a solid waste if it is to be discarded.

A working group has been formed between EPA Region III and representatives of the states in that region. The working group has held numerous conference calls and meetings, and has visited an electronics dismantling facility in Hagerstown, Maryland. Region III and the states are working together to establish a region-wide pilot program for the management of e-waste beginning in fall of 2001. A meeting of key decision-makers from original equipment manufacturers, retailers, transporters, dismantlers, and government agencies was held on June 6, 2001. Regulatory issues, including hazardous waste issues, are considered a significant impediment to the recycling of electronics.

The Region III states propose to conditionally exclude from the classification as a hazardous waste end-of-life electronics that may exhibit a toxicity characteristic, when the materials are physically dismantled for the recovery of useful elements. For these purposes end-of-life electronics would include: cathode ray tubes (CRTs), personal computers and components, televisions, radios, tape recorders/players, cellular telephones, and compact disk/DVD recorders/players.[2] The exclusion would apply to the generation, transportation, collection, accumulation, storage, and dismantling of such materials (although any applicable requirements for transportation of hazardous materials would still apply). This exclusion would be done by amendment to 40 CFR 261.4(a) (and state analogue), by enforcement discretion, or by other appropriate mechanism. The Region III states seek authorization to pursue this course of action prior to a final regulatory amendment, if needed. The proposed exclusion is similar to the one for shredded circuit boards found in 40 CFR § 261.4(a)(14). The purpose is to exclude end-of-life electronic materials and their management from hazardous waste requirements upon certain conditions, including:

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[2] Although not all of these items may exhibit a toxicity characteristic, they are included here for completeness and to give a better understanding of the scope of the Region III Pilot Project.

**FINAL REPORT - EPA Region 3 eCycling Pilot**
**April 2004**

**Environmental Council of States (ECOS) Regulatory Flexibility Proposal**

1. The exclusion is only for end-of-life electronics that are physically dismantled (demanufactured) for recovery of useable elements. Chemical or thermal treatment is not included. Wastes that are disposed of must be properly classified and managed under existing requirements.

2. After physical dismantling, further extraction of the metals or other useable materials may be done if other exemptions apply. For example, magnetic recovery of ferrous metals for reuse would be exempt from any requirements as part of the physical dismantling.

3. The exclusion from hazardous waste requirements would apply to the generation, transportation, collection, accumulation, storage, and dismantling of electronic materials, subject to these conditions.

4. To minimize the possibility of under-funded, ill-conceived dismantling operations, it is required that the receiving/dismantling facilities have an environmental management system approved by the Regional Administrator or state Director.

5. A conditional exclusion from being regulated as solid waste or hazardous waste under federal regulations would be given to electronics that are being recycled as part of the project. Note that individual states may have specific requirements in their state solid waste laws and regulations, with which project participants will be expected to comply. The project would establish minimum management standards applicable throughout Region III that participants would have to meet in order to be eligible for the conditional exclusion. Persons who fail to adhere to the conditions of the exclusion would be subject to applicable state solid and hazardous waste regulations. Operators of dismantling facilities would agree, for example, to:

   1. Have a responsible individual supervising operations at all times
   2. Operate and maintain the facility so as to prevent threats to human health or the environment
   3. Conduct all physical dismantling activity inside an enclosed facility
   4. Provide adequate personnel and equipment to ensure proper operation of the facility
   5. Control litter, dust, noise and other nuisances in operating the facility
   6. Have measures in place to prevent and control fires
   7. Allow authorized agency representatives access to the facility to assess compliance with the conditions of the exclusion

(This list may be expanded or modified as the final project design is established.)

6. To be eligible for the conditional exclusion, the participant would have to be actively recycling collected materials. To reduce the possibility that under-financed or poorly run facilities will go out of business, leaving warehouses full of material for the states to dispose of, "speculative accumulation" would not be allowed. Persons would have to demonstrate that at least 75% of their inventory of electronics that was present on January 1 was recycled by the end of the year.

The project of Region III and the Region III states is being designed to provide the benefits discussed above in the section entitled "Expected Benefits" and to provide information for the design of a nationwide program. Information will be gathered on factors affecting participation rates, and benefits of the

program will be measured. This information will be used in making recommendations on whether to expand the program nationally and whether revisions are needed to increase the program's effectiveness.

POLICY, LEGAL AND REGULATORY DETERMINATION

It will be necessary to address the following:

(a) Conditional exclusion from the classification as a hazardous waste for end-of-life electronic waste that exhibits a toxicity characteristic, when that waste is physically dismantled for the recovery of useful elements. This includes not only the dismantling operation itself, but also the prior management of the materials. This would be done by amendment to 40 CFR 261.4(a) (and state analogue), by enforcement discretion, or by other appropriate mechanism. The Region III states seek authorization to pursue this course of action prior to a final regulatory amendment, if needed.

(b) State solid waste management requirements may need to be examined, so that legitimate "take-back" programs by manufacturers, wholesalers, or retailers (at "recycling depots") are not impeded. The project is not intended to preclude the continued operation of existing collection programs.

(c) Any final changes to regulatory language should be carefully considered in open discussions with all affected parties and in accordance with administrative process requirements.

CONFORMITY OF PROPOSAL TO JOINT EPA/STATE AGREEMENT

This proposal meets the seven principles announced in the Joint EPA/State Agreement to Pursue Regulatory Innovation (EPA/State Agreement), which was published in the Federal Register on May 5, 1998.

A. Experimentation: A conditional exclusion for electronics involves a change from the current methods of management. Recycling of electronics, whether currently subject to hazardous waste requirements or not, would be encouraged. Protection for environmental and public health will be maintained and improved as electronics are diverted from the waste stream for recovery and reuse. The Regional project will involve experimentation with operational variables (for example, type of collection point, type of publicity, use of financial incentives such as rebates or coupons, etc.) to determine the main influences on participation rates and to aid in designing a program that could be extended nationwide.

B. Environmental Performance: Recovery and reuse of materials is a more effective and efficient management method than treatment and disposal, and supports pollution prevention. There are clear environmental and ecosystem benefits. There will be no adverse impact on: environmental protection, public access to information, or public access to the decision-making process. The innovation is designed to fit the transportation infrastructure of the Region III states and take advantage of economies of scale. Methods of collecting electronics will vary depending on local conditions. Requiring receiving/dismantling facilities to have an acceptable environmental management system in place as a condition for participation will reduce the possibility of adverse environmental consequences being caused by poorly run or undercapitalized operations.

**Environmental Council of States (ECOS) Regulatory Flexibility Proposal**

C. Smarter Approaches:  This proposal is designed to remove a regulatory barrier that prevents a prudent, common sense solution to the problem of managing end-of-life electronics.  The Region III States and the Region III EPA office are committed to quick implementation of the project.  The regulatory agencies have sought the participation of the relevant stakeholders in designing the project and are using a collaborative process with stakeholders to work out the project details.

D. Stakeholder Involvement:  Stakeholders from original equipment manufacturers, recyclers, transporters and local governments were all present at the June 6th E-Cycle meeting in Philadelphia.  They were briefed on this proposal.  This process is completely transparent.  The work from the initial stakeholder meeting will be carried forward through a series of conference calls on various aspects of the design and implementation of the pilot project.

E. Measuring and Verifying Results:  A team comprised of EPA, state, and stakeholder representatives has been established to collect data and measure the results of the Region III Project.  The project is targeting 35% of the population of the Region III states.

F. Accountability/Enforcement:  The innovators will be accountable to the public both for alternative regulatory requirements and for meeting commitments that go beyond compliance with current requirements.  Exclusions offered to participants are conditional – if the conditions of the exclusion are violated, regulators would retain authority to address such circumstances as imminent and substantial endangerment, actual harm, or criminal conduct.  Mechanisms to implement and enforce the program may vary according to individual states' statutory or regulatory constraints, and could take the form of voluntary consent agreements, modifications of permits, etc.  Nothing in this agreement authorizes any facility to be exempt from any state or local laws or regulations.

G. State-EPA Partnership:  This proposal has been the product of a full and extended partnership between the states and EPA Region III.

CONCLUSION

Even if fully implemented, this is not a complete solution to the problem of electronic waste.  Unlike other material recovery programs, the value of recovered electronic components probably will not offset the cost of transporting the material and operating the dismantling facility.   Also, unless otherwise prohibited by state statute or regulation or a policy of a solid waste facility, private citizens can still dispose of their electronics at such a facility.  However, with a program encouraging the availability of electronics dismantlers for businesses and industry, more citizens can be expected to recycle their electronics.  Manufacturers, wholesalers, and retailers may agree to take back electronics as part of their marketing and sales efforts.  In addition, more governmental agencies may offer to collect household electronic devices for proper dismantling and reclamation.  It is likely that some businesses would ship electronics directly to the dismantler.  All of these recycling and resource recovery activities would be encouraged by a conditional exclusion from hazardous waste and solid waste requirements.  These benefits will not come at the expense of environmental protection, since failure of a participant to live up to the terms of the conditional exclusion will allow recourse to all remedies available under existing state regulatory provisions.

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MEMORANDUM OF UNDERSTANDING

BETWEEN

THE DELAWARE DEPARTMENT OF NATURAL RESOURCES AND
ENVIRONMENTAL CONTROL

AND

THE DISTRICT OF COLUMBIA DEPARTMENT OF HEALTH

AND

THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

AND

THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

AND

THE VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AND

THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

AND

THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, REGION III

**CONCERNING**

**REGULATORY INNOVATION AND THE E-CYCLING PILOT PROJECT**

October 18, 2001

**Memorandum of Understanding Between Region 3 EPA and Region 3 States**

## I.  Introduction

In April 1998, the United States Environmental Protection Agency (EPA) and senior environmental officials from a number of states that are members of the Environmental Council of States (ECOS) signed an *Agreement to Pursue Regulatory Innovation* (EPA-ECOS Agreement).  Under the EPA-ECOS Agreement, the EPA and individual states agreed to experiment with new regulatory approaches to help identify and implement cleaner, cheaper, and smarter ways to ensure a clean environment and healthy ecosystems.  The EPA and the states recognize that the states, as the implementing agencies for Federally-approved, authorized, or delegated environmental programs, have first-hand knowledge of environmental problems, facility issues, and community concerns affecting their respective citizens.  Through the EPA-ECOS Agreement the EPA and the states are committed to working in an open and collaborative atmosphere to encourage, pursue, and test new ideas that can achieve environmental and ecosystem goals.

In October 2000, EPA and the State Environmental Agencies (the Delaware Department of Natural Resources and Environmental Control (DNREC), District of Columbia Health Department (DCHD), Maryland Department of the Environment (MDE), Pennsylvania Department of Environmental Protection (PADEP), Virginia Department of Environmental Quality (VADEQ), and West Virginia Department of Environmental Protection (WVDEP), hereafter State Agencies@, agreed to develop and implement, with the help of members of the electronics and related industries, one such new idea: the e-Cycling Pilot Project.  The e-Cycling Pilot Project is a joint effort between EPA Region III and the State Agencies.

Through the e-Cycling Pilot Project, EPA Region III and the State Agencies expect to foster the development of a sustainable collection, reuse, and recycling system for end-of-life electronics in the Region III states, diverting such materials from landfills and other disposal sites to facilities at which useful materials may be recovered for reuse or recycling.

On July 12, 2001, the State Agencies submitted a proposal entitled, A Regulatory Exclusion for End-of-life Electronic Materials that Are Dismantled for Recovery of Useful Elements@ for consideration to EPA Region III; that proposal was accepted in principle on August 10, 2001.  (Copies attached as Appendices A and B.)  This Memorandum of Understanding (MOU) documents the expectations and commitments of EPA Region III and the State Agencies to further support the e-Cycling Pilot Project.

## II.  Background: the Environmental Problem Posed by End-of-life Electronics

The management of end-of-life electronics has become an issue of national importance.  A large quantity of used electronic devices such as cathode ray tubes (CRTs), personal computers, televisions, and other personal electronics are routinely, and legally, disposed of in municipal solid waste landfills (MSWLFs) despite the fact that some may contain heavy metals, which may, upon testing, exhibit a hazardous characteristic under RCRA.[3]  For example, households are allowed to dispose of their wastes,

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[3]  Resource Conservation and Recovery Act, codified in the Solid Waste Disposal Act as amended, 42 U.S.C.  "6901-6991(i) (2001).  EPA and the State Agencies are not aware that CRTs are likely to contain certain substances which, when disposed,

whether hazardous or not, as part of the municipal solid waste stream, as are commercial small volume generators in certain states.

While properly regulated MSWLFs are designed and operated with a number of measures to ensure that public health and the environment are protected (use of liners, leachate collection systems, long-term monitoring) the disposal of end-of-life electronics in MSWLFs does increase the potential stress on the waste management unit itself, as well as on the leachate treatment and disposal system. Additionally, such disposal keeps useful components from end-of-life electronics from being put back to useful purposes.

The e-Cycling Pilot Project offers an environmentally and economically beneficial way to encourage the recovery of useful materials from used electronic devices. Under existing environmental programs in some states, several facilities dismantle or "demanufacture" electronics, removing hazardous components, reusable elements, metals, and other recoverable materials. RCRA generally encourages recycling, reuse, and recovery, and discourages land disposal when environmentally protective alternatives exist. Moreover, EPA recognizes that such facilities are typically in a better position than the last user of the electronic devices to decide whether such material, including its individual components, is best suited for reuse or recovery, or for treatment or disposal elsewhere. However, the State Agencies believe that a larger number of facilities engaged in the beneficial reuse and recovery of useful materials from used electronics has been unduly discouraged by the concern that the commercial dismantling of electronics might be deemed to require a RCRA Treatment, Storage, Disposal Facility (TSDF[4]) permit, at substantial outlay of time and money.

