



# **Implementing and Financing An Electronic Product Collection, Recycling and Reuse Program For Washington State**

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## **BACKGROUND DOCUMENT**



**January 2006**

**Publication Number 06-07-005  
Companion Document 05-07-049**

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## Executive Summary

This report provides information and background that supports the recommendations for financing and implementing an electronic product recycling and reuse program in the state of Washington, as requested by the legislature in ESHB 2488, in the 2004 legislative session.

The legislature requested the Department of Ecology carry out this study in consultation with stakeholders. Our process involved holding six, day long facilitated stakeholder meetings, several technical team conference calls and engaging in direct discussions with individual stakeholders to gather input on various aspects of establishing a recycling program for electronic products in the state. In addition to Ecology's meetings with various members of the Solid Waste Advisory Committee (SWAC) Subcommittee on Electronic Products and others who attended the meetings, members also met with each other and, through our facilitators, sent to each other numerous research reports and position papers for consideration.

Throughout this process, the stakeholders labored hard with one another and with Ecology to seek a system design that met the interests of all. As described in the facilitator's report (Appendix A), they did reach consensus on some points. Moreover, groups of diverse stakeholders also came to agreement with one another regarding major concepts. The group did not reach full consensus on the whole system design, especially as it relates to funding. Written comments about this report and recommendations received from the sub-committee are included in appendix B. Alternative approaches suggested by manufacturers are included in appendices C and D.

Stakeholders considered in depth three different ways in which to finance the system:

1. Cost Internalization— manufacturers internalize the costs of collection, transportation and processing of products at the end of the product useful life;
2. Advanced Recovery Fee— consumers pay a fee at the time of purchase to cover the cost of recycling end of life products with the idea that what is recycled today is paid for today;  
or
3. End of Life Fee— manufacturers offer end of life collection, transportation and processing services for a fee, paid by the consumer that owns the product at end of life.

The Sub-committee spent most of its time working out the details of how to finance a program, performance measures, disposal issues and performance standards. The sub-committee did not review all the issues the legislature asked Ecology to consider due to lack of time. Regardless, Ecology has addressed those issues in this report.

The recommendations are based on best available information and our understanding of the needs of the citizens of the state of Washington. We listened closely to the interests of various stakeholder groups as articulated through representatives on the SWAC subcommittee and we have attempted to honor as many of them as are consistent with the best interests of Washington citizens.

It is this interest in serving the citizens of Washington and in protecting the social, economic and environmental attributes of this state that has been the primary force in our work.

## Background

The Washington State Legislature directed the Department of Ecology to conduct research and develop recommendations for implementing and financing an electronic product collection, recycling, and reuse program for the state. The rationale for this directive included these legislative findings:

- Rapidly changing technological advances in the computer and electronics sector have resulted in an increasing number of outdated electronic products.
- The Environmental Protection Agency estimates that over 20 million personal computers became obsolete in 1998 and only 13 percent were reused or recycled.
- By 2005, more than 63 million personal computers are projected to be retired according to a recent study by the National Safety Council.
- Electronic products may contain hazardous materials including lead, mercury, brominated flame retardants, and hexavalent chromium.
- Cathode ray tubes in computer monitors and video display devices may contain between four to eight pounds of lead.
- National and state efforts have been initiated to examine opportunities to recycle and reuse electronic waste and encourage development of products using less toxic substances and more recycled content.

By directing Ecology to develop recommendations for implementing and financing an electronic product collection, recycling, and reuse program for the state, the legislature made a determination that the issue of recycling electronic products is a matter of state concern. Other state laws support this. The State Environmental Policy Act Chapter 43.21C RCW established that it is the responsibility of the state of Washington to improve and coordinate programs and resources so that its citizens can, among other things, “enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.”<sup>1</sup> In the Solid Waste Management – Recovery and Recycling Act Chapter 70.95 RCW the legislature established that “recycling, with source separation of recyclable materials as the preferred method” of solid waste handling, second only to waste reduction.<sup>2</sup>

In addition, the State Economic Policy, Chapter 43.21H RCW, states that in developing rules governmental entities of the state are to “insure that economic values are given appropriate

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<sup>1</sup> **RCW 43.21C.020 Legislative recognitions -- Declaration -- Responsibility.**

(1) ... (c) fulfill the social, economic, and other requirements of present and future generations of Washington citizens.  
(2)... it is the continuing responsibility of the state of Washington ... to improve and coordinate plans, functions, programs, and resources to the end that the state and its citizens may:  
(g) Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

<sup>2</sup> RCW 70.95.010 Legislative finding -- Priorities -- Goals.

8) The following priorities for the collection, handling, and management of solid waste are necessary and should be followed in descending order as applicable:

(a) Waste reduction;  
(b) Recycling, with source separation of recyclable materials as the preferred method;  
(c) Energy recovery, incineration, or landfill of separated waste;  
(d) Energy recovery, incineration, or landfill of mixed municipal solid wastes.  
(9) It is the state's goal to achieve a fifty percent recycling rate by 2007.



Once the programs were identified, the information was categorized into four types: general, collection, recycling, and financing. Programs are presented side by side within each category, in spreadsheet format, for ease of comparison (see database).

We did not receive the cooperation from industry run programs that we thought we might. Manufacturers considered information about their programs proprietary.

Recycling information describes the steps taken after all equipment was collected. It states whether the materials was reused, smelted, remanufactured, or exported overseas. It also identifies the collectors, dismantlers, consolidators, and recyclers to whom materials are subsequently shipped. Tracking the final destination is nearly impossible after the equipment is dismantled and the consolidated materials are sent to different markets. For various reasons related to market competition, many consolidators and recyclers would not release the names of their subcontractors, vendors, and brokers.

Financing data relates to the project costs and funding strategies<sup>5</sup>. The budget typically consists of administration, advertising, collection, disposal, processing, and shipping costs. It becomes complicated as administrators have different ways of classifying and recording their costs. Some do not report their expenses at all<sup>6</sup>. Permanent programs may have in-kind support and expenses that need time to stabilize. Demonstration projects, which explore new relations and markets, may require more funding than normal. Generally, due to these “gray areas”, a direct comparison of project costs is not recommended.

There are many programs in existence; they range from one-time to ongoing, and manufacturer run to government-based. While the list is not all-inclusive, it does provide an adequate picture of current programs and infrastructure for collecting, transporting and processing electronic products for reuse and recycling.

## **Analysis and Evaluation**

To the consumer, what to do with unwanted electronic products is generally a mystery. When replacing an electronic product due to obsolescence, the consumer generally keeps the old unit around. After all, it still works. It cost a lot of money when it was new. The idea of “throwing it away” is somewhat repugnant to most people. These old units become the second or third computer or television in the house, used as the “game computer” or the “shop TV” or simply stored away in a basement or garage.

Programs that prove convenient to consumers are more likely to be successful in collecting unwanted electronic products. Convenience includes easy access, availability, flexibility and consistency.

Programs that provide consistent and ongoing services for collection of electronic products from the public are the most effective. One time and short-term “collection events” are less effective.

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<sup>5</sup> Funding, subsidies, grants, or contributions from government, manufacturers, processors, retailers, haulers, associations, end-user, volunteers, or other sources.

<sup>6</sup> Some administrators, such as manufacturers, choose not disclose their expenses. For competitive reasons. Others are undocumented.

The quantity of unwanted electronic products gathered at collection events is small compared to the total number of product units potentially available. In addition, most collection events only occur within urban centers, leaving rural communities out.

## **Costs**

The available information indicates that the average cost for these programs, as varied as they are, was forty-two cents per pound for all programs. Programs in Washington State averaged thirty-eight cents per pound. Most all programs collected computers, televisions and computer monitors with many collecting computer peripherals and other home electronic devices as well. The highest cost program was a collection event sponsored by the City of Tacoma and Pierce County, which came in at 67 cents per pound. The lowest was Clark County Computer Reuse and Marketing program (CREAM) costing eighteen cents per pound.

