Delaware Citizens Computer Recycling

Pilot Project

A Report for the

Delaware Economics Development Office

Report Complied by

Center for Solid Waste Research

Philadelphia, PA 19119

January 2001

Funded by the United States Environmental Protection Agency, Region III

Executive Summary

The Delaware Citizens Computer Recycling Pilot Project was a highly successful one-day computer recycling drop-off event sponsored by the Delaware Economic Development Office (DEDO), COMPUSA-Wilmington and the Delaware Solid Waste Authority (DSWA). The event was held on Saturday, October 21st 2000 and drew approximately 400 car loads of computer equipment from citizens and small businesses in the Wilmington area. The project netted over 13,000 pounds of obsolete computer equipment in six hours – a bit more than one ton per hour.

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

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

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

Project Objectives

Consumers and businesses tend to replace computer technologies every two to three years. As such, obsolete computer equipment is fast becoming a major problem for solid waste managers. The replacement of equipment often does not mean that obsolete computers and peripherals are no longer useful. Many people who cannot afford the price of a new computer are interested in the use of used, less state-of-the-art equipment. In this regard, obsolete computers are potentially an important component of the growing effort, nationally and internationally, to bridge the so-called *digital divide*.

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

Project objectives were as follows:

1. Evaluate the merits of a partnership between DEDO and a private sector retail partner;

2. Evaluate the infrastructure capabilities of regional computer recycling processors to service a single-day obsolete computer collection event;

3. Establish a set of indices for predicting future collection quantities and resource requirements for similar events;

4. Based upon lessons learned in this pilot project, recommend to DEDO and EPA further activities and opportunities for the collection, re-distribution and processing of obsolete computer equipment.

Partnering

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

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

Of the seven companies contacted, COMPUSA-Wilmington was by far and away the most interested in supporting the project. They were located in a strategic area and indicated that they had ample space to stage the event. They were also immediately responsive to the idea of promoting the project themselves. In two brainstorming sessions with store manager Larry Sparks and retail manager Phil Roth, numerous ideas were explored. Both managers took the initiative in a number of areas including: coordinating their vendor partners to participate in a customer appreciation day that was planned as part of the recycling event; preparing signs and promotional material to be handed out to customers prior to the event; contacting property managers in the shopping center for permission to hold the event; communicating with other merchants so as to inform them of possible traffic issues; and convincing their vendor partners to donate merchandise to be used as prizes in raffles scheduled for the end of the day. On the day of the event, all operational issues at the site were coordinated by store management There is no question that the success of this project is directly due to the energy and enthusiasm of COMPUSA's management team.

RFP for Processing

Besides partnering with a retailer, choice of a company to assist in collections, processing and re-distribution of collected equipment was a key to program success. However, project staff were also aware of the fact that the electronics recycling infrastructure is still in a nascent developmental stage. A request for proposals (RFP) was distributed to a number of regional electronics recycling firms. This RFP is included in the appendices of this report[1].

The RFP document was mailed to nine firms in the region (a list is provided below). All of these firms indicated that they would respond.

RFP recipients were given two weeks to return formal bids.

The following companies were mailed RFPs:

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

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

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

[1] The RFP is a modified version of one developed by the Maryland Environmental Service. Many thanks to Richard Keller of MES for his support and guidance on this portion of the project.

Project Planning

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

1. Private sector research and outreach
2. Promotions coordination and PR
3. RFP design and management
4. Outreach to volunteers and community groups
5. Collections, transportation & operations planning
6. Event day management
7. Project evaluation and analysis
8. (6) Project meetings with all partners & sponsors

Total Budgeted Project Management Time for this Project:

240 hours (over the course of 6 months)