EPA Region III and the State Agencies believe that the public health and welfare can be more than adequately protected at such facilities by implementation of measures apart from TSDF permitting, in consultation with EPA Region III and under state supervision. Working together pursuant to this MOU, EPA Region III and the State Agencies intend to further the goals of the e-Cycling Pilot Project in several ways. First, EPA Region III intends to promulgate a conditional exclusion to RCRA's definition of solid waste, applicable to end-of-life electronics within the Region III states, which (a) would conditionally exempt CRTs from RCRA's definition of solid waste when they are sent for recycling, and (b) will as part of its preamble clarify EPA's understanding of when end-of-life electronics become solid wastes under RCRA. Second, each State Agency intends to exercise existing authorities under its solid waste programs to further the goals of the e-Cycling Pilot Project by (a) ensuring that the conditions of EPA Region III's conditional exclusion are met at affected facilities, and (b) otherwise taking steps to ensure that the public health and the environment is protected at these facilities.

For purposes of the e-Cycling Pilot Project, end-of-life electronics include: CRTs, personal computers and related components/peripherals, televisions, radios, tape recorders/ players, cellular telephones, and compact disks/digital video disk recorders/players.

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are likely to fail RCRA's TCLP test. Neither EPA nor the State Agencies are aware of information suggesting that other computer components (other than CRTs) or other electronic products would generally be hazardous wastes.

[4] Facilities that engage in the treatment, storage, or disposal of hazardous wastes typically require a permit under 40 C.F.R. Parts 264 and 265.

**Memorandum of Understanding Between Region 3 EPA and Region 3 States**

**III.  Principles for Agency Regulatory Innovations Under the e-Cycling Pilot Project**

EPA Region III and the State Agencies agree to the seven principles set forth in the EPA-ECOS Agreement.  In summary, the principles described below, which are set forth in the EPA-ECOS Agreement, form the basis of the e-Cycling Pilot Project principles.

*1.  Experimentation: The EPA-ECOS Agreement recognizes that innovations that involve new ideas, experimentation, and changes, may carry some risk of failure.  However, experiments that may help us better achieve environmental goals are worth pursuing when the objectives are clearly defined, costs are reasonable, and environmental and public health protections are maintained and even improved.*

e-Cycling Pilot Experimentation: The e-Cycling Pilot Project involves a change from the current methods of management of end-of-life electronics, to a more uniform process within the EPA Region III states.  Recycling of electronics is encouraged and protection of the environment and public health will be maintained and improved as end-of-life electronics are diverted from MSWLFs and other disposal facilities for recovery and reuse.  The e-Cycling Pilot Project involves experimentation with the following:  (1) use of a multi-state collection, transportation, and recycling approach; (2) collaboration between government and industry; and (3) development of a regional infrastructure (that could be adopted more broadly in other states/Regions).

*2.  Environmental Performance:  EPA-ECOS Agreement innovations seek more efficient and effective ways to achieve environmental and programmatic goals, move toward a cleaner, healthier environment, and promote sustainable ecosystems.*

e-Cycling Pilot Environmental Performance: Under the e-Cycling Pilot Project, the recovery and reuse of materials is expected to provide a more environmentally protective, effective and efficient management method for end-of-life electronics than land disposal typically provides, thus supporting pollution prevention goals.  Protection of the environment, public access to information, and public access to the decision-making process will be assured via the protective measures being adopted under the e-Cycling Pilot Project.  As detailed below, collection, storage, dismantling, and recycling facilities will be required to operate to reduce the potential risks to the environment from poorly-run or undercapitalized operations.  The innovation is designed to fit the extensive transportation infrastructure of the Mid-Atlantic States and to take advantage of economies of scale as State Agencies develop methods of collecting electronics appropriate to their local conditions.

*3.  Smarter Approaches:  The EPA-ECOS Agreement encourages regulators to seek creative ways to remedy environmental problems and improve the environmental protection system.*

e-Cycling Pilot Smarter Approaches:  The e-Cycling Pilot Project is designed to encourage a simplified, prudent, common-sense solution to the problem of managing end-of-life electronics.  As RCRA itself recognizes, it is better to recover and reuse materials than to dispose of them, as long as adequate protections for public health and the environment are in place.

*4.  Stakeholder Involvement:  The EPA-ECOS Agreement recognizes that effective stakeholder involvement enhances the effectiveness of environmental improvement efforts.  Stakeholders must have an opportunity for meaningful involvement in the design, implementation and evaluation of innovation projects.*

*Stakeholders may include other government agencies, the regulated community, citizen organizations, environmental groups, and individual members of the public. Stakeholder involvement should be appropriate to the type and complexity of the innovation proposal.*

e-Cycling Pilot Stakeholder Involvement: The EPA and the State Agencies are working with stakeholders from original equipment manufacturers, electronics recyclers, waste transport and management companies, electronics retailers, non-governmental organizations, and local governments to develop and implement the Pilot Project. These stakeholders met on June 6, 2001 and on August 29, 2001 in Philadelphia, Pennsylvania to develop the Project implementation strategy. These groups will continue to work together toward Project completion. Prior to the Pilot Project kick-off, the State Agencies will announce the Project to the public through publicity of local collection events, an e-Cycling website, TV and radio public service announcements, newspaper articles, and mailings. The EPA has conducted extensive outreach nationally on some of the issues raised by this Project as part of its proposed amendments to certain RCRA regulations concerning used CRTs and processed CRT glass sent for reuse and recycling, as part of the Common Sense Initiative conducted between 1994 and 1998. In addition, the EPA Region III will publish a Pilot Project specific regulation in the Federal Register that will solicit and consider comments from all members of the public.

*5. Measuring and Verifying Results: The EPA-ECOS Agreement recognizes that innovation efforts are likely to be more effective when based on measurable goals and objectives. Effective measurement and monitoring allows regulators and stakeholders to monitor progress, analyze results, and respond appropriately.*

e-Cycling Pilot Measuring and Verifying Results: An e-Cycling Data Collection and Analysis group composed of EPA, state, and stakeholder representatives has been established to collect data and measure the results of the Project. After one year, and periodically thereafter as agreed by the parties, the EPA and State Agencies will evaluate the results of this Pilot Project to determine its effectiveness (see discussion of Project Evaluation, below). In the event that it is determined pursuant to this evaluation that the pilot project and the regional rule should be terminated, the regulators will take all necessary steps to facilitate the participants= transition to governance by the terms of the controlling national or state regulations in a timely manner.

*6. Accountability/Enforcement: The EPA-ECOS Agreement recognizes that innovators must be accountable to the public. For innovations that can be implemented within the current regulatory framework, current systems of accountability and mechanisms of enforcement remain in place. For innovations that involve some degree of regulatory flexibility, innovators must be accountable to the public, both for alternative regulatory requirements that replace existing regulations and for meeting commitments that go beyond compliance with current requirements. Regulators will reserve full authority to enforce alternative regulatory requirements to ensure that public health and environmental protections are maintained, and must be willing to explore new approaches to establish accountability for beyond compliance commitments.*

e-Cycling Pilot Accountability: EPA and the State Agencies will remain accountable to the public during the implementation of the E-Cycle pilot project by both engaging public stakeholders during the design of the Pilot Project and by following their existing procedures to inform and seek public comment on their actions. The conditional exclusion, which EPA Region III intends to propose in a Region III specific rule (described further below), will be promulgated in accordance with all

applicable public notice and comment requirements.  The State Agencies will implement the conditional exclusion in accordance with the requirements of their respective state laws and their authorized RCRA programs.  The facilities participating in the Pilot Project will remain accountable to the public, and will be subject to all applicable requirements (including enforcement actions where appropriate) if they fail to meet the conditions established in EPA Region III=s specific rule or the states' legal implementation mechanisms.

*7.  EPA-State Partnership:  The Agencies will support innovations at all levels to increase the efficiency and effectiveness of environmental programs.  This is best accomplished by working together in the design, implementation, and evaluation of innovative ideas and programs.*

e-Cycling Pilot EPA-State Partnership:  The design of the e-Cycling Pilot Project has been the product of a full and extended partnership between the states and EPA Region III.  This partnership will continue throughout the implementation and evaluation phases of the Pilot Project.

## IV.  The EPA Region III and Mid-Atlantic States e-Cycling Pilot Project

This MOU describes how the EPA and the State Agencies are working together to develop and implement innovations under the e-Cycling Pilot Project.  The goal and objectives of the e-Cycling Pilot Project are the following:

*Goal:*  Encourage the reuse and recycling of end-of-life electronic goods.

*Objectives/Benefits:*

Reduce hazardous constituents in the environment by reducing the volume of toxic metals in landfills.

Encourage beneficial reuse of electronics (de-manufacturing).

Create energy savings through the use of recycled material substituted for virgin materials in the manufacture of new goods.

EPA Region III and the State Agencies recognize that this Project will not provide a complete solution to the problem of electronic waste; but believe it will facilitate the development of a materials recovery program.  The Project developers recognize that, unlike many other recycled materials, the value of recovered electronic components may not offset the cost to transport the materials and to operate the dismantling facilities, and that households and small quantity commercial generators in certain states remain free to dispose of their end-of-life electronics at solid waste transfer/disposal facilities.  Nonetheless, EPA Region III and the State Agencies do expect that the e-Cycling Project will encourage the recovery of useful elements from end-of-life electronics, and will encourage the development of commercial facilities to accomplish this goal.

### Description of Project Activities

EPA - EPA Region III may provide contract funding to support the Project (in accordance with applicable procurement, ethics, and other regulations) and will help facilitate work and discussions among the various stakeholders. EPA will review and comment on criteria developed by each state to assess the ability of proposed dismantling facilities to operate so as to assure that the public health and welfare are adequately protected.

In order to legally implement the conditional exclusion requested by the State Agencies (described in Section I), EPA Region III intends to publish in the Federal Register a direct final rule (based on the current draft of a nationally applicable Federal rule presently under consideration) that would conditionally exclude certain types of CRTs from the Federal definition of solid waste in each of the Region III states. Additionally, EPA anticipates that the preamble to the Regional rule will state that, under current rules, EPA recognizes that electronic devices, including but not limited to CRTs, frequently are taken out of service before their useful life is over and that the person taking such a device out of service typically lacks the expert knowledge needed to determine whether the device can remain in use. Consequently, EPA does not view the person taking the device out of service as a waste generator (unless that person decides to dispose of the device). Devices (including their components), which go on to further use either directly, or after minor repair, are not solid wastes. Finally, EPA Region III anticipates that the Regional Rule will reflect that EPA is not aware of information suggesting that any end-of-life electronics that is solid waste (other than CRTs) generally comprise RCRA hazardous waste.

With respect to CRTs that are being recycled in a way that would normally make them RCRA solid wastes, EPA Region III anticipates that the Regional rule will provide that such CRTs will be conditionally excluded from RCRA's definition of solid waste when they are sent for recycling.

The direct final rule that EPA intends to promulgate will take effect 60 days after publication, giving the public 60 days to submit any comments. If the public submits any significant comments, the Region would withdraw the final rule and continue with the proposal. Region III would need to revise the rule as needed to respond to comment.

State Agencies - Each State Agency participating will be responsible for implementing the Pilot Project in its respective state. State Agencies will work directly with counties and municipalities to solicit their participation in the Project, assist them in establishing collection programs for the electronic materials, where needed, and publicize the date and location of established collection events. State Agencies are planning kick-off events to maximize public participation in the Project.

The State Agencies will use their solid waste authorities to manage the collection, accumulation, storage, transport, de-manufacture, and processing of end-of-life electronics dismantled for recovery of useful elements. The State Agencies expect that any regulatory changes adopted will include substantially all of the conditions set forth in their July 12, 2001 proposal. (See Appendix A.)

Some State Agencies may require financial assurance from some types of businesses to protect against the potential abandonment of end-of-life electronics. Additionally, each State Agency will

develop criteria to assess the ability of proposed dismantling facilities to operate so as to assure that the public health and welfare are adequately protected. These criteria may incorporate elements of an environmental management system. EPA Region III will be afforded an opportunity to comment on the criteria.

Other Federal and State Agencies   EPA Region III and the State Agencies will work to encourage other governmental agencies to offer to collect household end-of-life electronics for proper dismantling and reclamation.

Retailers - Retailers will be encouraged to take back electronics as part of their marketing and sales efforts. Participating retailers are expected to experiment with different collection scenarios to collect data on which collection methods generate the greatest participation. Retailers will contract directly with recyclers to handle the material collected.

Original Equipment Manufacturers - Manufacturers and wholesalers retailers will be encouraged to take back electronics as part of their marketing and sales efforts. Some manufacturers of electronics involved in the Project have agreed to pay for the recycling of their own brand of products for the purpose of this Project. Appropriate stakeholders in the e-Cycling Pilot Project will contact other manufacturers to solicit their involvement in the Project. In addition, the Electronics Industries Alliance (EIA), which represents hundreds of electronics manufacturers, is also expected to support the Project through grant funding.

Collection Centers, Recyclers, De-manufacturers, and Transporters - Collection centers, recyclers, de-manufacturers, and transporters will be expected by all State Agencies and the EPA to operate in a manner that is protective of human health and the environment. Some State Agencies may require financial assurance from some types of businesses to protect against the potential abandonment of end-of-life electronics. State Agencies may request some degree of an environmental management system from a facility to demonstrate its ability to properly manage these materials. Nothing in this agreement authorizes any facility to be exempt from any state or local law or regulations.

Evaluation of Lessons Learned and Replication of Successful Innovations - The EPA and State Agencies agree that evaluating the progress of the e-Cycling Project is an integral step in making systemic improvements to environmental protection programs. EPA and the State Agencies will work with all stakeholders to develop protocols to measure the success of the e-Cycling Pilot Project. The e-Cycling Data Collection and Analysis group will measure Project success based on existing baseline data regarding waste disposal practices, using criteria in the following categories: citizen participation, material characteristics, collection and transportation costs, recycling volumes, secondary material recovery, economies of scale, and profitability (as a measure of sustainability). The data group will prepare and make available a catalog of Project data elements. Also, the Pilot Project stakeholders will evaluate and publicize Project status during implementation and following Pilot Project completion.