While we tried to capture all costs associated with these programs, there was no consistency among program operators related to how they accounted for and distributed costs. So, any comparisons and conclusions are antidotal. Even so, the financial information provides a general estimate of program costs. The broad range of costs illustrates the effectiveness of ongoing collection programs compared to special collection events. Ongoing programs are cheaper, recover more products and are more easily adapted to by consumers. Single events cost more and rely on more coordination between many players. They also require more training and staff time.

Two states have mandated programs for collection of CRT wastes only, Maine and California. The California program is an advanced recovery fee (ARF) program. The fee is collected by the California Board of Equalization and the program is administered by the California Integrated Waste Management Board. In conversations with the California program manager, it was learned that it is too early to tell whether the fee that is charged adequate or the program is effective in collecting all products that are available. This is due to start up problems. While it appears that revenues are in excess of costs, in truth, there has not been adequate time invested nor data gathered to substantiate any claims one way or the other. As for Maine, a program that requires manufacturers to submit plans to be approved by the state and operated programs, implementation has yet to begin.

## Electronic Product Recycling Collection Events, Programs and Activities

PROJECT/PROGRAM	Description/Summary	Jurisdiction/Company	Type	Date	Location/Area Served	Population	Density
4-H Electronic Recycling Event	Snohomish County supported 4-H Program's one-day drop-off of electronics at Everett Mall Parking lot. Youths members of 4-H worked as volunteers at collection event.	4-H Byte By Byte Technology Club, Snohomish County	One Day Event	Apr 26, 2003	Everett Mall Village parking lot	637,510	305/sq mile
Basin Disposal-Franklin County Electronic Collection	Basin Disposal joined with Franklin County in organizing a one-day collection event. Participants must pay "market rate" to drop-off electronics equipment for recycling.	Basin Disposal Inc. Franklin County	Pilot (1 day)	Oct 23, 2004	Franklin and Benton County area	205,190	70/sq mile
Bellevue Curbside Collection of Electronics	Bellevue incorporated electronic recycling into its curbside garbage collection for single-family households. Residents were encouraged to recycle by lower rates for less garbage.	City of Bellevue	Ongoing		City of Bellevue	112,000	3642/sq mile
Benton County Electronic Equipment Col Collection Events, Programs and Activities lection Event	Benton County and Regional Moderate Risk Waste Facility applied for the Coordinated Prevention Grant to fund the one-day event at the Tri-Cities Coliseum. Residents & businesses may drop off electronics free of charge.	Benton County, Regional Moderate Risk Waste Facility	One Day Event	Sept 21, 2002	Tri-Cities Coliseum	147,608	87/sq mile
Best Buy & Starbucks Team Up to Clean Up Event	Best Buy partnered with Starbucks and HP to organize weekend drop-off at Seattle Starbucks support center. Electronics collected were recycled at HP facilities in Roseville, CA and La Vergne, TN.	Starbucks, Best Buy, Hewlett-Packard	Weekend Event	Apr 26-27, 2003	Starbucks store location in Seattle, King County	1,779,271	837/sq mile
Best Buy Weekend Drop-off, Fall 2001	Best Buy held weekend electronic drop-off in the parking lot of Tukwila store. Participants paid \$5 per vehicle plus additional fees for recycling monitors and TVs.	Best Buy, Compaq	Weekend Event	Oct 12-13, 2001	Best Buy retail location in Tukwila, King County	1,758,266	827/sq mile
Best Buy Weekend Drop-off, Fall 2002	Best Buy held weekend electronic drop-off in the parking lot of Tukwila store. Participants paid \$5 per vehicle plus additional fees for recycling monitors and TVs.	Best Buy	Weekend Event	Sept 27-28, 2002	Best Buy retail location in Tukwila, King County	1,774,275	835/sq mile
Clark County Collection Events 2003: Computer Reuse and Marketing (CREAM)	Funded by CPG grant, CREAM set up 15 one-day collection events & 2 permanent drop-off sites (at Work Center 4 days a week & at east Clark County once a month). Electronics may be refurbished by Clark College, reused by Salvation Army, or recycled.	Clark County	Ongoing	Jan-Dec 2003	Clark County	372,290	593/sq mile
Douglas-Chelan County Collection Event	Douglas and Chelan counties sent out surveys to small businesses in the counties. The surveys served as a form of pre-registration for businesses to participate in the one-day drop-off at the Eastmont School District Maintenance Shop.	Douglas County, Chelan County	One Day Event	June 24, 2003	Eastmont School District Maintenance Shop, East Wenatchee	101,500	21/sq mile
Good Guy Television Recycling Project	Good Guys television retailers accepted used TVs at store locations in Bellevue, Tukwila, Lynnwood and Puyallup for recycling. Participants may drop-off TVs at set fees in exchange discounts on specific brands of television.	King, Snohomish & Pierce County, Good Guys, 5 TV manufacturers	Pilot (31 days)	July 8-Aug 7, 2004	Good Guys retail locations in Bellevue, Tukwila, Lynnwood, and Puyallup	3,177,073	539/sq mile
King County Take-It-Back Network	Coordinated partnership between King County SWD & TIBN members (electronic retailers/recyclers, computer resellers, TV/comp repair shops). The SWD gave members publicity & tech assistance in collecting, transportation, packaging, recycling, etc.	King County Solid Waste Division, Seattle Public Utilities, 14 businesses & recyclers	Ongoing	Sept 2003-Nov 2004	Collection sites varied with retailers, recyclers, businesses, community groups	1,788,264	841/sq mile
Kirkland Curbside Recycling Program	Kirkland incorporated electronic recycling into its curbside garbage collection under the contract with Waste Management-Sno King. Residents were encouraged to recycle by lower rates for less garbage.	City of Kirkland	Ongoing	Dec 2003-Sept 2004	City of Kirkland	45,800	4280/sq mile