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

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

Promotions

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

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

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

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

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

Results

Overall General Project Economics

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

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

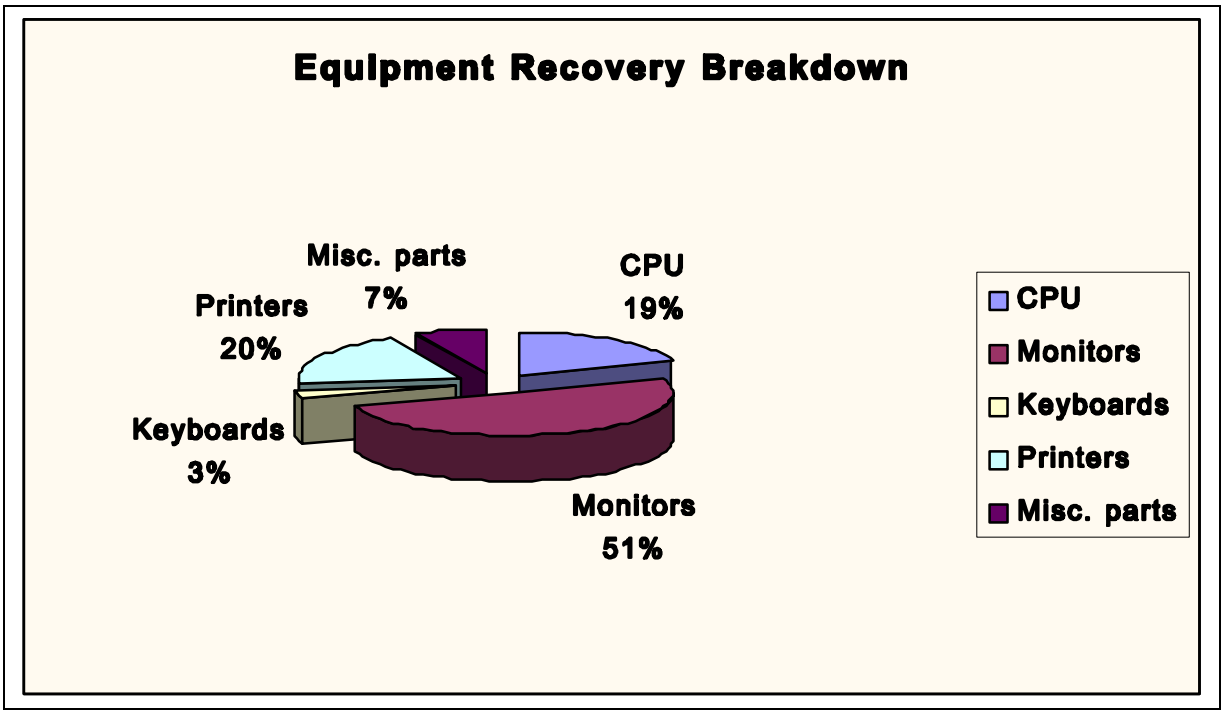
Materials Collected

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

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

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

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



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

Collection & Processing Economics

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

Item	# Units	$/Unit	Value ($)	
CPUs	180	2.50	450	
Monitors	224	2.50	560	
Broken Monitors	0	-5.00	0	
Keyboards	94	.50	47	
Printers (non-working)	140	NC		
Misc. parts	NA	NC		
Total Value				$1,057

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

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

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

$343 /13,346 pounds = $0.0257/pound or $51.40 per ton

Conclusion

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

Key lessons learned on this project are as follows:

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

2. The electronics processing industry in the region is relatively unsophisticated and requires a considerable amount of technical assistance in meeting the needs of communities – especially as regards residential and consumer computer equipment;

3. Goodwill Industries of Delaware requires support and guidance in establishing lasting materials market networks; they also require a more efficient method of equipment handling and processing;

4. It is likely that advertising in local newspapers for computer recycling events such as the one described here is the most effective means of getting the word out about collection details;

5. As a promotional event, it is economically advantageous for the private sector to invest in projects like this.

Recommendations

1. DEDO should meet separately with COMPUSA and Goodwill to ascertain specific needs for the continuation of computer recycling events. Consideration should be given to holding two events a year – one in the spring and one in the fall. Consideration should also be given to holding similar events in other regions of the state.