## V. Duration

This MOU will remain in effect for the duration of the e-Cycling Pilot Project, or until modified or terminated by one or more of the signatories. This MOU is not intended to supercede any other agreement between the EPA and the State Agencies.

## VI. Relationship with Other Laws and Agreements

This MOU (including its substantive and the procedural provisions) does not create legal rights or obligations, and it is not an enforceable contract or a regulatory action such as a permit or a rule. Nothing in this agreement exempts any facility from any state or local laws or regulations. This MOU will be implemented in a manner consistent with EPA Region III's and the State Agencies' responsibilities under existing state programs as approved or authorized by EPA.

This MOU does not establish privity between EPA Region III and DNREC, DCHD, MDE, PADEP, VADEQ, and WVDEP.

No waiver of sovereign immunity is implied or assumed by this MOU.

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# Appendix D – eCycling Data Collection Forms

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Location _____

Date _____

# Mid-Atlantic States eCycling Project
## Program Organizer Information

<u>Instructions:</u>

Please complete the information requested below for each shipment of collected electronics.  If a requested field does not apply, indicate this with "N/A".  Feel free to attach any supplementary data or information you think is relevant.  Please return form to the eCycling coordinator in your state.

### 1.  Contact Information

| | |
|---|---|
| Event Sponsor | |
| Contact Name | |
| Address | |
| City, State, Zip Code | |
| Phone Number | |
| E-mail Address | |

### 2.  Type of Sponsoring Organization

❑  Retailer
❑  Local Government
❑  County Government

❑  Non-profit organization
❑  Other (please specify) _____

### 3.  Type of Collection Event

❑  One-day collection

❑  Multiple-day collection (less than 3 months)
❑  Permanent collection (more than 3 months)

### 4.  Location of Collection Event

❑  Retail Store
❑  Landfill
❑  Transfer Station
❑  Municipal Facility (other than landfill, MRF, or transfer station)

❑  Non-Profit Organization
❑  Municipal Recycling Facility (MRF)
❑  Other (please specify) _____

### 5.  Describe weather conditions in the collection region on the day(s) of the event(s):

6. **How did you promote of advertise this event?  Please check promotions used and briefly describe how/where they were distributed and the approximate cost:**

1. eCycling brochure –
2. Flyers –
3. Radio –
4. Print –
5. TV –
6. Other –

7. **Participant Information**

| Type | Number of Participants |
|---|---|
| Households | |
| Businesses | |
| Other (specify) | |
| **Total** | |

8. **Products Collected**

| | Quantity (units) | Weight (lbs)* | Fee Charged (if any) |
|---|---|---|---|
| Televisions | | | |
| Monitors | | | |
| CPUs | | | |
| Peripherals** | | | |
| Printers | | | |
| Scanners | | | |
| Keyboard/Mice | | | |
| Other: | | | |
| VCR | | | |
| Stereo/Tape/CD Player | | | |
| Fax/Copy Machines | | | |
| Misc. Computer Parts | | | |
| Laptops | | | |
| Other: | | | |
| **Totals** | | | |

\* Please provide weight for each material category if known
\** Providing breakdown by peripherals is optional

Location _____

Date _____

# Mid-Atlantic States eCycling Project
## Recycler Information

**Instructions:**

Please complete the information requested below for each shipment of eCycling Project electronics.  If a requested field does not apply, please indicate by writing "N/A" in that field.  Feel free to attach any supplementary data or information you think is relevant.  Please return form to the eCycling coordinator in your state.

## 1. Contact Information

| | |
|---|---|
| Your company | |
| Contact person | |
| Address | |
| City, State, Zip Code | |
| Phone number | |
| E-mail Address | |

## 2.  Products Collected

| | Quantity (units) | Weight (lbs) |
|---|---|---|
| Televisions | | |
| Monitors | | |
| CPUs | | |
| Peripherals* | | |
|    Printers | | |
|    Scanners | | |
|    Keyboards/Mice | | |
|    Other: | | |
| VCR | | |
| Stereo/Tape/CD Player | | |
| Fax/Copy Machines | | |
| Misc. Computer Parts | | |
| Laptops | | |
| Other: | | |
| **Totals** | | |

*Providing breakdown by peripherals is optional.

Location _____

Date _____

## 3. Number of CRT Units from Panasonic, Sharp, and Sony

|  | Panasonic | Sharp | Sony |
|---|---|---|---|
| Number of Televisions and Monitors |  |  |  |

## 4. Commodity Breakdown

|  | Plastics (lbs) | Glass (lbs) | Copper Breakage (lbs) | Metal Breakage (lbs) | Circuit Boards (lbs) | Waste (lbs) |
|---|---|---|---|---|---|---|
| Televisions |  |  |  |  |  |  |
| Monitors |  |  |  |  |  |  |
| CPUs |  |  |  |  |  |  |
| Peripherals* |  |  |  |  |  |  |
| Printers |  |  |  |  |  |  |
| Scanners |  |  |  |  |  |  |
| Keyboards/Mice |  |  |  |  |  |  |
| Other: |  |  |  |  |  |  |
| VCR |  |  |  |  |  |  |
| Stereo/Tape/CD Player |  |  |  |  |  |  |
| Fax/Copy Machines |  |  |  |  |  |  |
| Misc. Computer Parts |  |  |  |  |  |  |
| Laptops |  |  |  |  |  |  |
| Other: |  |  |  |  |  |  |
| Total Materials Processed |  |  |  |  |  |  |

*Providing breakdown by peripherals is optional.

Location _____
Date _____

## 5. Overall Processing Results

|  | Total Tonnage (lbs) |
|---|---|
| Material Recycled |  |
| Material Reused (if applicable) |  |
| Material Disposed (landfilled or incinerated) |  |
| Total Materials Processed |  |

## 6. Transportation Costs (from collection point to the de-manufacturer)

| Number of Trips |  |
|---|---|
| Miles Traveled |  |
| Transportation Cost ($) |  |

## 7. Commodity Markets*

| Plastics | Shipped to**:_____<br>Tonnage Shipped (lbs):_____ Cost to ship ($):_____<br>❑ Cost or ❑ Revenue (check one) from Plastics ($): |
|---|---|
| Glass | Shipped to Glass Recycler**:_____<br>Tonnage Shipped (lbs):_____ Cost to ship ($):_____<br>❑ Cost or ❑ Revenue (check one) from Glass Recycler ($): |
|  | Shipped to Lead Smelter**:_____<br>Tonnage Shipped (lbs):_____ Cost to ship ($):_____<br>❑ Cost or ❑ Revenue (check one) from Lead Smelter ($): |
| Copper Breakage | Shipped to**:_____<br>Tonnage Shipped (lbs):_____ Cost to ship ($):_____<br>❑ Cost or ❑ Revenue (check one) from Copper Breakage ($): |
| Metal Breakage | Shipped to**:_____<br>Tonnage Shipped (lbs):_____ Cost to ship ($):_____<br>❑ Cost or ❑ Revenue (check one) from Metal Breakage ($): |
| Circuit Boards | Shipped to**:_____<br>Tonnage Shipped (lbs):_____ Cost to ship ($):_____<br>❑ Cost or ❑ Revenue (check one) from Circuit Boards ($): |

*For confidentiality or competitive reasons, you may not be able to disclose this information. If this is true, please leave this section blank. In addition, cost ranges are acceptable for this section.
**Please provide company name, city, state, and country.

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Event Location _____

Date _____

# Mid-Atlantic States eCycling Project
## Materials Transportation Information

**Instructions:**

Please complete the information requested below for each shipment of eCycling Project electronics.  If a requested field does not apply, please indicate by writing "N/A" in that field.  Return form to _____

### 1. Contact Information

| | |
|---|---|
| Your company | |
| Contact person | |
| Address | |
| City, State, Zip Code | |
| Phone number | |
| E-mail address | |

### 2. Transportation Costs (from collection point to the de-manufacturer)

| | |
|---|---|
| Number of Trips | |
| Miles Traveled | |
| Transportation Cost ($) | |

### 3. Companies receiving shipment:

| | |
|---|---|
| Name of company | |
| Address | |
| Phone number | |
| Contact person | |

| | |
|---|---|
| Name of company | |
| Address | |
| Phone number | |
| Contact person | |

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Location _____

Date _____

# Mid-Atlantic States eCycling Project
## Participant Survey

1.  How did you hear about this event?
    - ❑ Web page
    - ❑ TV ad
    - ❑ Other _____
    - ❑ Newspaper ad
    - ❑ Flyer
    - ❑ Radio
    - ❑ Word of mouth

2.  How far did you travel today to recycle your electronics? *(Give your best estimate)*
    - ❑ <5 miles
    - ❑ 5 - 10 miles
    - ❑ 11 - 20 miles
    - ❑ >20 miles

3.  Are your electronics from a:
    - ❑ Residence
    - ❑ Business
    - ❑ Other:_____

4.  Who do you think should pay for the safe recycling of electronic products? *(Choose one)*
    - ❑ Consumer / user
    - ❑ Retail store
    - ❑ Electronics manufacturer
    - ❑ Government
    - ❑ Other (please list) _____

5.  What is the most you would be willing to pay per item to recycle your electronics?
    - ❑ $2
    - ❑ $5
    - ❑ $10

6.  What is the most convenient way for you to recycle your electronics?
    - ❑ Take them to a municipal recycling center
    - ❑ Take them to a retail store
    - ❑ Mail them back to a manufacturer
    - ❑ Take them to a local charity
    - ❑ Other (please specify) _____

7.  How many computer monitors and TVs do you have at home right now?
    - ❑ 0-2
    - ❑ 3-4
    - ❑ 5 or more

8. How many households does your vehicle represent?
    - ❑ 1
    - ❑ 2
    - ❑ 3
    - ❑ More than three

**Thank you for participating in today's electronics collection event!**

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# Appendix E – Local Government Survey

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## *Local Government Interest Survey Enclosed for*
## *New Regional Program to Recycle Electronics*
## *Submission Deadline:   Friday, July 20*

Dear    :

The States in EPA Region III are working together to develop a long-term solution to consumer electronic product recovery and recycling.  This new initiative is called the **eCycling Project**.  The States comprising EPA Region III are the District of Columbia, Delaware, Maryland, Pennsylvania, Virginia, and West Virginia.

Each of the EPA Region III states is seeking, through the enclosed survey, to collect demographic data to measure the level of interest that localities might have in participating in this project.  Your response to this survey will assist us in identifying and selecting collection sites to collect end-of-life electronics.

The **project objectives** involve a partnership among electronics manufacturers, retailers, and demanufacturers, waste transporters, and local, state, and federal government to:

⊩☐     Increase recycling of electronic products from Region III households and small businesses through a shared responsibility partnership between industry and government;

⊩☐     Explore the economies of scale for recycling used electronic products; and

⊩☐     Identify infrastructure development needs by comparing and assessing the costs and effectiveness of various collection techniques sponsored by local governments and retailers.

The **general design** of the project can be described as:

· *Service population:*  Residences and businesses from a mix of urban, suburban and rural communities in the Region III states;
· *Product focus:*  Televisions and computers (including monitors and peripherals);
· *Project duration:* A one-year project to build the necessary infrastructure for a long-term sustainable program. The Region III eCycle team will evaluate project status at six-month intervals; and
· *Start date:*  October 2001

Project costs to local government would only be to provide a site for collection, storage facility or unit, and appropriate staff.  At this point, EPA has pledged funding for education and outreach, the states have pledged resources primarily though in-kind services to this project, and resource commitments from equipment manufacturers and others are forthcoming.

Local governments will benefit from the environmental impact of this collection by reducing the amount of toxics, such as lead, cadmium and mercury entering the waste stream, saving landfill space, and conserving natural resources.

Our objective in contacting local governments with this survey is to develop a list of localities with a serious interest in being a site for this project and to prepare cost estimates based on location, volume estimates, etc. Thus, we ask that you complete the following survey to provide us with adequate information to develop parameters for preparing program budgets.  **By sending in a survey and expressing an interest, you do not commit yourself to this project.**  We do anticipate, however, that the majority of collection programs will take place in localities responding to this survey.

Successful implementation of the eCycle project will result in an economically and environmentally sustainable collection, reuse and recycling system for electronics in the Mid-Atlantic States, and establish the core of a model of shared responsibility that other EPA Regions and the States may adopt.

As we are targeting October 1, 2001 as our project kickoff date, we are asking for a quick response, and request that you **respond to this survey by Friday, July 20**.  Please return the survey document via email, fax or mail to:_____

Once we have gathered this survey data, we will create collection scenarios with operational descriptions and cost estimates.  We will then prepare a project proposal for selected localities.

For questions or additional general information about this project, a list of the eCycle Project team members, or a more detailed project description, please contact the representative from your state or Claudette Reed, at US EPA Region III at 215-814-2997 or Reed.Claudette@epamail.epa.gov.

Thank you for completing the survey.  We greatly appreciate this valuable information and hope you will join this effort.  We look forward to your response.

# eCycle Project - EPA Region III
# Local Government Survey of Interest

Name: _____

Title: _____

Representing (local government body): _____

Address: _____

Address: _____

Phone: _____ Fax: _____

Email: _____


Demographic Profile of Area:
Population:     _____     Square Mile Area: _____
Percent Urban _____ ; Suburban _____; Rural _____

Major Transportation Corridors in/near locality (such as Interstate 95):
_____
Computer Recyclers/Processors located in area: _____
_____


INTEREST AND PREFERENCE SURVEY:
Please indicate your level of interest in being a site for an electronic products collection program or event:
_____  High                                _____  Low

_____  Moderate                            _____  Not Interested at this time

Collection Program Characteristics:
Various collection techniques will be utilized in this project.  For each section, please mark your answer in order of preference, with "1" being most desirable.  If you have no preference, please mark "NP".