PROJECT/PROGRAM	Description/Summary	Jurisdiction/Company	Type	Date	Location/Area Served	Population	Density
Kitsap County Electronic Collection Program	Kitsap County used CPG grant to fund collection of electronics in 2 school districts, 2 fire districts, and 2 cities & county agencies. Electronics were sent to Total Reclaim for recycling.	Kitsap County	Pilot (146 days)	Aug 1-Dec 24, 2003	Kitsap County's school & fire districts, city agencies and county offices	237,204	599/sq mile
Kitsap County Transfer Station Drop-off	Kitsap County Olympic View Transfer Station accepted drop-offs CRTs and electronics on a daily basis. There were set fees for monitors and sizes of television.	Kitsap County, Waste Management	Ongoing	2003-Nov 2204	Olympic View Transfer Station	237,204	599/sq mile
Kittitas County Collection Event	Kittitas County held one-day event for public and small quantity generators to drop-off electronics. Two-hundred surveys were sent to local businesses, only 19 were returned.	Kittitas County	One Day Event	June 24, 2003		35,790	16/sq mile
Redmond Curbside Collection of Electronics	Redmond incorporated electronic recycling into its curbside garbage collection under the contract with Waste Management. Residents were encouraged to recycle by lower rates for less garbage.	City of Redmond	Ongoing	Mar 2004-Sept 2004	City of Redmond	46,900	2817/sq mile
Snohomish City/School Cleanout	Supplemented with grants for DOE and SWD, Snohomish County contracted Total Reclaim for routed pick-up of electronics from 8 cities and 11 school districts.	Snohomish County cities and school districts	One Time Event	Dec 9-20, 2002	Snohomish County	628,004	301/sq mile
Snohomish County Take-It-Back Network	Coordinated partnership between Snohomish County SWD and local businesses. The SWD handled publicity and assisted businesses in collecting, packaging, transporting, recycling electronics.	Snohomish County, 14 businesses	Ongoing		Collection sites varied with private retailers/businesses	639,409	306/sq mile
Snohomish Transfer Station Drop-off	Snohomish County had three transfer stations that accepted a maximum of 3 units of each type of electronics on a daily basis. There was a set fee for each type of electronics.	Snohomish County	Ongoing	Jan-Dec 2003	Airport Road T.S. (Everett), North County T.S. (Arlington), Temporary Recycle & Transfer Station	639,409	306/sq mile
Staples Computer Recycling Event, Fall 2004	Staples held two-week collection event during stores hours at 21 retail location in the Puget sound area. In exchange for Staples coupons, participants may donate \$10 to local schools when dropping off used computer equipment.	Staples Inc.	Two Week Event (16 days)	Oct 30-Nov 15, 2004	27 Staples retail locations in Washington	6,167,800	93/sq mile
Staples Computer Recycling Event, Spring 2004	Staples held two-week collection event during stores hours at 21 retail location in the Puget sound area. In exchange for Staples coupons, participants may donate \$10 to local schools when dropping off electronics.	Staples Inc.	Two Week Event (17 days)	Apr 22-May 8, 2004	21 Staples retail locations in Puget Sound area		
Tacoma-Pierce County Collection Event	Tacoma and Pierce County held two-days event for residents to drop off all types of consumer electronics (except microwaves, smoke detectors, and large appliances) at \$5 per vehicle. Tacoma and Pierce County split the recycling cost 30-70.	City of Tacoma, Pierce County	Pilot (2 days)	May 11-12, 2002	Cheney Stadium	724,999	432/sq mile
Thurston County Transfer Station Drop-off	Thurston County Waste and Recovery Center accepted TVs and monitors on a daily basis, for a fee of \$5 per unit along with the drop-off of garbage. The TVs and monitors were sent to Ecolights for recycling.	Thurston County	Ongoing	Jan 2004-Oct 2004	Thurston County Waste and Recovery Center	218,493	301/sq mile
Alachua County, Florida End-of-Life Electronic Equipment Collection	Alachua County collected end-of-life electronic equipment as part of a two-day household hazardous waste drop-off event. This pilot program was funded by the Florida Department of Environmental Protection (FDEP).	Alachua County, FL	Pilot (2 days)	Apr 23-24, 1999	PERMA-FIX facility, during HHW collection event	208,000	238/sq mile

PROJECT/PROGRAM	Description/Summary	Jurisdiction/Company	Type	Date	Location/Area Served	Population	Density
California Electronic Waste Recycling Legislation SB 20	Under the legislation, California electronics retailers charged consumers up-front fees when purchasing devices with display screens. Retailers retained a portion of the fees to pay for administration costs; the remaining covered for recycling costs.	California Integrated WM Board, Board of Equalization	Ongoing	Starting Jan 1, 2005			
Cascade Computer Round-Ups for Individuals	Cascade Asset Management LLC held semi-annual collection of computers, TVs, and consumer electronics at their facility. Electronics can be dropped off at no charge, with exception of \$5 per monitor and \$25 per TV.	Cascade Asset Management, LLC, City of Madison, Dane County	Ongoing (Semiannual)	Nov 1999-Nov 2004	Cascade facilities in Madison, Wisconsin		
Charlotte County, Florida Electronic Recovery, Reuse and Recycling	Charlotte County in cooperation with Goodwill Industries set up drop-off sites in Goodwill stores and other locations for "donation" of electronics. Electronics collected underwent sorting and triage for repair/resell or recycling.	Charlotte County, Goodwill Industries, Resource Management Group Inc.	Pilot (1 ½ year)	June 1, 2001 - Dec 15, 2002	Goodwill store in Englewood & other collection sites in Charlotte County	141,627	204/sq mile
Citrus County, Florida Electronic Recycling	Citrus County held 10 monthly one-day events, 9 at Citrus County Central landfill, 1 at a rural facility. Residents, businesses, and government can drop-off electronics at no charge. Events were funded by Electronic Recycling Grant.	Citrus County	Pilot (9 months)	Mar-Nov 2002	Citrus County	124,000	212/sq mile
Knoxville, Tennessee Collection Event at Staples, June 2004	Knoxville organized one-day drop-off of computers and computer-related. Event was sponsored by retailers, processors, recyclers, television, radio, public utilities, associations and others.	City of Knoxville Solid Waste Office, Staples, 2 recyclers, 1 processor, 2 charity/non-profits, and 6 other sponsors	One Day Event	June 12, 2004	Staples location in Knoxville, Knox County		
Maine E-Waste Legislation LD 743	Law based on "shared responsibility". Local govts arrange electronics collection, consolidators ensure shipment to responsible dismantlers/recyclers, manufacturers label brand names & paid for recycling cost.	State of Maine & Department of Environmental Protection	Ongoing	Starting Jan 1, 2005	State of Maine	1,275,000	38/sq mile
Mid-Atlantic States Electronics Recycling Pilot Project	The EPA Region 3, mid-Atlantic states, and 10 electronics manufacturers collaborated in running 58 residential collection events, 8 county-wide & 9 state-wide permanent collection programs.	EPA Region 3, Mid-Atlantic States, District of Columbia, Electronic Industries Alliance	Pilot (3 months)	Oct 1, 2001-Dec 31, 2001	48 Counties, 2 regions, 6 cities in Delaware, Maryland, Pennsylvania, Virginia, West Virginia & D.C., Best Buy, Butler Co.	12,369,447	
Minnesota's Demonstration Project	64 collection events in Minnesota in forms of curbside pickup and drop-off at HHW sites, multi-facilities, recycling facilities, retail locations, & special collection events. Funded by Sony, Panasonic, WM-ARG, American Plastic Council & the OEA.	Minnesota's Office of Environmental Assistance & 4 industrial partners	Pilot (3 months)	July 31-Oct 31, 1999	32 Minnesota Counties, 64 collection sites	1,300,000	
Orange County, North Carolina Electronic Recycling Program	Orange County permanent ongoing program consisted of electronics drop-off locations and curbside pick-ups. Program operated from "enterprise fund" with revenues from tip-fees at transfer stations and improved property taxes.	Orange County, PTA Thrift Shop	Ongoing	Jan 1, 2003-Dec 31, 2003	PTA store location & 6 County Convenience Centers (drop-off); Public Works Department (curbside pick-up)	118,183	295/sq mile
Pasco County, Florida Pilot Program	FDEP funded Pasco County's pilot program at the recycling center/landfill where electronics were accepted from individuals & collected from tipping floors of waste-to-energy facilities. Electronics were demanufactured at a facility in Tampa.	Pasco County, FL	Pilot (4 ½ months)	June- mid Oct 1999	West Pasco Class III Landfill	321,000	438/sq mile
Rural Community Electronic Recycling in Maine, New Hampshire and Vermont	NRC project consisted of 4 ongoing electronics collections in Pittsfield, Springfield, & Barre; 5 one-day drop-offs in Farmington, Hardwick, Tunridge, Pemi-Baker District & CVSWMD; and a two-day computer reuse event in Barre, Vermont.	Northeast Recycling Council, Inc.	Pilot (4 months)	May-Sept 2002	Pittsfield & Farmington, Maine; Pemi-Baker SW District, New Hampshire; Springfield & Central Vermont SWM District	158,285	