2. In particular, Goodwill is capable of solving a great many of the state's problems as regards consumer-based electronics but they require considerable planning and business support if they are to become an established part of the recycling infrastructure for the state.

3. EPA should also consider meeting with COMPUSA regionally or nationally to encourage replicability of this project on a broader scale.

Appendix

Delaware Computer Recycling Drop-off

Volunteer Coordination Fact Sheet

Needed: Volunteers to help with traffic and equipment handling (October 21, 2000).

We will be running a minimum of two shifts 11:00 A.M. – 3:00 P.M. and 3:00 P.M. – 7:00 P.M.

We need a minimum of six (6) materials handlers for each shift[t]

Problem: More than 40 million computers become obsolete every year. While corporations and institutions are able to find secondhand homes for old computers and peripherals, small businesses and consumers have few options beyond putting yesterday's equipment in the trash. Through a grant from the US EPA, the Delaware Economic Development Office is running a one-day pilot computer recycling drop-off in partnership with COMPUSA – Wilmington and Delaware Goodwill Industries to provide citizens with an environmentally-friendly and socially responsible solution to computer recycling.

Goal: Project sponsors intend to make every effort to restore and re-distribute old computer equipment to people in need through Goodwill of Delaware and WHYY's Computer Education Connection. Equipment that cannot be reused will be recycled through regional electronics recovery outlets.

When: Saturday, October 21, 2000, 12:00 P.M. – 6:00 P.M.

Where: The parking lot of Concord Square shopping center - 4021 Concord Pike, Wilmington

Who: Residents of Delaware and small businesses

What:
Desktop CPUs (personal computers)
Computer Monitors*
Laptop and Notebook Computers
Printers
Modems
Keyboards
Scanners
Mice and other pointing devices
Disk drives, CD-ROMS & other storage devices
Cables and wires

To register or for more information, call David Biddle at 215-247-2974

[*] Depending upon the number of volunteers, the shift schedule may change.

A REQUEST FOR PRICING PROPOSALS TO

COLLECT, TRANSPORT AND PROCESS USED COMPUTER EQUIPMENT

DELAWARE OFFICE OF ECONOMIC DEVELOPMENT

A Green Industries Initiative Pilot Project

July 2000

5. Introduction

The Delaware Economic Development Office (hereinafter, "DEDO") is seeking proposals from qualified firms to collect, transport and process used/obsolete computer equipment generated by residents and small businesses of the State of Delaware (hereinafter, "the State").

Proposals shall be submitted to DEDO at: Delaware Economic Development Office, Carvel Building, 820 North French Street-10th Floor, Wilmington, DE 19801 received no later than July 28, 2000 at 4:00 p.m. Proposals shall be clearly marked**: ELECTRONICS RECOVERY PROPOSAL.**

6. Background

The State uses an integrated approach to solid waste management that includes source reduction, recycling, composting, household hazardous waste management, waste-to-energy and landfilling. Delaware's residential recycling program is the only full-service drop-off program in the country with 120 State-run drop-off sites strategically located throughout the State's three counties. Recycling in Delaware is voluntary.

The State wishes to explore the possibility of adding computers and peripheral equipment to the list of items targeted for recycling. This will help increase recycling tonnage, create economic development opportunities, and divert recyclable materials from the State waste disposal facilities.

To this end, the State has accepted grant funding from the United States Environmental Protection Agency, Region III to set up a pilot computer recovery drop-off project in partnership with a private sector computer and electronics retail firm. A one-day residential drop-off event is planned for early September (on a Saturday). The drop-off is currently planned to be held in the retailer's parking lot. The retailer may also provide incentive coupons to participants. It is anticipated that 250 – 450 citizens will participate in the program. **Please note that these participation figures are for background only. The State does not guarantee any tonnage of material or resident participation.**

7. Project Description

The project is modeled after several other EPA funded pilot projects which have been implemented in California over the last several years. Besides the support of the partnering retailer, it is anticipated that volunteers from environmental and community development organizations will be on hand to assist in the transferal of computer equipment from citizen vehicles to the contractor's point of collection. It is anticipated that the contractor will provide personnel to properly sort, pack and handle material at the point of collection they provide.