Collection Site:
____  Collection at public works/solid waste/recycling site.
____  Arranged collection at retailer's site.
____  Collection at a centrally-located site, such as a school or stadium.
____  Other: _____

Collection Frequency:
_____  One-time event             _____  Routine event, held twice yearly
_____  Monthly event              _____  Permanent Collection
_____  Curbside

Cost Structure:
_____  Charge only for TVs & Monitors (Average $5 - $15)
_____  Charge for each piece
_____  No Charge

When citizens and businesses call now, what do you currently suggest they do with end-of-life electronics?
_____

_____

## COLLECTION INFORMATION:

If your locality has conducted any type of electronics product recycling collection or is planning a collection, please complete the following section for each event or program.

___ Yes, we have had an electronics collection in our locality.
___ No, but an electronics collection is planned.

Please check what best describes this event or program:
_____ One-Time Event
_____ Repeated Several Times Yearly (No.:_____)
_____ Ongoing collection

Collected materials:
_____ Computers, peripherals and TVs
_____ Computers and peripherals, but no monitors
_____ Computers, TVs and other electronic products
       such as: (please name)_____
_____ Other: _____

Were any fees charged to participants?   Yes   No      If yes, please describe costs and type of items charges applied to.
_____
_____
Vendor Used: _____
Manufacturers/Retailers Involved: _____
Transportation was provided by: _____
Material was recycled by: _____

_____
Tonnage collected: _____
Break down of types of materials by tons:
_____

Additional Information/Comments:
_____
_____
_____
___

Thank you for completing the survey.  By <u>FRIDAY, July 20</u>, please email, fax or mail this completed survey to:      [STATE CONTACT INFO HERE ]

Appendix F – Map of eCycling Collection Locations

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# Region III eCycling Project
## Participating Local Governments

### Legend
- ● Town of Ashland
- Participating Local Governments
- Hydrography
- County Boundary
- State Boundary

*Data Sources*
*U.S. Census Bureau:    County and State Boundary*
*U.S. EPA:              eCycling Data*
*U.S. Geological Survey:  National Hydrography Dataset*

Miles
0   30   60   90   120   150

Kilometers
0   50   100   150   200   250

Lake Erie

PENNSYLVANIA

MARYLAND

DELAWARE

WEST VIRGINIA

VIRGINIA

ASHLAND
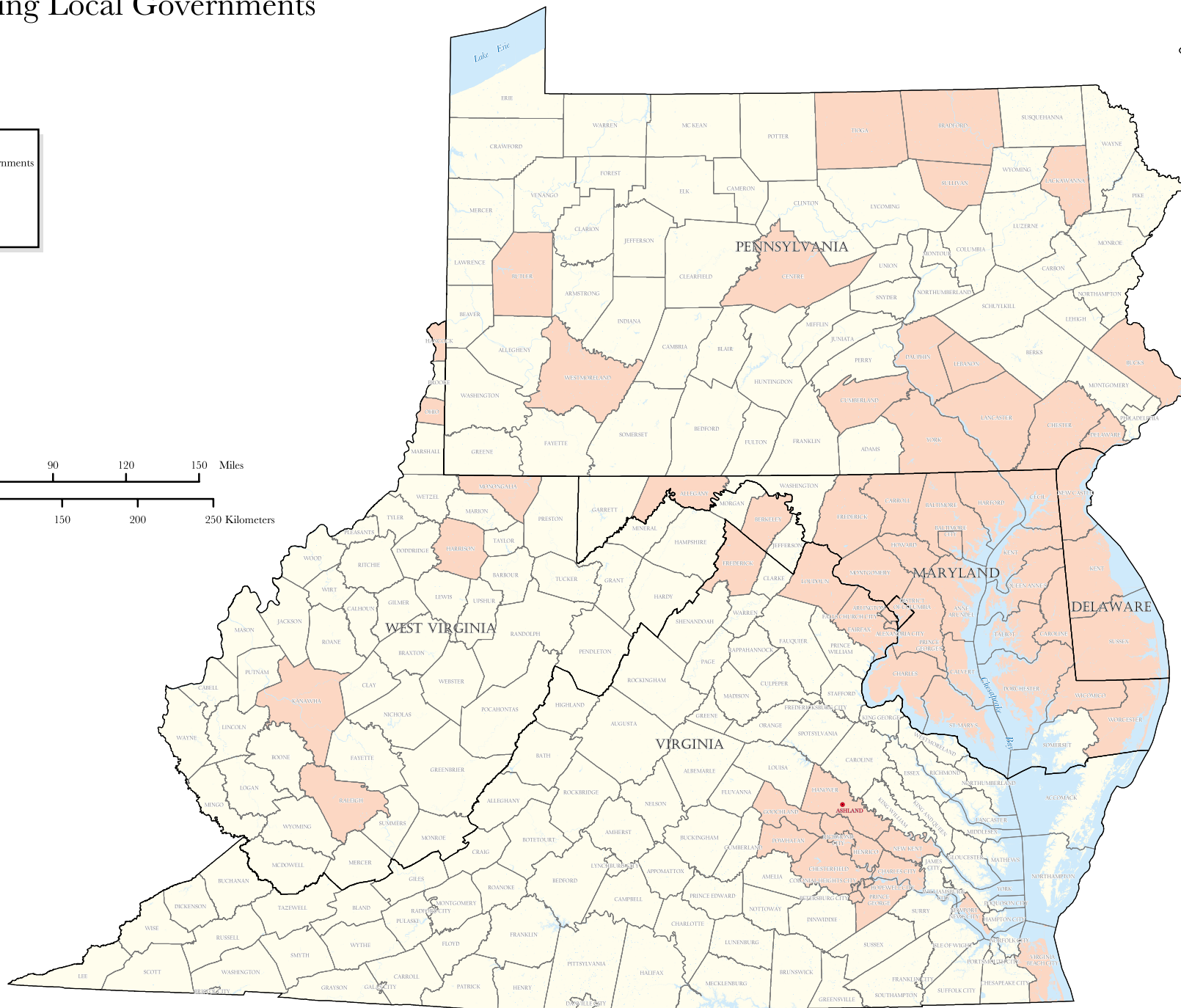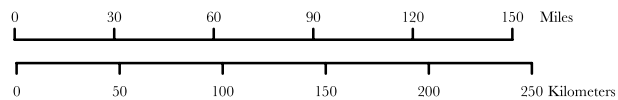
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# Appendix G – Drop-Off Locations in the State of Delaware

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# Drop - Off Locations in the State of Delaware

## New Castle County

Delaware Recycling Center
1101 Lambsons Lane, New Castle
(off Rt. 9 North)
Monday - Friday 7 a.m. to 3 p.m.

Cherry Island Landfill
1706 E. 12th Street, Wilmington
Monday - Friday 7 a.m. to 5 p.m.
Saturday 7 a.m. to 3 p.m.

Pine Tree Corners Transfer Station
Rd. 25 Townsend
(approximately 1 mile off Rt. 13)
Monday - Saturday 7 a.m. to 5 p.m.

## Kent County

Central Solid Waste Management Center
(Sandtown Landfill)
Rt. 10, Sandtown
Monday - Saturday 7 a.m. to 5 p.m.

Cheswold Collection Station
Rd. 153
Cheswold, Delaware
Monday 8:30 a.m. to 3:30 p.m.
Saturday 8:30 a.m. to 3:30 p.m.

## Sussex County

Southern Solid Waste Management Center
(Jones Crossroads Landfill)
Rt. 20, Hardscrabble
Monday - Saturday 7 a.m. to 5 p.m.

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Appendix H – Utility Bill Stuffer

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## Are You Prepared for Winter Storms?

Our equipment and power lines are built to rigid standards for safety and reliability. But you never know when heavy winds, snow and ice may cause a power outage and dangerous conditions.

To minimize storm damage and restore power quickly, BGE monitors the weather at all times. By the time a storm reaches our area, our emergency team is already at work.

If you lose power, call BGE's automated response system—**1-877-778-2222**. It's the fastest and most efficient way of reporting a power outage. You can call this number any hour and almost never get a busy signal.

We will do our best to restore your power as quickly as possible. But if a storm causes widespread severe damage to our system, it may take 24-36 hours for our crews to physically assess the damage before we can give you an estimated restoration time. Rest assured, our crews will continue working around the clock until all power is restored.

### Be prepared—
### it's the best way to weather a storm

Make sure you have flashlights, battery-operated radios, cell phones, non-perishable foods, water bottles, or an emergency generator in good working order. Here are some more tips:

* Plan where to go should you need to leave your home.
* Turn off or unplug sensitive electronic equipment and appliances.
* Keep refrigerator and freezer doors closed.

* Don't use candles for lighting—they can create a fire hazard. And never use a gas cooking range for heating—it can create deadly carbon monoxide fumes.
* Burn only seasoned wood in your fireplace—no trash, paper or other materials. Always use a metal screen over the fireplace opening to catch flying sparks, and clear the hearth of any materials.
* Be sure your smoke alarm has a battery backup and is operating properly.

### When the storm has passed...

* Tune in local radio for safety and status reports.
* Keep phone lines clear. Call BGE only to report downed or sparking power lines or unsafe electrical equipment.
* **Never touch fallen or low-hanging wires or anything they contact.** ●

## Get Plugged into eCycling
Electronics Recycling

**H**ave you recently purchased new home electronics? Are you wondering what to do with your outdated television or computer?

In an effort to answer this question, the Maryland Department of the Environment (MDE) and its sister agencies in neighboring states have launched the EPA (Environmental Protection Agency) eCycling project. Other businesses including BGE support this effort.

The eCycling project is a year-long project to evaluate different methods of collecting and recycling electronics equipment. This project will guide the development of a long-term solution to remove end-of-life computer equipment and televisions from the municipal waste stream.

There is growing concern about the disposal of electronic equipment since it adds volume to municipal waste streams. In Maryland, outdated computers and televisions account for 150,000 tons of waste annually. Obsolete electronics also contain elements such as lead, mercury, and arsenic that pose environmental and health risks.

You can participate in eCycling by taking advantage of upcoming events where televisions and computers will be collected. The collection events will occur at solid waste management facilities or retail outlets. For more information on eCycling events and recycling locations, check the MDE website at www.mde.state.md.us. ●

⊕ Printed on recycled paper.

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# Appendix I – User Guide to the eCycling Database

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# eCycling User's Guide

**Prepared for:**

EPA Region III eCycling Project

**Prepared by:**

**D.N.AMERICAN**

Suite 3220, 1000 Technology Drive
Fairmont, WV 26554

October 9, 2002

# Table of Contents

# 1.0 Scope

## 1.1 System Overview

The eCycling data site was developed for a partnership among EPA Region III and the Mid-Atlantic States environmental agencies to enable more accurate comparisons among computer and electronics recycling programs across the Mid-Atlantic region.  The site is used to allow recycling programs to share information.  The information will be used to analyze and characterize the impact of the eCycling Pilot in Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia.

## 1.2 Document Overview

This document provides an overview of the web site features and the usage instructions. It is composed of the following main sections:

Section 1 — Provides identification and overview of the eCycling Forms web site as well as an overview of the document contents.

Section 2 — Provides a brief overview of the general application capabilities (e.g., forms, navigation, reports), error resolution and support, security and privacy considerations, equipment and external software requirements.

Section 3 —Describes user access and roles.

Section 4 —Describes how users access and exit the eCycling web site.

Section 5 — Describes System Features (e.g., menu, form navigation techniques).

Section 6 — Shows the hierarchy of the eCycling site pages and provides an explanation of each.

# 2.0 General Capabilities

## 2.1 Overarching Capabilities

**At a high level, the eCycling site provides 1) complete insight into event activity, 2) enhanced event communications, and 3) better methods for more accurate comparisons. The eCycling web site provides detailed information on the following:**

- Events,
- Materials Collected,

- Materials Recycled, and
- Materials Reused

Site navigation is possible via links provided in the interface design that allows users to advance quickly to areas of interest (e.g., Forms, EPA Reports).  A menu bar resident at the right hand side of the web pages allows users additional functionality and the ability to advance through other areas of the tool (e.g., Reports, Forms).

For field navigation, users may use the **TAB** key or a mouse click to advance to the desired point of entry.

# 2.2 Error Resolution and Support

If users need general guidance when using the eCycling site, they should follow this hierarchy for assistance:

1. Refer to this document,
2. Send an electronic mail message to ElectronicsRecycling@DNAmerican.com.

# 2.3 Security and Privacy

Only authorized users may access the eCycling forms site. Data are protected via the following methods:

- A valid Username and Password must be assigned to all users in order for users to gain access to the tool,
- User roles are assigned to protect data as it is entered into the eCycling forms, and
- Registered users who input data may edit only the data belonging to them.

# 2.4 Hardware and Software Requirements

**The eCycling site operates under the following machine configuration:**

- MS Windows Operating System Windows 95, 98, NT or XP.
- Internet Explorer 5.0 or higher
- Screen Resolution 1024 x 728

# 3.0 User Access and Roles

**The ADMIN grants users permission according to their role. The eCycling web site recognizes the following User Access Roles:**

- ADMIN
- Edit
- Read-only

## 3.1 ADMIN:

The Admin user has the ability to add, edit and delete any event data. The Admin user may also access an Administration menu which allows the following additional activities:

- view a list of users currently accessing the eCycling site,
- view a list of events that have missing data,
- add, edit or delete transporters or recyclers from the system,
- view a user log to determine who has accessed the system and when,
- enter survey results for any event, and
- edit any user's access privileges.

## 3.2 EDIT:

A user with Edit privileges has the ability to add, edit or delete event data. This user also has access to all reports, but does not have access to the Administration menu.

## 3.3 READ-ONLY:

A user with Read-only privileges has the ability to view and add event data, but may not edit or delete data. This user also has access to all reports, but no access to the Administration menu.

# 4.0 Accessing and Exiting eCycling

## 4.1 Obtaining an eCycling User Name and Password

To obtain an eCycling User Name and Password, the user must select the link on the Main page that states New Users Register Here and complete the form.  Once the user has clicked the "Submit Information" button, the user will be automatically registered and logged in.  The user will be taken directly to the first page of the eCycling site.