PROJECT/PROGRAM	Description/Summary	Jurisdiction/Company	Type	Date	Location/Area Served	Population	Density
National Cristina Foundation & Dell Computer Donation	National Cristina Foundation accepted drop-off donations of Pentium & higher (including hard drives, monitors, keyboards, and mice). Systems were reused by students, low-incomes & disabled. Donors received discounts on Dell purchases.	National Cristina Foundation, Dell Inc.	Ongoing				
Dell Exchange Program	When purchasing new Dell system, customer may schedule pick-up of old computer and monitor along with keyboard and mouse. Electronics were shipped to Dell for recycling at no charge.	Dell Inc.	Ongoing				
Microsoft Authorized Refurbisher (MAR)	Microsoft provided OS Win 98/2000 & CompuMentor provide license to non-profit refurbishers. Refurbishers accepted used computers from donors, refurbished and sold them to schools, non-profits, and low-income families for reduced prices.	Microsoft, CompuMentor, non-profit refurbishers	Ongoing	Dec 2002-Dec 2004	Various U.S. computer refurbishers		
Office Depot & Hewlett-Packard	Office Depot accepted drop-off electronics, one unit per day, at no charge in over 800 store locations in the US. Electronics were sent to HP facilities in Nashville and Roseville for recycling.	Office Depot, Inc. and Hewlett-Packard	Pilot (51 days)	July 18-Sept 6 2004	Over 800 Office Depot retail locations (continental U.S.)		
Electronic Product Stewardship Canada	Information Technology Association of Canada (ITAC) and Electro-Federation joined with 16 electronic manufacturer to plan and implement national program for recycling electronics based on shared responsibility between governments., consumers, industries, & stakeholders	16 Electronic manufacturers, Information Technology Association of Canada, Electro-Federation Canada	Ongoing	June 2002-present	Canada		
Electronic Product Stewardship Manitoba Research & Demonstration Project	EPSOM organized weekend collection events at 6 drop-off sites in Winnipeg and Stonewall. Sixteen electronics manufacturers, processors, haulers, consultants, and advertisers along with volunteers provided in-kind support	Electronic Product Stewardship of Manitoba (EPSOM) & 16 manufacturers, processors, haulers	Weekend Event	Oct 19-20, 2002	5 sites at Winnipeg, 1 site at Stonewall	1,157,356	

## Collection, Transportation and Processing

PROJECT/PROGRAM	Source	Overseas Export	Reuse small parts	Reuse whole units	Smelter	Back to Same Product	Collector	Dismantler/ Consolidator	Processor	End Location(s)
4-H Electronic Recycling Event	Anyone	No	No	Yes	Yes	Yes	4-H Technology Club	Total Reclaim	PC Plastics, Plastic Nation, Envirocycle, Doe Run, Jones Quarry, Circuit Boards, Copper Wire, Allied Battery, Kinsbursky Brothers	Plastics, steel, aluminum, circuit boards shredded and remanufactured; glass and lead sent to domestic smelter; functional units reused by US consumers; non-recyclable plastics & wood were landfilled
Basin Disposal-Franklin County Electronic Collection	Household, Small business						Basin Disposal	Basin Disposal		
Bellevue Curbside Collection of Electronics	Single-family household	Possibly	No	Yes	Yes	Yes	Rabanco	Total Reclaim	PC Plastics, Plastic Nation, Envirocycle, Doe Run, Jones Quarry, Circuit Boards, Copper Wire, Allied Battery, Kinsbursky Brothers	Plastics, steel, aluminum, circuit boards shredded and remanufactured; glass and lead sent to domestic smelter; functioning units reused in US market and oversea governments, non-profits, & schools; non-recyclable plastics & wood were landfilled
Benton County: Electronic Equipment Collection Event	Household, Business	No	No	Yes	Yes	Yes	Benton County Regional Moderate Risk Waste Facility	Micro Metallics Corp., NxtCycle Corp.	Micro Metallics Corp., NxtCycle Corp.	Copper & precious metals sent to primary/secondary smelters; steel to domestic processor mills; plastic to plastic manufacturers; reusable ICs to secondary market in US, South America, Asia, and Europe; CRTs glass to smelters & melted down to make new CRTs
Best Buy & Starbucks Team Up to Clean Up Event							Starbucks, Best Buy	Hewlett-Packard	Hewlett-Packard plant in Roseville, California	
Best Buy Weekend Drop-off, Fall 2001	Household	Yes	Yes	Yes	Yes	Yes	Best Buy retail, Tukwila	NxtCycle Corp.		750 working PCs reused in schools; copper & precious metals sent to primary/secondary smelters; steel to domestic processor mills; plastic to plastic manufacturers; reusable ICs to secondary market in US, South America, Asia, and Europe; CRTs glass to smelters & melted down to make new CRTs
Best Buy Weekend Drop-off, Fall 2002	Household	No					Best Buy retail, Tukwila	Recycle America Alliance (Waste Management)		
Clark County Collection Events 2003: Computer Reuse and Marketing (CREAM)	Household	No	Yes	Yes	Yes	Yes	Computer Reuse/Recycling and Marketing (CREAM)	Clark College, Work Center inmates	PC Plastics & CRT smelter in Pennsylvania	Fifteen tons of non-recyclable plastics & wood were landfilled; functional units were refurbished, reused by non-profits and schools; non-functional units dismantled & remanufactured into new plastics, metals & CRTs
Douglas-Chelan County Collection Event	Small business	No	No	Yes	Yes	Yes	Total Reclaim	Total Reclaim	PC Plastics, Plastic Nation, Envirocycle, Doe Run, Jones Quarry, Circuit Boards, Copper Wire, Allied Battery, Kinsbursky Brothers	Plastics, steel, aluminum, circuit boards shredded and remanufactured; glass and lead sent to domestic smelter; functional units reused by US consumers; non-recyclable plastics & wood were landfilled
Good Guy Television Recycling Project	Household	No	No	Yes	Yes	Yes	Philip Services Corp.	Total Reclaim	PC Plastics, Plastic Nation, Envirocycle, Doe Run, Jones Quarry, Circuit Boards, Copper Wire, Allied Battery, Kinsbursky Brothers	Plastics, steel, aluminum, circuit boards shredded and remanufactured; glass and lead sent to domestic smelter; functional units reused by US consumers; non-recyclable plastics & wood were landfilled

PROJECT/PROGRAM	Source	Overseas Export	Reuse small parts	Reuse whole units	Smelter	Back to Same Product	Collector	Dismantler/Consolidator	Processor	End Location(s)
King County Take-It-Back Network	Household, Small business	No		Yes	Yes	Yes	Arranged by TIBN members	Total Reclaim, Rabanco, Tectonic, 3R	PC Plastics, Plastic Nation, Envirocycle, Doe Run, Jones Quarry, Circuit Boards, Copper Wire, Allied Battery, Kinsbursky Brothers	Whole PC systems donated to trade schools, low-income youths & non-profits; functional electronics resold to US market through retailers/online; leaded glass, plastics, metals, etc. are remanufactured into new products; non-recyclable plastics & wood were landfilled
Kirkland Curbside Recycling Program	Household	Possibly	No	Yes	Yes	Yes	Waste Management Sno-King	Total Reclaim	PC Plastics, Plastic Nation, Envirocycle, Doe Run, Jones Quarry, Circuit Boards, Copper Wire, Allied Battery, Kinsbursky Brothers	Plastics, steel, aluminum, circuit boards shredded and remanufactured; glass and lead sent to domestic smelter; functioning units reused in US households and overseas governments, non-profits, & schools
Kitsap County Electronic Collection Program	School, Government	No	No	Yes	Yes	Yes	Electronics accepted at Olympic View Transfer Station	Total Reclaim	PC Plastics, Plastic Nation, Envirocycle, Doe Run, Jones Quarry, Circuit Boards, Copper Wire, Allied Battery, Kinsbursky Brothers	Plastics, steel, aluminum, circuit boards shredded and remanufactured; glass and lead sent to domestic smelter; functional units reused by US consumers; non-recyclable plastics & wood were landfilled
Kitsap County Transfer Station Drop-off	Household, Business	Possibly	No	No	Yes	Yes	Kitsap County	Total Reclaim	PC Plastics, Plastic Nation, Envirocycle, Doe Run, Jones Quarry, Circuit Boards, Copper Wire, Allied Battery, Kinsbursky Brothers	Plastics, steel, aluminum, circuit boards shredded and remanufactured; glass and lead sent to domestic smelter; functioning units reused in US market and overseas governments, non-profits, & schools; non-recyclable plastics & wood were landfilled
Kittitas County Collection Event	Business	No	No	No	Yes	Yes		Total Reclaim	PC Plastics, Plastic Nation, Envirocycle, Doe Run, Jones Quarry, Circuit Boards, Copper Wire, Allied Battery, Kinsbursky Brothers	Plastics, steel, aluminum, circuit boards shredded and remanufactured; glass and lead sent to domestic smelter; functional units reused by US consumers; non-recyclable plastics & wood were landfilled
Redmond Curbside Collection of Electronics	Household	Possibly	No	Yes	Yes	Yes	Waste Management	Total Reclaim	PC Plastics, Plastic Nation, Envirocycle, Doe Run, Jones Quarry, Circuit Boards, Copper Wire, Allied Battery, Kinsbursky Brothers	Plastics, steel, aluminum, circuit boards shredded and remanufactured; glass and lead sent to domestic smelter; functional units reused by US consumers; non-recyclable plastics & wood were landfilled
Snohomish City/School Cleanout	School, City Government	No	No	Yes	Yes	Yes	Total Reclaim	Total Reclaim	PC Plastics, Plastic Nation, Envirocycle, Doe Run, Jones Quarry, Circuit Boards, Copper Wire, Allied Battery, Kinsbursky Brothers	Plastics, steel, aluminum, circuit boards shredded and remanufactured; glass and lead sent to domestic smelter; functional units reused by US consumers; non-recyclable plastics & wood were landfilled
Snohomish County Take-It-Back Network	Anyone						Arranged by TIBN members	Arranged by TIBN members		
Snohomish Transfer Station Drop-off	Anyone	Yes	No	Yes	Yes	Yes	Total Reclaim	Total Reclaim	PC Plastics, Plastic Nation, Envirocycle, Doe Run, Jones Quarry, Circuit Boards, Copper Wire, Allied Battery, Kinsbursky Brothers	Plastics, steel, aluminum, circuit boards shredded and remanufactured; glass and lead sent to domestic smelter; functioning units reused in US households and overseas governments, non-profits, & schools