DEDO will provide the scheduled drop-off day to the successful bidder within 10 days of the Notice to Proceed.

- The Contractor shall provide all on-site containers appropriate to the collection of materials listed in item #4 below. Containers appropriate to this job may include Gaylord-type boxing, enclosed trailers, pallets, and any other equipment deemed necessary for the safe transport of materials listed below.

- The Contractor shall also provide all trucking and transportation services as part of this bid.

- The Contractor shall document the quantities of material collected both by weight and on a unit basis. Documentation and data shall be provided in a manner that has been determined as mutually acceptable by the Contractor and DEDO. Material that is shipped to sites other than the contractor's central location (as indicated in this bid document) shall be documented by weight and unit along with the address and appropriate contact information for that site or group of sites. This includes full documentation on the disposition of any material deemed "non-recoverable" and therefore necessitating disposal in a landfill or incinerator. Tonnage information for any material collected in this project and disposed of by the contractor or by end-markets used by said Contractor shall be documented and made available to DEDO.

- The Contractor shall also be responsible for ensuring that any material that is considered hazardous is properly managed in accordance with all state and federal regulations. This includes providing evidence of appropriate permits.

8. List of Acceptable Materials

Acceptable material assumes the drop-off of personal computers and associated peripherals used by residential and small business consumers only and shall include:

Desktop CPUs (personal computers)
Undamaged Computer Monitors
Laptop and Notebook Computers
Printers
Modems
Keyboards
Scanners
Mice and other pointing devices
Disk drives, CD-ROMS and other storage devices
Cables and wires

At this time, no other electronic equipment is scheduled for collection. DEDO expects the successful Contractor to accept and process all of the materials described above. Other materials such as TVs, VCRs, FAX machines, etc. may be proposed by bidders. Bid success is **not** contingent upon expansion of material categories.

9. Proposals

Each proposal shall contain the following information:

1. Name, address, phone, fax and e-mail for the contact person for your company;

2. A general description of the company, including experience in transporting and processing computers and peripheral equipment;

3. A listing of three clients (including name, address and phone of the contact person) for whom you have provided computer recycling services;

4. A brief description of how the material will be containerized on site at the drop-off, transported and processed;

5. A brief description of the personnel you plan to have on-site and what their activities and duties shall entail;

6. The end market(s) for all material must be provided (this information shall be treated as proprietary and confidential by DEDO);

7. A statement that upon awarding of a contract by DEDO, evidence of liability insurance, workers' compensation, employers' liability, automobile insurance and property damage insurance shall be provided in full;

8. Costs and revenues as described below.

Questions and information referrals for this project should be addressed to the project manager:

David Biddle
Center for Solid Waste Research
7366 Rural Lane
Philadelphia, PA 19119
215-247-2974
Dbiddle@aol.com

Specific questions must be addressed in writing to Mr. Biddle by no later than July 21, 2000. Any questions or points of clarification resulting in a change in project scope will be forwarded by July 25, 2000 to all recipients of this RFP.

Two copies of the proposal are due to DEDO's offices in Wilmington no later than 4:00 p.m. on Friday, July 28, 2000. Proposals must be mailed or delivered to:

Robert Propes
Director - Green Industries Program
Delaware Economic Development Office
Carvel Building
820 North French Street-10th Floor
Wilmington, DE 19801
(302) 577-8708 (phone)
rpropes@state.de.us

No proposals will be accepted by fax or e-mail.