## 4.2 Accessing the eCycling Site

To access the eCycling site, users must open their web browser and enter the following link into the address bar:  http://www.electronicsrecycling.org/ecycling.  The user must now enter the user name and password.  Selecting the "Login" button will open the first page of the eCycling site.

## 4.3 Exit the eCycling Site

To exit the eCycling site, the user may click the "Logout" button from the menu on the right hand side of the current web page.  This will open the **Logout** page and notify the user that the session has ended. The user may also simply close the web browser to end the session.

# 5.0 System Features

Once the user has logged into the eCycling site, a menu will appear on the right hand side of the web page that will allow the user to explore the site and perform tasks easily. To choose a menu item, click the button displaying the menu name (e.g., Form Selection, Select Event, Logout). Figure 1 below illustrates the Menu bar options from the User point of view and from the Admin point of view. Menu items enable and disable according to the user role and data selections. Appendix D provides screen captures of each menu name and available cascading menu items. For an at-a-glance reference of all menu bar options, toolbar options, and forms, see the Quick Reference Card (Appendix E).



• **Figure 1 – User Menu (left) and Admin Menu (right)**

## 5.1  Menu Options

### 5.1.1 Form Selection:

This option will display the web page that will allow the user to see which forms exist and give the user the options to add new forms, edit existing forms or view existing forms. This option is only available after the user has selected an event from the event selection page. See Section 6.4 for more information on the **Form Selection** page.

### 5.1.2 Select Event:

This option will display the web page that will allow the user to select an event for which the user wishes to view information. See section 6.2 for more information on the **Event Selection** page.

### 5.1.3 User Information:

This option will display the web page containing the user registration form allowing the user to edit the contact information. See Section 6.5 for more information on the **User Information** page.

### 5.1.4 Register New Event:

This option will display the web page that will allow the user to add new events. See Section 6.3 for more information on the **New Event Registration** page.

### 5.1.5 Logout:

This option will end the user's current session and display a message informing the user that the session has ended. After selecting this option, the user must return to the **Login** page and begin a new session in order to continue using the system. See Section 6.6 for more information on the **Logout** page.

### 5.1.6 Administration:

This option is available only to Admin users. This option will display a web page that lists all sponsors currently in the system. The administrator logged in will then be given the options to edit and delete the sponsors. See Section 6.7 for more information on the **Administration** page.

### 5.1.7 Print Event Info:

This option is available only to Admin users. This option will display a printer-friendly web page showing all related information (Event Information, Sponsor Information, Recycler Data, Transporter Data) for the event selected on the Event Selection form. See Section 6.8 for more information on the **Print Event Information** page.

### 5.1.8 EPA Reports:

This option is available to all registered users. This option will display a web page that lists and describes all "canned" reports currently available. Reports are available for the years 2001, 2002, 2003 or all three years combined. The following reports are available from the "Reports" menu:

- "Total Volume By State",
- "Total Volume by Unit Type",
- "Total Units (TV's, Monitors, CPUs & Peripherals)",
- "Volume of Material Recycled as Disposed vs Reused",
- "Volume by Sony/Panasonic/Sharp",
- "Average Waste/Participant",
- "Commodities Recovered",
- "State Participation Rate",

- "Average Transportation Cost"
- "Survey Results"
- "Event Summary Data"



- **Figure 2 – Report Menu**

## 5.1.8.1 Total Volume By State

This report provides condensed poundage information broken down by each state.



• **Figure 3 - Total Volume By State**

## 5.1.8.2 Total Volume By Unit Type

This report provides condensed poundage information broken down by each type of unit collected (such as TVs and Monitors).
*Not all event data have been captured for this report.
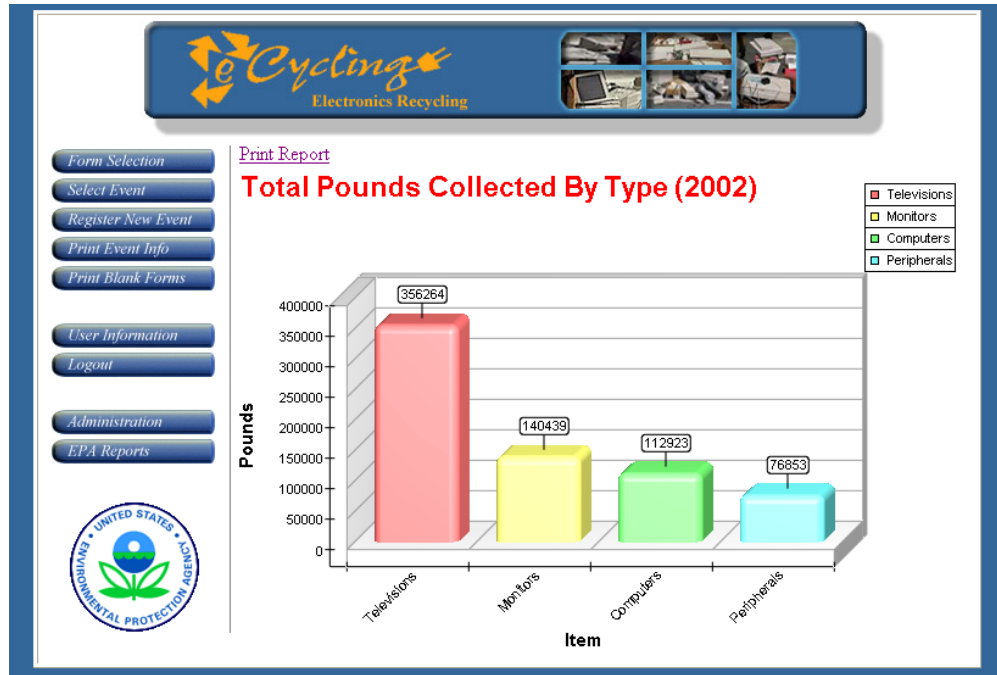


• **Figure 4 – Total Volume By Unit Type**

## 5.1.8.3 Total Units (TVs, Monitors, CPUs & Peripherals)

This report provides condensed information regarding total number of units collected (TVs, Monitors, CPUs & Peripherals).
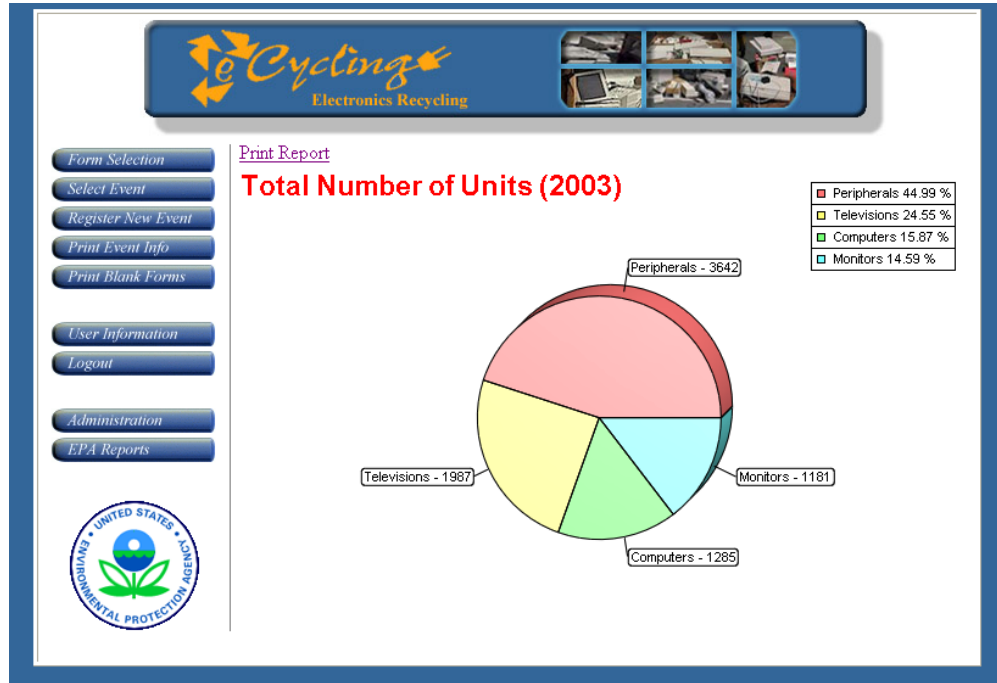


- Figure 5 – Total Units

## 5.1.8.4 Volume of Material Recycled vs Disposed vs Reused

This report provides an overall look at the number of units of material recycled versus material dipsosed versus material reused.
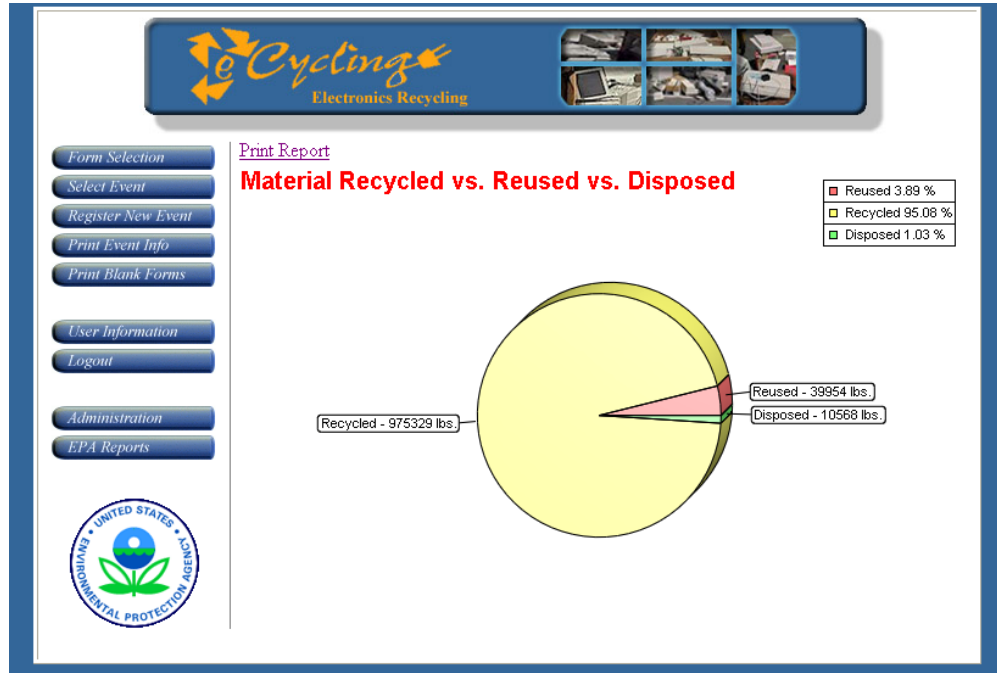


• **Figure 6 – Volume of Material Recyled vs Disposed**

## 5.1.8.5 Volume by Sony/Panasonic/Sharp

This report provides information for total number of units by the top 3 brands: Sony, Panasonic, & Sharp
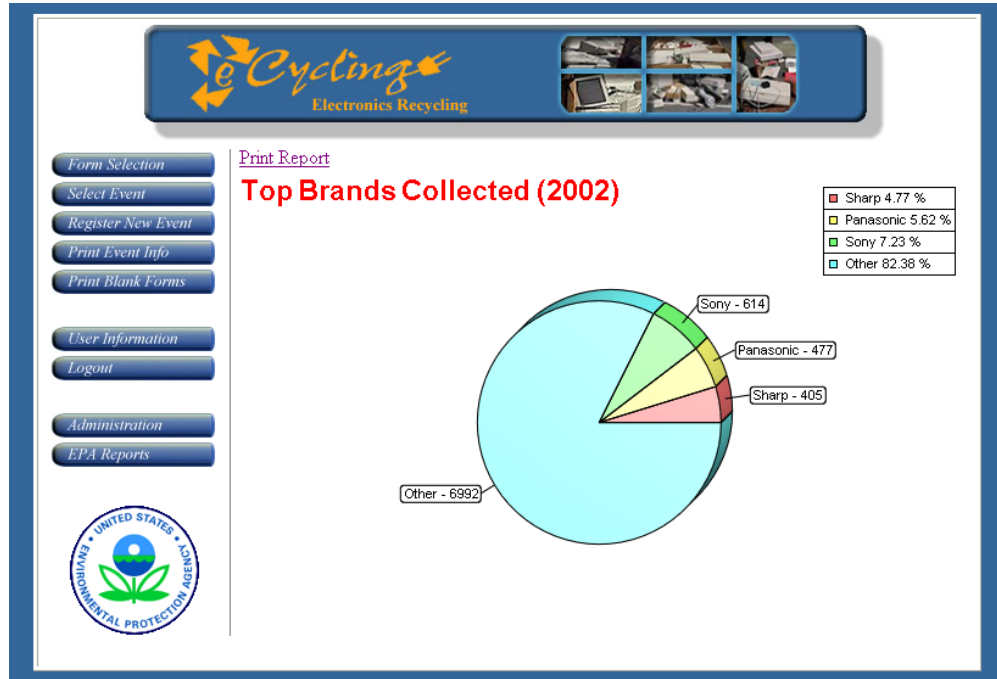