PROJECT/PROGRAM	Source	Overseas Export	Reuse small parts	Reuse whole units	Smelter	Back to Same Product	Collector	Dismantler/Consolidator	Processor	End Location(s)
Staples Computer Recycling Event, Fall 2004	Household						Electronic accepted at Staples store	Onyx		
Staples Computer Recycling Event, Spring 2004	Household		No	No		Yes	Electronic accepted at Staples store	Envirocycle	Envirocycle	CRTs glass cleaned & remanufactured into new CRTs, metals components sent to refiners; boards sent to IC recovery and refineries, plastics to sent plastics recyclers
Tacoma-Pierce County Collection Event	Household	Yes	No	Yes	Yes	Yes	Philip Services Corp.	Philip Services Corp.	NxtCycle Corp., STRUT	Copper & precious metals sent to primary/secondary smelters; steel to domestic processor mills; plastic to plastic manufacturers; reusable ICs to secondary market in US, South America, Asia, and Europe; CRTs glass to smelters & melted down to make new CRTs; repaired computers reused in schools
Thurston County Transfer Station Drop-off	Household	No	No	No	Yes	Yes	Electronics accepted at Thurston County Waste & Recovery	Ecolights (subsidiary of Total Reclaim)	PC Plastics, Plastic Nation, Envirocycle, Doe Run, Jones Quarry, Circuit Boards, Copper Wire, Allied Battery, Kinsbursky Brothers	Plastics, steel, aluminum, circuit boards shredded and remanufactured; glass and lead sent to domestic smelters; functional units reused by US consumers; non-recyclable plastics & wood were landfilled
Alachua County, Florida End-of-Life Electronic Equipment Collection	Household	No	Yes	Yes	Yes	Yes	Alachua County	Secure Environmental Electronic Recycling	Envirocycle, Doe Run, Noranda Inc., Tampa Scrap Processors, Gulf Coast Metals, BCTI (batteries)	Wood & plastics sent to waste-to-energy facilities; steel sold to industries; iron, aluminum, & copper smelted to make new products; leaded glass smelted or remanufactured into make new CRTs; reusable parts sold to consumers
California Electronic Waste Recycling Legislation SB 20	Anyone									
Cascade Computer Round-Ups for Individuals	Non-business, Non-institution	No		Yes	No	Yes	Electronics accepted at Cascade facilities	Cascade Asset Management	Envirocycle, CRT Recycling (Janesville, Wisconsin), Techneglass	CRTs glass cleaned & remanufactured into new CRTs, metals components sent to refiners; other metals and boards sent to refiners, plastics to plastics recyclers
Charlotte County, Florida Electronic Recovery, Reuse and Recycling	Household, Business, Institution	No	Yes	Yes	Yes	Yes	Electronics donation to Goodwill	Secure Environmental Electronic Recycling	Envirocycle, Doe Run, Noranda Inc., Tampa Scrap Processors, Gulf Coast Metals, BCTI	Wood & plastics sent to waste-to-energy facilities; steel sold to industries; iron, aluminum, & copper smelted to make new products; leaded glass smelted or remanufactured into new CRTs; units in good condition are repaired were resold to consumers
Citrus County, Florida Electronic Recycling	Household, Business, School, Government		Yes	Yes		Possibly	Drop-off electronics at designated collection sites	Creative Recycling Systems	Creative Recycling Systems	Circuit boards, hard/floppy drives, power supplies, cables, & plastics sold to secondary market for reuse; non-recyclables parts sent to landfill

PROJECT/PROGRAM	Source	Overseas Export	Reuse small parts	Reuse whole units	Smelter	Back to Same Product	Collector	Dismantler/ Consolidator	Processor	End Location(s)
Knoxville, Tennessee Collection Event at Staples, June 2004	Household	No	Yes	Yes	No	Yes	Drop-off at Staples retail location	5R Processors		Working systems reused by Goodwill, non-workings were repaired & sold for reuse; plastics sold to manufacturer as feed stocks/blend; low-grades shredded & reduced to metal contents; precious metals, copper & aluminum sold to market; leaded glass sent to CRT manufacturers, non-leaded used as granular substitutes; at least 100 lbs was landfilled
Maine E-Waste Legislation LD 743										
Mid-Atlantic States Electronics Recycling Pilot Project	Anyone		No	No		Yes	Envirocycle	Envirocycle, Elemental, Inc.	Envirocycle, Elemental, Inc.	CRTs glass cleaned & remanufactured into new CRTs, metals components sent to refineries; boards sent to IC recovery and refiners, plastics to sent plastics recyclers
Minnesota's Demonstration Project	Household, Small business	Yes	No	Yes	Yes	Possibly	Drop-off at designated sites and retail stores	Waste Management-Asset Recovery Group	MBA Polymers, Dlubak Glass	70% PCs sold to export markets; 10.1 tons of monitors, 21.4 tons of TVs resold overseas; circuit boards & coppers materials sent to smelters; over 80% of CRTs sent lead smelter, others to glass recycler in Ohio; 183,613 lbs of wood & laminated plastic were landfilled
Orange County, North Carolina Electronic Recycling	Household, Business	Yes	Yes	Yes	Yes	Possibly	PTA Thrift shops, Convenience Centers, local Public Works	Synergy Recycling, SDS Recycling & Logistic Services	Dlubak Glass, Unicorn, Doe Run, Global Investment & Recovery, WSF Group, American Equity, recyclers in Australia, China, Venezuela, Malaysia, Pakistan, Singapore (Synergy visited sites & observed practices to ensure responsible recycling)	Functional computers donated to school in Carrboro and Chapel Hill, TV and stereos resold to public; circuit boards scrapped/grinded & sent to Asia, chips pulled & sent to New Hampshire & Chicago for reuse; plastic reprocessed in to feedstock/pellets; CRT glass either smelted or grinded by prison labor; metals recovered & refined as secondary materials
Pasco County, Florida Pilot Program	Household	No	Yes	Yes	Yes	Yes	Pasco County	Secure Environmental Electronic Recycling	Envirocycle, Doe Run, Noranda Inc., Tampa Scrap Processors, Gulf Coast Metals, BCTI (batteries)	Wood & plastics sent to waste-to-energy facilities; steel sold to industries; iron, aluminum, & copper smelted to make new products; leaded glass smelted or remanufactured into new CRTs; reusable parts sold to consumers
Rural Community Electronic Recycling in Maine, New Hampshire and Vermont	Household, Business, School, Government	Yes	Yes	Yes	Possibly	Yes	Drop-offs at recycling centers & designated sites	ElectroniCycle, Inc.	ElectroniCycle, Inc.	At least 1835 lbs was reused; 5-10% were repaired & resold along w/ circuit boards; others were demanufactured into copper, aluminum, steel barium/leaded glass, ferrous metals, gold, palladium components & sold as scrap commodities; lead/barium glass remanufactured into new CRTs; working TVs, VCRs sent to South America, Eastern Europe, Asia
National Cristina Foundation & Dell Computer Donation	Anyone	No	No	Yes	No	No	Electronics accepted at NCF location	n/a	n/a	Refurbished for reuse by the economically disadvantaged, disabled, and students at risk.
Dell Exchange Program	Household		Yes				Electronics pick-up by Dell carriers			
Microsoft Authorized Refurbisher (MAR)	Household, Business	No	No	Yes	No	Yes	Computer donors	Non-profit refurbishers	Non-profit refurbishers	Refurbished units sent to schools (50%), non-profit organizations (27%), and low-income families (23%)