10. Costs and Revenue

As part of the proposal, the Contractor shall provide the following information:

Component	Price Paid/Unit*
Desktop CPUs (personal computers)	
Laptop and Notebook Computers	
Undamaged Computer Monitors**	
Modems	
Scanners	
Disk drives, CD-ROMS and other storage devices	
Printers	
Keyboards	
Mice and other pointing devices	
Cables and wires	
Other material (proposed by bidder)	
Other material (proposed by bidder)	
Other material (proposed by bidder)	

*If there is a charge for items (e.g., monitors) the price paid should be presented as a negative price using appropriate nomenclature. If there is no cost or revenue, please put $0 in the appropriate category.

**Damaged monitors will not be accepted at the drop-off. All program promotional literature will seek to make this clear to the public.

11. Selection Process

A selection team from DEDO and the State will review the proposals. The selection will be based on the following criteria:

Cost and Revenue	40 percent
Previous Experience	40 percent
Clarity of Proposal	20 percent

DEDO and the State reserve the right to reject any and all proposals and to contact any potential Contractor during the evaluation process to clarify proposals. The final agreement will be between DEDO and the successful Contractor.

For Immediate Release

Date: December 15, 2000

Delaware Citizen Computer Recycling Event
Is Major Success

(Wilmington, DE) - The Delaware Economic Development Office (DEDO) announced that initial estimates for its one-day computer recycling event held in partnership with COMPUSA-Wilmington on October 21st netted over 13,000 pounds of obsolete computers and related equipment. The event, the first of its kind on the East Coast, was funded by the United States Environmental Protection Agency, Region III as part of their support of Delaware's Green Industries Program.

Teaming with Goodwill Industries of Delaware, WHYY radio and television, and the Delaware Solid Waste Authority, DEDO set up an equipment recycling drop-off in COMPUSA's parking lot. In conjunction with the recycling program, COMPUSA held a customer appreciation day complete with free hotdogs, popcorn and sodas, a clown and face painting. They also provided computer donors with $50 certificates towards the purchase of their next computer system. COMPUSA and a number of their partner vendors also held a raffle for several new computer systems along with a host of other peripherals.

"We exceeded our goals," said Harold Stafford, director of DEDO. "Not only have we kept over six tons of electronics out of the state's landfills, but we've re-directed thousands of dollars of old computers to Goodwill where they will be refurbished and then distributed to needy families and non-profits."

Over the course of six hours a team of volunteers, including representatives of the Boy Scouts and students from Concord High School's National Honor Society, helped approximately 400 families and small businesses unload cars and trucks. Volunteers filled five separate 24-foot trucks. Roughly half of the CPUs and monitors were in ready working condition. Goodwill will test and refurbish all equipment then sell some in their store and redistribute the rest to needy families, schools, church groups and non-profits. All non-salvageable monitors and other equipment will be sent to electronics recycling companies in the region for further processing.

A final tabulation of recovered equipment by Goodwill shows the recovery of 180 computers, 224 monitors, 94 keyboards, 140 printers and half a ton of miscellaneous computer parts.

"It was a remarkable event," comments Rob Propes, director of DEDO's Green Industries Program. "Citizens were very excited by what we were doing. We raised people's awareness of

the digital divide and the problem of enviro-scrap." Perhaps most importantly, notes Propes, the project demonstrated that government and business working together can truly solve problems.

"We're hoping to convince COMPUSA and Goodwill to team up again in the spring," says David Biddle of the Center for Solid Waste Research, the organization chosen by DEDO to plan and run the project. "This was a pilot project funded by EPA to test the waters. The true measure of our success will be when Goodwill and COMPUSA take the initiative with less impetus coming from government."

According to industry experts, 40-50 million computers become obsolete annually and will eventually be disposed of as trash without alternatives. Computers contain trace quantities of a number of toxic chemicals including lead, cadmium and mercury.

For more information on DEDO's Green Industries Program, go to:
http://www.state.de.us/dedo

For information on computer recycling issues in the Mid-Atlantic, go to:
http://www.libertynet.org/macredo/eprprj.htm