- **Figure 7 - Volume by Sony/Panasonic/Sharp**

## 5.1.8.6 Average Waste/Participant

This report provides information on the average number of pounds of waste collected per participant by state.
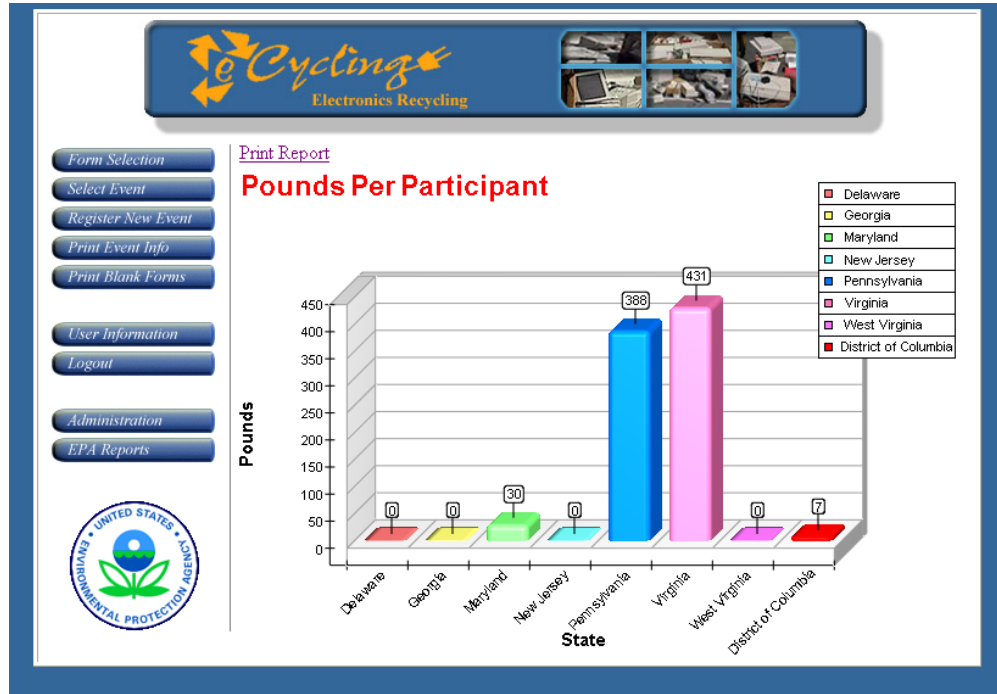


• **Figure 8 – Waste Per Participant**

## 5.1.8.7 Commodities Recovered

This report compares the number of Plastic, glass and copper breakage pounds recovered.
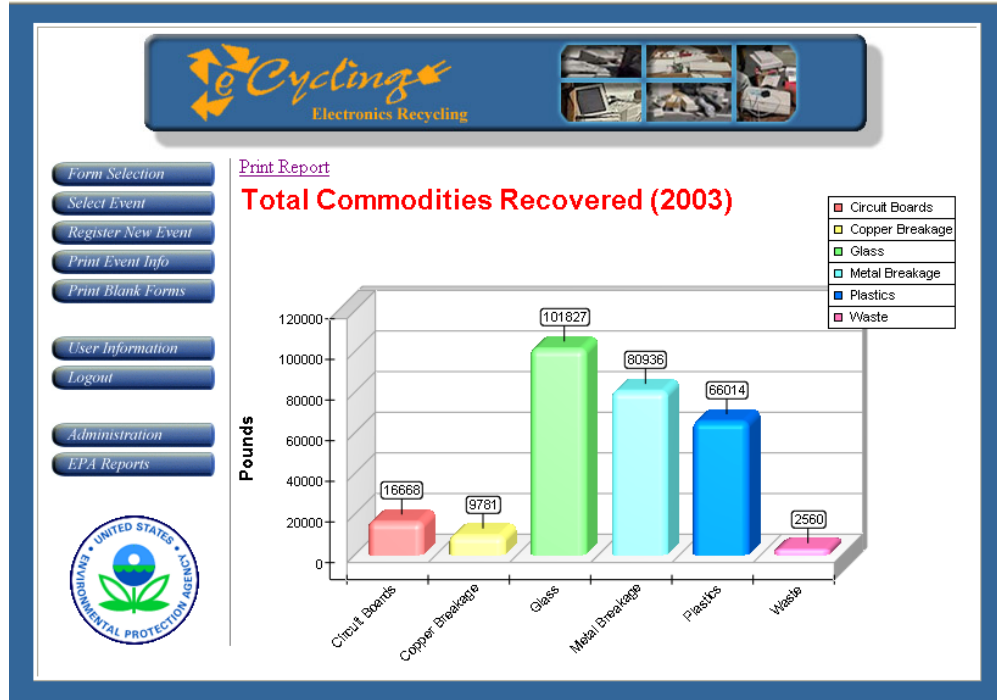


- **Figure 9 – Total Commodities Recovered**

## 5.1.8.8 State Participation Rate

This report compares participation rates among States.
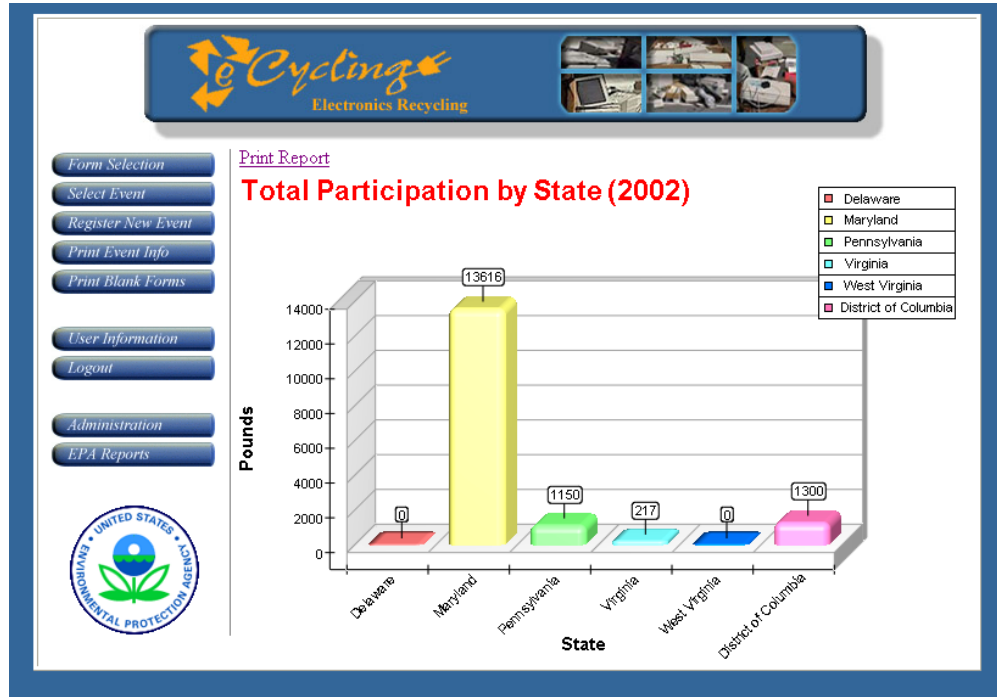


- **Figure 10 – Total Participation by State**

## 5.1.8.9 Average Transportation Cost

This report compares transportation costs among States.
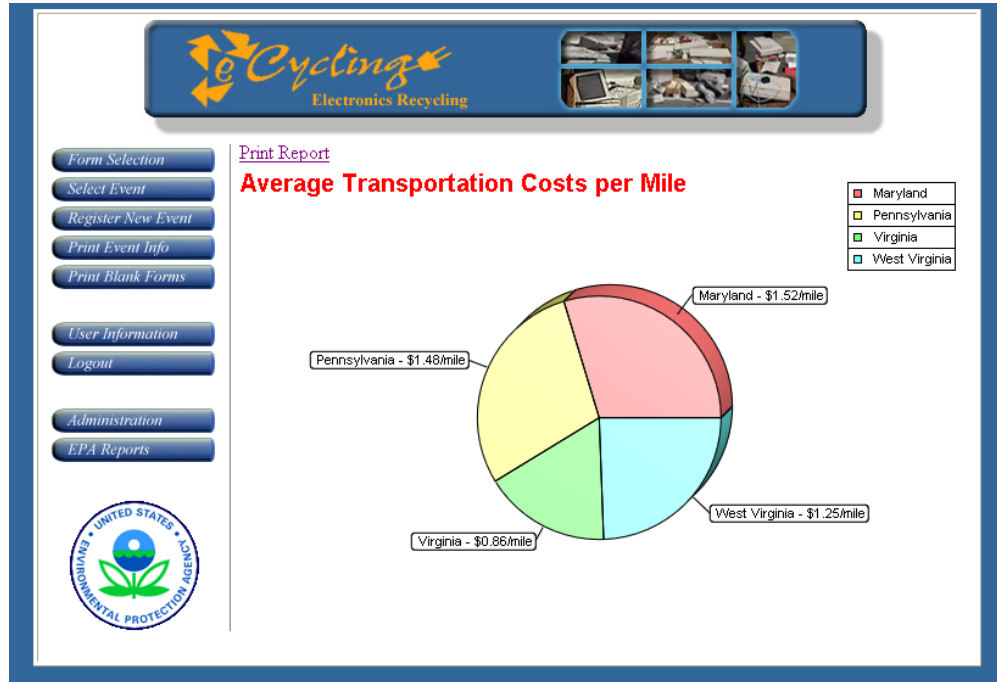


- **Figure 11 – Average Transportation Cost**

## 5.1.8.10 Survey Results

This report contains results from surveys given at EPA events.



• **Figure 12 – Survey Results**

### 5.1.8.11 Event Summary Data

Excel spreadsheet containing *first* year summary data for the eCycling Program



| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | B49 | ▼ | fx | =33812+40563+29772+19197 | | | | | | | | |
| 1 | **eCycling Events Detailed Information** | | | | | | | | | | | |
| 2 | **October 1, 2001 through December 31, 2002** | | | | | | | | | | | |
| 3 | Location | Population | Rural/Urban/ Suburban | Date | Material Collected | | | Participant Data | | | Cost | |
| 4 | | | | | Pounds | Tons | CRT Units | Participants | Pounds/ Participant | Participation Rate | Advertising | Processing |
| 5 | | | | | | | | | | | | |
| 6 | Delaware (P) | | | | | | | | | | | |
| 7 | Permanent Sites | | | | | | | | | | | |
| 8 | DSWA | | | 31-Oct-01 | 157,100 | 78.55 | 500 | N/A | N/A | N/A | N/A | N/A |
| 9 | DSWA | | | 30-Nov-01 | 138,700 | 69.35 | 413 | N/A | N/A | N/A | N/A | N/A |
| 10 | DSWA | | | 31-Dec-01 | 107,120 | 53.56 | 432 | N/A | N/A | N/A | N/A | N/A |
| 11 | DSWA | | | 31-Jan-02 | 143,580 | 71.79 | 420 | N/A | N/A | N/A | N/A | N/A |
| 12 | DSWA | | | 28-Feb-02 | 154,760 | 77.38 | 381 | N/A | N/A | N/A | N/A | N/A |
| 13 | DSWA | | | 31-Mar-02 | 125,280 | 62.64 | 423 | N/A | N/A | N/A | N/A | N/A |
| 14 | DSWA | | | 30-Apr-02 | 192,421 | 96.21 | 547 | N/A | N/A | N/A | N/A | N/A |
| 15 | DSWA | | | 31-May-02 | 164,020 | 82.01 | 416 | N/A | N/A | N/A | N/A | N/A |
| 16 | DSWA | | | 30-Jun-02 | 185,460 | 92.73 | 529 | N/A | N/A | N/A | N/A | N/A |
| 17 | DSWA | | | 31-Jul-02 | 234,540 | 117.27 | 758 | N/A | N/A | N/A | N/A | N/A |
| 18 | DSWA | | | 31-Aug-02 | 185,140 | 92.57 | 639 | N/A | N/A | N/A | N/A | N/A |
| 19 | DSWA | | | 30-Sep-02 | 177,660 | 88.83 | 612 | N/A | N/A | N/A | N/A | N/A |
| 20 | DSWA | | | 31-Oct-02 | 225,420 | 112.71 | 666 | N/A | N/A | N/A | N/A | N/A |
| 21 | DSWA | | | 30-Nov-02 | 100,460 | 50.23 | 404 | N/A | N/A | N/A | N/A | N/A |
| 22 | DSWA | | | 31-Dec-02 | 114,600 | 57.30 | 607 | N/A | N/A | N/A | N/A | N/A |
| 23 | | | | | | | | | | | | |
| 24 | *TOTAL* | 783,666 | | | 2,466,261 | 1,263 | 7,747 | N/A | N/A | N/A | $38,711 | $385,962 |
| 25 | | | | | | | | | | | | |
| 26 | Maryland | | | | | | | | | | | |
| 27 | | | | | | | | | | | | |
| 28 | Harford County | 218,590 | suburban/rural | 27-Oct-01 | 15,980 | 7.99 | 233 | 150 | 107 | 0.07% | $2,000 | $1,596 |
| 29 | Worcester County | 46,543 | rural | 17-Nov-01 | 6,000 | 3.00 | 143 | 56 | 107 | 0.12% | $1,700 | $960 |

Total By Event

- **Figure 13 – eCycling Summary Data**

# 6.0 eCycling Pages

Upon accessing the eCycling site from the browser, the initial page that displays is the **Login** page. The only hierarchy associated with the follow-on eCycling site is that the user must begin with the **Event Selection** page and either select an existing event or register a new event. There is no hierarchy required for the ADMIN administrative forms. Links for individual pages will be enabled and disabled depending on the user role and page dependencies.

## 6.1 Login Page

The **Login** page appears after the user's browser opens the eCycling site. This page gives users a brief overview of the eCycling site. Users may type in their assigned eCycling User Name and Password into the Login form on this page or select the "New Users Register Here" link to access the system. Selecting "Login" will launch to the **Event Selection** page of the eCycling site.

- **Figure 14 – Login Page**

**The Login form contains the following data fields.**

| Data Fields | Description |
|---|---|
| Password | Password that the user entered during registration for system access. This password appears in encrypted format when entered on the Login form. |
| Username | User Identification that the user entered during registration for system access. |

## 6.1.4 Details:

Login Button
The user may click this button after entering the User Name and Password into the corresponding fields.  The User Name and Password will be validated.  If the validation is passed, the user will be automatically taken to the **Event Selection** page, otherwise they will receive an error message stating that the Username or Password is invalid.