PROJECT/PROGRAM	Source	Overseas Export	Reuse small parts	Reuse whole units	Smelter	Back to Same Product	Collector	Dismantler/Consolidator	Processor	End Location(s)
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Office Depot & Hewlett-Packard	Anyone						Drop-off electronics at Office Depot	Hewlett-Packard	Hewlett-Packard (plants in Nashville, Tennessee and Roseville, California)	
Electronic Product Stewardship Canada	Anyone									
Electronic Product Stewardship Manitoba Research & Demonstration Project	Anyone						Drop-off electronics at collection sites run by EPSOM	Maxus Technology, also at collection sites in Cree Crescent & Bond St.	Western Scrap Metals, Gerdau MRM Steel, Syrotech Industries, Asset Recovery Corp., Maxus Technology	Steel was scrapped & remanufactured into bulk steel; 7.5 tons of wood & trash was landfilled

PROJECT/PROGRAM	TOTAL COST \$								FINANCED/SUBSIDIZED \$									
	Administration	Advertising	Collection	Disposal	Processing	Shipping	Other	Total	Association	End Market User	Government	Manufacturer	Processor	Retailer	Waster Hauler	Other	Volunteer Hours	Total

4-H Electronic Recycling Event			2,500.00		4,944.00			7,444.00			2,500.00								
Basin Disposal-Franklin County Electronic Collection	0.00	0.00	500.00	0.00	2,485.00		Incorporated w/ processing cost 0.00	2,985.00	0.00	2,469.00	516.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2,985.00
Bellevue Curbside Collection of Electronics											625.38								
Benton County: Electronic Equipment Collection Event	651.00	1,046.74	774.20	18,016.00	Incorporated w/ disposal cost		Incorporated w/ disposal cost 171.84	20,659.78	0.00	0.00	20,487.94	0.00	0.00	0.00	0.00	0.00	171.84	20,659.78	
Best Buy & Starbucks Team Up to Clean Up Event																			
Best Buy Weekend Drop-off, Fall 2001																			
Best Buy Weekend Drop-off, Fall 2002																			

PROJECT/PROGRAM	Source	Overseas Export	Reuse small parts	Reuse whole units	Smelter	Back to Same Product	Collector	Dismantler/Consolidator	Processor	End Location(s)									
Clark County Collection Events 2003: Computer Reuse and Marketing (CREAM)	0.00	0.00	0.00	9,373.00	Incorporated w/ cost of disposal	3,362.50	5,700.00	18,435.50	0.00	0.00	18,435.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18,435.50
Douglas-Chelan County Collection Event	0.00	0.00	Incorporated w/ processing cost	Incorporated w/ processing cost	3,575.00	500.00	0.00	4,075.00	0.00	4,853.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5,353.00
Good Guy Television Recycling Project																			25,000.00
King County Take-It-Back Network	0.00	83,272.00	Arranged by TIBN members	39,140.00	172,412.00														
Kirkland Curbside Recycling Program	0.00	0.00	24,200.00	Incorporated w/ cost of collection	Incorporated w/ cost of collection	Incorporated w/ cost of collection	0.00	24,200.00	0.00	24,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24,200.00
Kitsap County Electronic Collection Program	Incorporated w/ cost of collection	0.00	36,904.25	Incorporated w/ cost of collection	Incorporated w/ cost of collection	Incorporated w/ cost of collection	0.00	36,904.25	0.00	0.00	36,904.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36,904.25
Kitsap County Transfer Station Drop-off										109,685.00									
Kititas County Collection Event																			
Redmond Curbside Collection of Electronics	0.00	0.00	28,000.00	Incorporated w/ cost of collection	Incorporated w/ cost of collection	Incorporated w/ cost of collection	0.00	28,000.00	0.00	8,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28,000.00
Snohomish City/School Cleanout	34,157.04	Incorporated w/ administration cost	Incorporated w/ cost of processing	Incorporated w/ cost of processing	70,610.62	Incorporated w/ cost of processing	0.00	104,767.66	0.00	0.00	104,767.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	104,767.66
Snohomish County Take-It-Back Network	45,040.00	23,201.00	2,016.00	Arranged by TIBN members	Arranged by TIBN members	Arranged by TIBN members	0.00	70,257.00	0.00	0.00	70,257.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70,257.00

PROJECT/PROGRAM	Source	Overseas Export	Reuse small parts	Reuse whole units	Smelter	Back to Same Product	Collector	Dismantler/Consolidator	Processor	End Location(s)								
Snohomish Transfer Stations Drop-off	48,900.00	23,201.00	205,152.00	Incorporated w/ cost of collection	Incorporated w/ cost of collection	Incorporated w/ cost of collection	0.00	277,253.00	0.00	118,360.00	158,893.00	0.00	0.00	0.00	0.00	0.00	0.00	277,253.00
Staples Computer Recycling Event, Fall 2004																		
Staples Computer Recycling Event, Spring 2004					7,808.80													
Tacoma-Pierce County Collection Event	3,089.22	25,535.30	72,121.52	Incorporated w/ cost of collection	Incorporated w/ cost of collection	Incorporated w/ cost of collection	0.00	100,746.04	0.00	9,500.00	91,157.15	0.00	0.00	0.00	0.00	0.00	0.00	100,657.15
Thurston County Transfer Station Drop-off	0.00	0.00	50,000.00	Incorporated w/ cost of collection	Incorporated w/ cost of collection	Incorporated w/ cost of collection	0.00	50,000.00	0.00	-24000.00	-26000.00	0.00	0.00	0.00	0.00	0.00	0.00	50,000.00
Alachua County, Florida End-of-Life Electronic Equipment Collection	1,200.00	Incorporated with HHW	Incorporated w/ processing cost	Incorporated w/ processing cost	6,424.00	1,200.00	340.00	3,164.00	0.00	0.00	9,164.00	0.00	0.00	0.00	0.00	0.00	0.00	9,164.00
California Electronic Waste Recycling Legislation SB 20																		
Cascade Computer Round-Ups for Individuals																		
Charlotte County, Florida Electronic Recovery, Reuse and Recycling	21,000.00	Incorporated w/ collection	11,789.52	Incorporated w/ administration cost	Incorporated w/ administration cost	8,504.48	36,607.00	127,901.00	0.00	11,500.00	171,644.00	0.00	0.00	0.00	0.00	0.00	0.00	183,144.00
Citrus County, Florida Electronic Recycling	0.00	5,774.47	39,797.46	0.00	15,413.00	Incorporated w/ processing cost	0.00	50,984.93	0.00	0.00	60,984.93	0.00	0.00	0.00	0.00	0.00	0.00	60,984.93
Knoxville, Tennessee Collection Event at Staples, June 2004	260.00	32,300.00	4,460.00	0.00	9,700.00	Incorporated w/ processing cost	0.00	16,720.00	300.00	0.00	1,860.00	10000.00	6,050.00	2,000.00	0.00	26,310.00	200.00	46,720.00