New Users Register Here Link
If this is the first visit to the eCycling site, the user may click this link to create a User Account.  The user will automatically be taken to the **User Registration** page.

# 6.2 User Registration Page

## 6.2.1 General Description

The **User Registration** page appears after the user has clicked the "New Users Register Here" link on the **Login** page.  The purpose of this page is to allow the users to create an eCycling account to access the system.  The first **User Registration** page contains the form that allows users to choose a username and password.  Once the user completes this form, the user will be directed to the second **User Registration** form.



• **Figure 15 – First User Registration Page**

The second **User Registration** page appears after the user has clicked the "Submit Information" link on the first **User Registration** page.  The purpose of this page is to allow the users to enter personal and company information.  Once the user completes this form, the user will have access to the eCycling site and will be directed to the **Event Selection** form.

● Figure 16 – Second User Registration Page

## 6.2.2 Getting Started

The form on the **User Registration** page will be blank when displayed for the first time.  The form will allow the user to enter detailed information about the user and the user's organization.  Once the user has completed all required fields, the user must click the "Submit Information" button to complete the registration process.

## 6.2.3 Form Population

Data fields captured on the **User Registration** pages include:

| Data Fields | Description |
|---|---|
| **User Name** | Name user wishes to use when accessing the eCycling site. |
| **Password (Confirm Password)** | Password user wishes to use to secure login access. |
| First Name | First Name of the person registering. |
| Last Name | Last Name of the person registering. |
| Title | User's job title description. |
| Organization | Organization that the user is representing. |

| Address | Mailing address of the user or organization. |
|---|---|
| City | City where the user or organization is located. |
| State | State where the user or organization is located. |
| Zip Code | Zip code for the city where the user or organization is located. |
| Phone | Phone number where the user can be reached. |
| Fax | Fax number for the user or organization. |
| Email | Email address where the user can be contacted. |

## 6.2.4 Details:

User Name
The user may create a unique user name for accessing the system.  The user will be notified if the User Name is not unique and asked to select another user name.

Password (Confirm Password)
The user may create a password for secure login to the system.  The user must confirm the password entered in the Confirm password box.  The password will then be validated to ensure the user has entered the same password.

Required fields
The Username and Password fields are required, as are all fields with a red asterisk.  If the user clicks the "Submit Information" button without completing any of these fields, a message will appear next to the required field notifying the user that they must enter a value.

Submit Information button
Once the user has completed the registration form, the user may click the "Submit Information" button.  The information entered on the form will be validated.  If the validation passes, the user account is created and the user will automatically be logged into the system. The user will be taken to the **Event Selection** page.

# 6.3 Event Selection Page

## 6.3.1 General Description

The **Event Selection** page appears after the eCycling Username and Password or registration information has been validated.  This page is accessible at any time during the users' session through the "Select Event" button located on the Menu.  The **Event Selection** page contains two selection boxes.  The first selection box lists all events existing in the system as the default.  The second selection box lists all states that have registered events.

• **Figure 17 – Event Selection Page**

## 6.3.2 Getting Started

The user must select an event before continuing their eCycling session.  The user may begin their session by selecting an Existing Event using the Event Selection box or they may choose to register a new event by clicking the "Register New Event" button located on the Menu.

## 6.3.3 Form Population

This form is automatically populated with data.  The Event Selection box provides the user a mechanism for selecting and viewing specific Event information. The State Selection box provides a means for the user to filter the Event Selection box.  Data fields included in the Event Selection box include:

| Data Fields | Description |
|---|---|
| Event Name | Name identifying the event. |
| Event Date | Date that the event took place. |

The user may select the particular state on which to filter the data displayed in the Event Selection box.  Data displayed in the State Selection box includes:

| Data Fields | Description |
|---|---|
| State Name | Full name of the state. |

## 6.3.4 Details:

State Selection
The user may use the State Selection box to view all events or a subset (e.g., only Delaware; only Pennsylvania). The user may select a particular state from the State Selection box. Once a state is selected, the form will automatically refresh and the Event Selection box will now contain only the events associated with the selected state.

Event Selection
The Event Selection box shows all events when the user first accesses the page. The user may use the State Selection box to filter the events listed in this box. The user may choose an event from the Event Selection box by selecting the event they wish to view. The event will be displayed, but not selected until the user clicks the "Submit" button.

Submit Button
Once the user has selected an event, the user may click the "Submit" button to confirm the selection. The user will automatically be taken to the **Form Selection** page.

View All States Button
The user may reset the Event Selection box by clicking the "View All States" button located under the State Selection box. The Event Selection box will be refreshed and will list all events for all states.

# 6.4 Event Registration Page

## 6.4.1 General Description

The **Event Registration** page appears after the user has clicked the "Register New Event" link on the Menu. The purpose of this page is to allow the user to create a new event entry. The **Event Registration** page contains the form that allows users to enter information regarding an eCycling event for their organization. Once the user completes this form, the user will be able to create forms for the new event. Users may register a new event at anytime during their session.

• **Figure 18 – Event Registration Page**

## 6.4.2 Getting Started

The form on the **Event Registration** page will be blank when displayed for the first time.  The form will allow the user to enter detailed information about the event the user wishes to register.  To complete the registration process, the user must click the "Submit This Event" button located at the bottom of the page.  Once the user has completed the process, the event will be available for selection on the **Event Selection** page.

## 6.4.3 Form Population

Data fields captured on the **Event Registration** page include:

| Data Fields | Description |
| --- | --- |
| Program/Event Sponsor | Name used to identify the event. This field will be used to populate the Event Selection box on the **Event Selection** page. |
| Retailer, Manufacturer, or Charity project partners | Optional field allowing the user to associate the event with a specific organization. |
| City | City where the event took place. |
| State | State where the event took place. |
| County | County where the event took place. |
| Start Date | Date the event started. |
| End Date | Date the event ended. |
| Collection Location | Physical location (building) where the event took place. |
| Frequency | How often/long the event occurred/occurs. |
| Program Type | Type of program (special event, ongoing). |

## 6.4.4 Details

Start Date Calendar
The user can select the start date from the calendar by clicking on the date the event took place. The user may choose a previous date or a future date by clicking the arrows next to the month. The end date is automatically set to the same date chosen for the start date.

End Date Calendar
The user can select the end date from the calendar by clicking on the date the event took place. The user may choose a previous or future date by clicking the arrows next to the month. The user should first select a start date for the event as the end date will be reset when one is chosen.

Required fields
The user must enter a name to identify a new event. If the user clicks the "Submit This Event" button without completing any of this field, a message will appear notifying the user that the user must enter a value.

Submit Information Button
Once the user has completed the registration form, the user may click the "Submit Information" button. The information entered on the form will be validated. If the validation passes, the new event is created and the user will automatically be taken to the **Form Selection** page.

# 6.5 Form Selection Page

## 6.5.1 General Description

The **Form Selection** page appears after the user has clicked the "Form Selection" button on the Menu.  This page will also appear after the user has submitted an event selection on the **Event Selection** page or submitted a new event on the **Event Registration** page.  The purpose of this page is to allow the user to add, edit, view and print the contact information for the sponsor, recycler, and transponder that are involved with the selected event.  The **Form Selection** page contains links to the form that allows the user to edit information regarding the contact information.



• Figure 19 – Form Selection Page

## 6.5.2 Getting Started

Add New Forms

The user may select existing links in this section if they wish to add contact information for the person in the available role.  Users may add contact information for the organization who sponsored the event, the recycler that handled the recycling for the event, and/or the transporter who handled pick-ups and drop-offs for the event.

Edit Existing Forms

The user may select existing links in this section if they wish to edit contact information for the person in the existing role. Users may edit existing contact information for the organization who sponsored the event, the recycler that handled the recycling for the event, and/or the transporter who handled pick-ups and drop-offs for the event.

View/Print Forms

The user may select existing links in this section if they wish to view the contact information for the person in the existing role on a printer-friendly page. Users may view existing contact information for the organization who sponsored the event, the recycler that handled the recycling for the event and/or the transporter who handled pick-ups and drop-offs for the event.

## 6.5.3 Form Population

The **Form Selection** page populates automatically with information to identify the selected event. Data fields included on the **Form Selection** page include:

| Data Fields | Description |
|---|---|
| Event Name | Name identifying the event. |
| Event Date | Date that the event took place. |

## 6.5.4 Details

Add New Forms Links

This section will display links to the **Contact Information** page if the Contact has not yet been entered for the contact role. If the user has previously entered contact information for any of the contact roles, this section will notify the user that the contact information exists.

Edit Existing Forms Links

This section will display links to the **Data Display** page if the Contact information has been entered for the contact role. If the user has not previously entered contact information for any of the contact roles, this section will notify the user that the contact information does not exist.

View/Print Forms Links

This section will display links to a printer-friendly **Data Display** page if the Contact information has been entered for the contact role. If the user has not previously entered contact information for any of the contact roles, this section will notify the user that the contact information does not exist.

# 6.6 Add Contact Information Page

## 6.6.1 General Description

The **Contact Information** page appears after the user has clicked the "Add Sponsor Form", "Add Recycler Form" or the "Add Transponder Form" link on the **Form Selection** page. This form will also appear when the user selects the "Edit Contact" link on the **Data Display** page. The purpose of this page is to allow the user to enter and edit contact information for the people/organizations responsible for assisting during the event. The **Contact Information** page contains the form that allows users to enter their personal and company contact information for the sponsor, recycler or transponder for the selected event. Once the user completes this form, the user will be able to access the information from the **Form Selection** page.

• Figure 20 – Contact Information Page

## 6.6.2 Getting Started

If the user has selected a link from the Add New Form section of the **Form Selection** page, the form on the **Contact Information** page will be populated with the contact information of the first individual in the contacts drop down list. The user may choose this person to be the contact or use the drop down list to select the appropriate contact. Once the contact has been selected from the drop down list, the user must click the "Submit/Continue" button to complete the process of selecting a contact. Contacts may be added, edited and deleted only from the Administration menu by an Admin user.

## 6.6.3 Form Population

The **Contact Information** form populates automatically with information for the selected contact. This form also captures the data for new contacts. The Data fields included on the **Contact Information** form are:

| Data Fields | Description |
|---|---|
| First Name | First Name of the person registering. |
| Last Name | Last Name of the person registering. |
| Title | User's job title description. |
| Organization | Organization that the user is representing. |
| Address | Mailing address of the user or organization. |
| City | City where the user or organization is located. |
| State | State where the user or organization is located. |
| Zip Code | Zip code for the city where the user or organization is located. |
| Phone | Phone number where the user can be reached. |
| Fax | Fax number for the user or organization. |
| Email | Email address where the user can be contacted. |

## 6.6.4 Details

<u>Submit/Continue Button</u>
Once the user has completed the **Contact Information** form, the user may click the "Submit/Continue" button. The information entered on the form will be validated. If the validation passes, the changes will be saved and the user will be taken to the **Data Display** page for confirmation. If the validation fails, the user will be notified that the password has not been changed and will be prompted to try again.

# 6.7 Data Display Page

## 6.7.1 General Description

The **Data Display** page appears after the user has clicked the "Edit Sponsor Form", "Edit Recycler Form" or the "Edit Transponder Form" link on the **Form Selection** page. This page will also appear after the user has clicked the "View/Print Sponsor Form", "View/Print Recycler Form" or the "View/Print Transponder Form" link on the **Form Selection** page. The purpose of this page is to allow the user to edit, view and print the information for the sponsor, recycler, and transponder that are involved with the selected event. The **Form Selection** page contains links to the form that allows the user to edit information regarding the contact information.

• **Figure 21 – Form Selection Page**

## 6.7.2 Getting Started

Add New Forms
The user may select existing links in this section if the user wishes to add contact information for the person in the available role.  Users may add contact information for the organization who sponsored the event, the recycler that handled the recycling for the event, and/or the transporter who handled pick-ups and drop-offs for the event.

Edit Existing Forms
The user may select existing links in this section if the user wishes to edit contact information for the person in the existing role.  Users may edit existing contact information for the organization who sponsored the event, the recycler that handled the recycling for the event, and/or the transporter who handled pick-ups and drop-offs for the event.

View/Print Forms
The user may select existing links in this section if the user wishes to view the contact information for the person in the existing role on a printer-friendly page.  Users may view existing contact

information for the organization who sponsored the event, the recycler that handled the recycling for the event, and/or the transporter who handled pick-ups and drop-offs for the event.

## 6.7.3 Form Population

The **Form Selection** page populates automatically with information to identify the selected event. Data fields included on the **Form Selection** page include:

| Data Fields | Description |
|---|---|
| Event Name | Name identifying the event. |
| Event Date | Date that the event took place. |

## 6.7.4 Details

Add New Forms Links
This section will display links to the **Contact Information** page if the Contact has not yet been entered for the contact role. If the user has previously entered contact information for any of the contact roles, this section will notify the user that the contact information exists.

Edit Existing Forms Links
This section will display links to the **Data Display** page if the Contact information has been entered for the contact role. If the user has not previously entered contact information for any of the contact roles, this section will notify the user that the contact information does not exist.

View/Print Forms Links
This section will display links to a printer-friendly **Data Display** page if the Contact information has been entered for the contact role. If the user has not previously entered contact information for any of the contact roles, this section will notify the user that the contact information does not exist.

# 6.8 User Information Page

## 6.8.1 General Description

The **User Information** page appears after the user has clicked the "User Information" button on the Menu. The purpose of this page is to allow the user to edit the contact information the user entered when registering. The **User Information** page contains the form that allows users to edit contact information. Users may edit their contact information at any time during their session.

• Figure 22 – User Information Page

## 6.8.2 Getting Started

The form on the **User Information** page will display information entered previously by the user. The form will allow the user to change any field displayed. To complete the update process, the user must click the "Update Information" button located at the bottom of the page. The user may update contact information at any point during this session.