PROJECT/PROGRAM	Source	Overseas Export	Reuse small parts	Reuse whole units	Smelter	Back to Same Product	Collector	Dismantler/Consolidator	Processor	End Location(s)								
Maine E-Waste Legislation LD 743																		
Mid-Atlantic States Electronics Recycling Pilot Project	142,815.50	115,946.00	329,949.30	Incorporated w/ administration cost	1,101,323.00	219,966.20	384,940.85	1,910,000.00	0.00	0	1,850,000.00	60,000.00	0.00	0.00	0.00	0.00	0.00	1,910,000.00
Minnesota's Demonstration Project	13,194.00	65,877.00	84,255.00	5,508.00	82,313.00	47,105.00	2,517.00	300,769.00	25,000.00	8,930.00	25,000.00	50,000.00	112,887.00	0.00	0.00	0.00	0.00	221,817.00
Orange County, North Carolina Electronic Recycling	Incorporated w/ collection	0.00	40,000.00	Incorporated w/ processing cost	27,135.00	Incorporated 0.00	0.00	57,135.00	0.00	67,135.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	67,135.00
Pasco County, Florida Pilot Program	58,600.00	4,400.00	0.00	0.00	29,420.40	2,550.00	7,888.00	102,858.40	0.00	0.00	100,000.00	1,320.00	0.00	0.00	0.00		0.00	101,320.00
Rural Community Electronic Recycling in Maine, New Hampshire and Vermont	0.00	700.00	47,728.24	Incorporated w/ collection cost	Incorporated w/ collection cost	Incorporated 0.00	0.00	48,428.24			5,000.00		600.00				600.00	6,200.00
National Cristina Foundation & Dell Computer Donation																		
Dell Exchange Program																		
Hewlett-Packard & Office Depot Recycling Program																		
Microsoft Authorized Refurbisher (MAR)																		
Electronic Product Stewardship Canada	0.00	0.00	0.00	0.00	0.00	0.00	300,000.00	300,000.00				75,000.00						75,000.00
Electronic Product Stewardship Manitoba Research & Demonstration Project	8,800.00	14,246.40	32,992.00	26,837.12	30,357.76	Incorporated w/ disposal cost	11,385.60	154,618.88	0.00	1,191.68	51,200.00	61,056.00	16,960.00	0.00	1,952.00	16,539.52	3,353.60	152,252.80

## **Financing: Cost internalization, Advanced Recovery Fee or End of Life Disposal Fee**

The primary issue for manufacturers in these programs is financing. This has been the major stumbling block in national discussions, stalling progress toward establishing a national recycling solution for electronic products. The issue boils down to these two questions:

- Should manufacturers be responsible to pay for the costs associated with end of life management of the products they produce and their associated impacts? Or,
- Can collecting and recycling end of life electronics be accomplished by placing a fee charged to consumers on all electronic products at the point of purchase and managed by a third party or governmental entity, which pays for all associated costs?

### **Manufacturer Responsibility – Cost Internalization**

Manufacturer responsibility mandates that producers independently create and finance their own end-of-life programs for their brand name products. Generally, a plan is written that describes the programs. The plan is submitted to a government agency for review and approval. The plans must assure that the manufacturer establishes and meets recovery targets. Ideally, costs of the program are rolled into overall product costs. With this approach, the consumer does not see a fee, either at the point of purchase or at end of life. They are assured that they can return their end of life product for recycling. Some companies in Europe have demanded individual responsibility<sup>7</sup>.

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<sup>7</sup> Clean Production Action, Extended Producer Responsibility, <http://www.cleanproduction.org/AAbase/default.htm> EPR Home. INDUSTRY REACTIONS TO Extended Producer Responsibility (EPR)

***"We see it as an opportunity in the U.S. where we are getting into the recycling business. We're presently considering the European market situation. And there will be other major changes. Future transportation may not involve owning a car. Instead, you may own the right to transportation. We will make vehicles and either lease or loan them to you. We'll end up owning a vehicle at the end-of-life and have to dispose of it. We will treat it as a technical nutrient, making it into a car or truck again. We're getting ourselves ready for the day when this is truly cradle-to-cradle. We're not fighting it, we're embracing it."*** --Statement by Bill Ford, CEO of Ford Motor Company, 1999—

Many companies, particularly multi-national affiliates who reside in Europe, are supporting "Extended Producer Responsibility" as they see it as an opportunity to be more competitive and economically efficient with the resources they use in products. Major electronic manufacturers in Europe, such as Apple Europe, Hewlett Packard, Sony Europe, and Intel and environmental NGOs released joint statements of support for the Waste from Electrical and Electronic Equipment Directive (WEEE).

WEEE mandates that individual electronic manufacturers take back their products at the end-of-life as well as design out harmful materials and meet recycling/reuse targets. Manufacturers in Europe not only supported the EPR legislation, but also advocated for mandated individual responsibility, which means corporations have to take back their products independently. Individual responsibility is critical to helping manufacturers redesign products as the alternative system whereby companies fund a third party to collectively take back products does not reward companies who improve the environmental design of their products.

***"Individual responsibility encourages competition in the environmental performance and rewards improvements. Collective responsibility makes environmental improvements pointless and rewards the irresponsible and the lazy."*** --Electrolux, the world's largest producer of kitchen appliances—

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**Joint Press Statement  
of Industry, Consumer and Environmental Organisations  
on Producer Responsibility in the  
Waste Electrical and Electronic Equipment (WEEE) Directive**

This Statement refers to the responsibility of financing the management of WEEE for products sold in the future, and not the organisation of recycling systems. As regards all products sold in the past (historical waste), both the Council and the European Parliament have proposed that producers shall share the cost of recycling.

The European Parliament has concluded its First Reading and the Council has adopted its Common Position on the proposed WEEE directive. The Second Reading of the European Parliament will be completed by April 2002.

One of the objectives of introducing producer responsibility is to create incentives for producers to improve the design of their products with a view to enhancing their environmental performance. We support this ambition.

The European Parliament has made a constructive proposal that would secure this objective by establishing a strong producer responsibility, whereas the Council's Common Position fails to create the necessary incentives.

In addition, through its Article 7.4 the Council has proposed that existing producers should always finance the recycling of products from producers that disappear, or where the producer cannot be identified. Our opinion is that this stands on weak legal grounds. It would also become a dangerous incentive for free-riding, meaning short-sighted actors (producer = importer and/or manufacturer) would be able to place products on the market without addressing how these products should be recycled in the future.

Instead, the Parliament has proposed that each producer would be required to provide appropriate guarantees for the management of WEEE. This establishes the necessary legal instrument for proper enforcement and addresses the issue of free-riders. This is essential to avoid placing unjustified burdens on tax-payers and consumers.

**For the second reading, we urge the Council, the European Parliament and the Commission to:**

⇒ **Support the proposal of the European Parliament for financing on an individual basis and the need to provide appropriate guarantees for the financing of the management of WEEE ( and the section of Article 3 defining individual financing )**

⇒ **Reject the proposal of the Council regarding free-riders (Article 7.4 of Council Common Position)**

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AeA (American Electronics Association) Europe  
Association of Netherlands ICT Sector (ICT Milieu)  
Bellona Europa – Environmental NGO  
BEUC – The European Consumers' Organisation  
Confederation of Swedish Enterprise  
European Environmental Bureau  
Japan Business Council in Europe  
SRI – The Swedish Recycling Industries' Association  
Swiss Association of Information, Communication and Organisation Technology  
VI – Association of Swedish Engineering Industries  
WWF-UK (Part of the global environmental network)  
Zentralverband Elektrotechnik- und Elektronikindustrie e.V (ZVEI) –  
The German Electrical And Electronic Manufacturers' Association

AB Electrolux  
Agilent Technologies  
Apple Europe  
Fujitsu Siemens Computers GmbH  
Hewlett-Packard  
ICL plc  
IKEA Service Center S.A  
Intel Corporation  
Länsförsäkringar Insurance Group  
Lucent Technologies  
Nokia  
Oekopol Institute, Hamburg  
Sanyo  
Siemens AG  
Sony  
Sun Microsystems.  
The Gillette Group Europe/ Braun

## **Benefits**

Market driven and competitive – The most similar to competitive market based economic models. Programs that are managed most efficiently will reduce overall product cost to the consumer, providing a cost competitiveness factor in the marketplace.