## 6.8.3 Form Population

The **User Information** form populates automatically with information for the registered user. Data fields included on the **User Information** form include:

| Data Fields | Description |
|---|---|
| First Name | First Name of the person registering. |
| Last Name | Last Name of the person registering. |

| Title | User's job title description. |
|---|---|
| Organization | Organization that the user is representing. |
| Address | Mailing address of the user or organization. |
| City | City where the user or organization is located. |
| State | State where the user or organization is located. |
| Zip Code | Zip code for the city where the user or organization is located. |
| Phone | Phone number where the user can be reached. |
| Fax | Fax number for the user or organization. |
| Email | Email address where the user can be contacted. |

### 6.8.4 Details

Update Information Button
Once the user has completed the desired changes, the user may click the "Update Information" button.  The information entered on the form will be validated.  If the validation passes, the changes will be saved and the user will automatically be taken to the **Event Selection** page.

Change Password Link
The user may change the eCycling password by clicking on this link at any time.  The user will be taken to the **Change Password** page where the user can complete the process of changing a password.

## 6.9 Change Password Page

### 6.9.1 General Description

The **Change Password** page appears after the user has clicked the "Change Password" link on the **User Information** page.  The purpose of this page is to allow the user to change the password for accessing the eCycling site.   The **Change Password** page contains the form that allows users to change a current password.  Users may change a password at anytime during a session.

• **Figure 23 – Change Password Page**

## 6.9.2 Getting Started

 The form on the **Change Password** page will appear blank to the user.  The user must enter the current password in the Old Password textbox.  The user must then type in the password the user wishes to change it to in the New Password textbox.  After confirming the new password, the user may click the "Change Password" button to complete the process.

## 6.9.3 Form Population

The **Change Password** form is not populated automatically.

## 6.9.4 Details

Change Password Button
Once the user has completed the change password form, the user may click the "Change Password" button.  The information entered on the form will be validated.  If the validation passes, the changes will be saved and the user will be notified that the password has been changed.  Iif the validation fails, the user will be notified that the password has not been changed and prompted to try again.

# 6.10 Logout Page

## 6.10.1 General Description

The **Logout** page appears after the user has clicked the "Logout" button on the Menu.  The purpose of the **Logout** page is to ensure that the user has ended the session.  Users may choose to logout at any time during their session.



• Figure 24 – Logout Page

## 6.10.2 Details

Once the user has reached this page, the session on the eCycling site has officially ended.  If the user wishes to regain access to the system, the user must click the "Login" button located on the menu.  This will take the user back to the **Login** page where the user may begin a new session.

# 6.11 Administration Page

## 6.11.1 General Description

The **Administration** page appears after the user has clicked the "Administration" button on the Menu.  This form is only available to users who are registered as administrators in the system.  The purpose of this page is to provide links to the following administrative tasks:

- **Event Administration** - edit or delete event information that has previously been entered into the system,
- **Online Users** - view a list of users who are currently logged in to the eCycling site,
- **Missing Forms** – view a list of events that have missing transporter, sponsor or recycling data forms,
- **List of Transporters** - view a list of transporters,
- **List of Recyclers** - view a list of recyclers,
- **View User Log** - view the user log which provides a history of user access to the eCycling site,
- **Contacts Administration** - add, edit or delete contacts (contacts are sponsors, recyclers or transporters who have been identified as the point of contact for a particular event),
- **Edit User Access Rights** - edit any user's access rights,
- **Enter Survey Results** - enter survey results for a particular event.

Administrators (ADMIN users) may access the **Administration** page shown below at any time during a session. Screenshots of each option from the **Administration** Page follow.



• **Figure 25 – Administration Page**

## 6.11.1.1 Event Administration

The **Event Administration** page allows the user to edit or delete event data.  Users may sort the event data presented on this page by Sponsor Name, Partner, City, State, County, Start Date, or End Date.  Once a particular event is identified, the user must click on the "Edit' button or the "Delete" button beside that event according to the desired action.



• **Figure 26 – Event Administration**

## 6.11.1.2 Online Users

At any time during a session, the ADMIN user may go to the "Online Users" menu option to ascertain who is currently accessing the eCycling web site.  The information presented on this page includes First Name, Last Name and Organization of each user currently online.



• Figure 27 – Online Users

## 6.11.1.3 Missing Forms

The **"Missing Forms"** page presents all events in the eCycling database that have missing data. Each event is listed with its Start Date and the forms that are missing (i.e., Transporter, Recycler, and/or Sponsor). The user may click on the Sponsor Name of the event and be directed to the **"Activity Selection"** page where he may choose to add the missing data.



• **Figure 28 – Missing Forms**

## 6.11.1.4 List of Transporters

The **"List of Transporters"** page allows the user to view a list of all transporters in the eCycling database.  The name of the transportation organization along with the name of the point of contact, city, state, phone number and email address are shown for each transporter.



### Transporters

| Organization | POC | City | State | Phone | Email |
|---|---|---|---|---|---|
| Envirocycle, Inc. | Joseph Nardone | Hallstead | Pennsylvania | (570) 879-2862 | jnardone@matcogroup.com |
| JB Hunt Company | Paula Moon | Lowell | Arkansas | (800) 942-0493 | Paula_moon@jbhunt.com |
| Subtractions, LLC | Sarah Manning | Highland | Maryland | (301) 924-0605 | wilsonmanning@msn.com |
| Delaware Solid Waste Authority | Rich Von Stetten | Dover | Delaware | (302) 739-5361 | rvs@dswa.com |

<<< Prev   Next >>>

Event Administration | Online Users | Missing Forms | List of Transporters | List of Recyclers | View User Log | Edit User Access Rights | Contacts

• **Figure 29 – List of Transporters**

## 6.11.1.5 List of Recyclers

The **"List of Recyclers"** page allows the user to view a list of all recyclers in the eCycling database.  The name of the recycling organization along with the name of the point of contact, city, state, phone number and email address are shown for each recycler.



| Organization | POC | City | State | Phone | Email |
|---|---|---|---|---|---|
| Envirocycle, Inc. | Joseph Nardone | Hallstead | Pennsylvania | (570) 879-2862 | jnardone@matcogroup.com |
| | James Wood | Centreville | Massachusetts | 410-758-6605 | jwood@friend.ly.net |
| | Regina Rochez | Baltimore | Maryland | (410) 537-3314 | RRochez@mde.state.md.us |
| Subtractions, LLC | Sarah Manning | Highland | Maryland | (301) 924-0605 | wilsonmanning@msn.com |
| Elemental, Inc | Karen Petherbridge | Philadelphia | Pennsylvania | (215) 289-1475 | eleminc@aol.com |
| District of Columbia Dept of Public Works | William Easley | Washington | District of Columbia | (202) 645-8245 | William.Easley@dc.gov |
| Solid Waste Authority of Cumberland County | Justin Miller | Carlisle | Pennsylvania | 717 240-6489 | |
| | Jim Brencisen | | Pennsylvania | | |

<<< Prev  Next >>>

Event Administration | Online Users | Missing Forms | List of Transporters | List of Recyclers | View User Log | Edit User Access Rights | Contacts

Powered By: **Green**Online.com    **U.S. Environmental Protection Agency**    Polymer Alliance Zone of West Virginia

• **Figure 30 – List of Recyclers**

## 6.11.1.6 View User Log

ADMIN users may view the "User Log" to determine which users have accessed the eCycling web site along with the user's organization name, login date and time and logout date and time.



| User | Organization | Login | Logout |
|------|--------------|-------|--------|
| Terri Linger | D.N. American | | |
| Terri Linger | D.N. American | 2/20/2003 9:06:59 PM | |
| Terri Linger | D.N. American | 2/26/2003 9:46:21 PM | |
| Terri Linger | D.N. American | 2/27/2003 9:46:57 AM | |
| Terri Linger | D.N. American | 2/27/2003 1:49:33 PM | |
| Terri Linger | D.N. American | 2/27/2003 2:57:36 PM | |
| Terri Linger | D.N. American | 3/4/2003 9:32:51 AM | |
| Terri Linger | D.N. American | 3/4/2003 1:49:46 PM | |
| Terri Linger | D.N. American | 3/5/2003 3:23:18 PM | |
| Terri Linger | D.N. American | 3/6/2003 9:55:44 AM | |
| Terri Linger | D.N. American | 3/6/2003 10:52:27 AM | |
| Terri Linger | D.N. American | 3/6/2003 12:47:07 PM | |
| Terri Linger | D.N. American | 3/7/2003 11:07:38 AM | |
| John Dailey | aweg | 8/14/2003 9:37:05 AM | 8/14/2003 9:59:58 AM |
| John Dailey | aweg | 8/15/2003 11:03:13 AM | 8/15/2003 11:23:54 AM |
| Bob Ernst | Harford Cty Recycling | 9/5/2003 9:39:22 AM | 9/5/2003 9:52:53 AM |

Event Administration | Online Users | Missing Forms | List of Transporters | List of Recyclers | View User Log | Edit User Access Rights | Contacts

• Figure 31 – View User Log

## 6.11.1.7 Contacts Administration

The **"Contacts Administration"** page provides a list of every contact in the eCycling database including transporters, recyclers and program sponsors. This is the only page in the eCycling web site where a user may add, edit or delete a contact.



● **Figure 32 – Contacts Administration**

## 6.11.1.8 Edit User Access Rights

This page allows an ADMIN user to assign access (or admin) privileges to registered users of the eCycling web site.   There are three options to choose from when assigning ADMIN privileges. "Read" access allows the user to view all event information in the database but not edit the information.  "Read" access does not permit the user to navigate to the **"Administration"** page. The second type of access is "Edit" access.  This option allows the user to edit event data but does not allow access to the **"Administration"** page.  The third type is "Admin", which allows the user to edit all event data as well as navigate to the **"Administration"** page.



• **Figure 33 – Edit User Access Rights**

## 6.11.1.9 Enter Survey Results

The **"Enter Survey Results"** page allows an ADMIN user to enter the results of a participation survey conducted at a specific event.



• **Figure 34 – Enter Survey Results**

## 6.11.2 Getting Started

The ADMIN user must select the appropriate link beside the Event in which they wish to Delete or Edit. This page will allow the user to edit the selected record. If the owner of the event wishes to update this information, the user will have to contact the system administrator.

## 611.3 Form Population

This form automatically populates with information upon user access. Data fields included on the **Administration** page include:

| Data Fields | Description |
| --- | --- |
| Program/Event Sponsor | Name used to identify the event. This field will be used to populate the Event Selection box on the **Event Selection** page. |
| Retailer, Manufacturer, or Charity project partners | Optional field allowing the user to associate the event with a specific organization. |
| City | City where the event took place. |
| State | State where the event took place. |
| County | County where the event took place. |
| Start Date | Date the event started. |
| End Date | Date the event ended. |

## 6.11.4 Details

Sorting the Events
The ADMIN user can sort the event listing by clicking on any of the table headings. The table will then sort the events listed by the column selected in ascending order.

Delete Link
This link allows the user to delete the selected event. The event will be removed from the table automatically when the user clicks on the "Delete" link. NOTE: The user will not be prompted for confirmation of the removal.

Edit Link
This link allows the user to edit the selected event. Once the user selects the Edit link, the corresponding event fields will appear in editable text boxes. The user may then update the desired information. At this point, the user will be given the options to Update or to Cancel.

Update Link
This link allows the user to commit any changes made to the selected event. The event will be updated automatically when the user clicks on the "Update" link. The user will be returned to the view-only **Administration** page populated with the updated information.

Cancel Link
This link allows the user to cancel any changes made to the selected event. The user will automatically be returned to the view-only **Administration** page when the "Cancel" link is clicked.

Prev Link

This link allows the user to view the previous page of event listings. If the user is currently viewing the first page, this link will not be underlined.

Next Link
This link allows the user to view the next page of event listings. If the user is currently viewing the last page, this link will not be underlined.

# 7.0 System Alerts and Validation

## 7.1 System Alerts

The Administration Tool has been designed to provide as much help to the user as possible. System alerts occur whenever an action has been committed by the ADMIN user to confirm their action or notify them of something important. The following confirmation alerts are built into the eCycling Administration site:

### 7.1.1  Delete Event Alert

Anytime event data is requested to be deleted from the database, the user will be prompted with a dialog box to be sure they would like to continue the Delete action. "OK" will continue the delete action, while "Cancel" will cancel the delete action. The following figure demonstrates this confirmation:
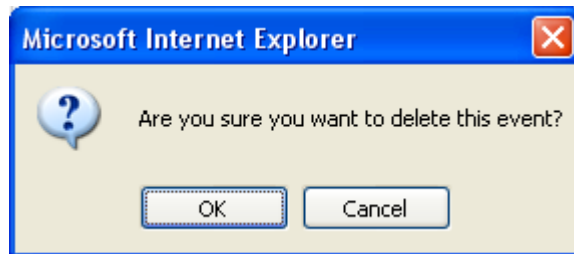


• Figure 35 – Delete Event

### 7.1.2 Delete Contact Alert

 Anytime a contact is requested to be deleted from the database, the user will be prompted with a dialog box to be sure they would like to continue the Delete action. "OK" will continue the delete action, while "Cancel" will cancel the delete action. The following figure demonstrates this confirmation:
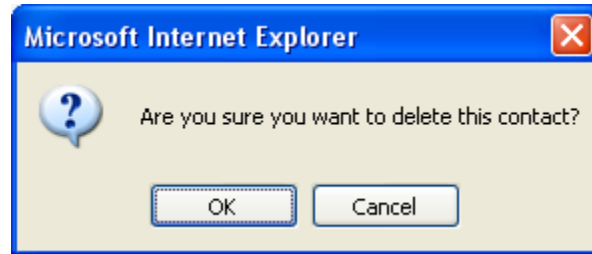
- **Figure 36 – Delete Contact**

# 7.2 System Validation

When a user attempts to login into the eCycling site and fails, an alert is displayed on the page in red text that notifies him of the invalid username or password.  The following figure demonstrates this validation alert:

• **Figure 37 – Validate Login**

# 8.0 Tables and Figures