Encourages design changes that improve the end of life value and recycle-ability of products. Products designed for recycling will cost less to recycle at end of life. Products designed for longer service life will not show up as a waste as often as those products that have short service lives. Both of these factors should be used as incentives to reduce the cost of the recycling program. When manufacturers are responsible to pay for end of life costs, there is an incentive to improve the quality of the product end of life characteristics.

Creates direct accountability to the source – Manufacturer responsibility requires each manufacturer to provide convenient collection and transportation of products for recycling of end of life electronics back to the manufacturer or their contracted processor.

Flexibility - The manufacturers can establish their own material collection and processing systems, contract the services out to another business or businesses or rely on existing infrastructure and services. This system also allows for the opportunity to utilize a reverse vending or reverse distribution model, which uses the product supply infrastructure to back haul end of life products in trucks that would normally run empty on their return runs.

Potentially reduces the number to steps in handling the product at end of life. If a manufacturer designs a collection and processing system that works efficiently, there should be a minimum number of steps between the consumer and the end of the recycling process. This should prove to be more cost effective and energy efficient. This will have the joint benefit of providing the least cost option and reduced energy consumption, an environmental benefit.

Easy for consumers to use - Consumers will be more likely to participate when there is no additional fees charged for bringing their end of life equipment in for recycling.

Improves In-state sales and sales tax revenues - An “Advanced Recovery Fee” on instate sales will likely drive more sales out of state and to the internet as consumers see an opportunity to save a bit of money on their electronics purchases. This will result in an under funded program and a loss of state sales tax revenue.

Discourages stockpiling – Consumers are more likely to recycle unwanted products rather than stockpile them in basements, attics and garages when a recycling opportunity is easily accessible and offered at no additional cost. It will also significantly reduce the motivation to illegally dump unwanted product on roadways and public lands.

## **Drawbacks**

Confusion - Consumer information may not be clear, leading to confusion as to what to do with end of life products. Individual manufacturer programs may vary significantly.

Minimal accountability to a regulatory authority – Because these types of programs are operated privately and competitively, businesses are not likely to share information about quantities of product returned or material actually recycled into new products, declaring that information proprietary.

Difficult to measure effectiveness – Without knowing the details of products returned, performance cannot be measured. One way of addressing this is through waste composition studies or monitoring incoming wastes at disposal facilities to determine if electronic products are being discarded. However, that would still not demonstrate the recovery rate of the products as there would be no number disposed number against which to evaluate. Another alternative would be to assume that all available products would be collected for recycling then establish a level of responsibility for each manufacturer based on the brands returned.

Relies on self-reporting by manufacturers to measure effectiveness – If manufacturers were willing to provide information on recovery rates of their products, those reports may be questioned as to accuracy due to tampering and number manipulation. Such information is considered proprietary by most companies.

Externalized costs - In some program cases, the manufacturer is only responsible for their end of life products after the product arrives at their receiving dock. This is a major downside in that consumers are not as likely to participate in a program where they have to pay for shipping and handling cost to transport their product back to the manufacturer.

Effective programs must include the costs of collection, transportation and processing of the products in order to maximize consumer participation and product recovery.

Potentially reduces the number of in state jobs associated with recycling – While one of this model's best attributes is that it encourages efficiency and competition, it could very well cut certain collectors and transporters out of the process in order to reduce costs. If that is the case then the work associated with those activities would be eliminated.

On the other hand, more jobs are created and economic activity occurs when materials are recycled rather than disposed.

## **Consumer/Government Responsibility – Advanced Recovery Fee**

In consumer/government responsibility models that are dependent upon a fee charged at the point of retail sale, manufacturers have no responsibility. These models rely on retail business to collect what has become know as an “advanced recovery fee” (ARF). The fees collected at in state retail stores are submitted to the government revenue agency. The funds are then appropriated to another government agency to run a recycling program. The program could be contracted to private entity. In either case, it is the responsibility of the state to assure that end-of-life management of products are taken care of responsibly, by providing subsidies to collectors, transporters and processors to handle returned products.

## **Benefits**

Minimizes involvement of manufacturers – Manufacturers have no involvement with their products after they are shipped from their facilities. For the manufacturers, this eliminates, or significantly reduces, their active involvement in end of life management of their products. This in turn reduces the cost of their products at retail. Fees are charged and collected as a separate cost at point of purchase. Government contracted service providers collect, transport and process products at end of life.

Creates a pool of funds that is used to pay for collection, transportation and processing of products – Costs associated with handling end of life products are covered by the fee. Businesses that provide collection, transportation or processing services are provided prompt payment for those services from a government agency.

Built in performance measurement – In order to receive reimbursement of costs, businesses handling products at end of life are required to report quantities of products collected and maintain documentation for audits. These reports are the basis for cost reimbursement. These data would also provide a performance measure of the various alternatives employed for collection, transportation and processing covered products.

Flexible – Provides an opportunity for many parties to be involved in the collection, transportation and processing of products. This in turn stimulates creativity in approach and efficiency in system design in order to realize the maximum profit available.

## **Drawbacks**

Externalizes (out sources) costs and responsibility to retailers, state government and consumers – By creating a consumer fee at retail, manufacturers have no responsibility for end of life management of their products. While this approach reduces direct cost for the manufacturer, all other parties become involved and responsible for product end of life management:

- Retailers would be required to collect fees.
- Consumers would be required to pay fees at point of purchase, as they dispose of their old products and replace with new.
- Local governments, responsible for solid waste management in the state, will create new systems to manage these and future new products that are introduced, which will require additional revenue to operate.
- State government would collect a new fee, manage it and operate or contract out for collection, transportation and processing services or contract the entire program to a private entity to manage.

More costly - There is no market based competitive incentive to reduce costs to consumers. This model does not encourage the most efficient collection, transportation and processing systems, as there is no incentive to reduce overall systems costs. Retailers will need to be compensated for the service of fee collection. Costs and profits for each entity along the way, from collection to final recycling, will need to be paid. While each of these entities may find efficiencies within their individual company to improve their own company profitability, there is no incentive to improve efficiency within the overall system that will reduce costs to the consumer without regulatory controls, whether by government or the third-party organization. These controls would add more costs to the system. Additionally, the costs of operating such a program by government could be very high. When revenues are generated to pay for government run programs, there is little motivation to reduce overall program costs.

No incentive for improving product design for environmental performance at end of life – With no end of life involvement with their products, manufacturers will be less likely to design their products for ease of recycling or to minimize hazardous substance content.

Reliance on a third party manager adds cost – Creating a third party manager to oversee the accounts receivable and payable process, certify material handlers, and create and use an audit system will be costly. Adding bureaucracy, private or public, will only raise the cost of the program to the citizens of the state. This is not a least cost alternative. Internalizing total life cycle costs into the total cost of the product provides motivations to assure program efficiencies, private, or public.

Perception that the fee is a tax – In these types of programs, fees are established in legislation. They are collected at the point of retail sale as a government requirement, the same as sales tax. While anecdotally, positive comments are received from consumers in states where such fees are charged, those comments are collected from those consumers that are willingly paying the fee at in-state retailers. There has been no attempt to acquire opinions from consumers that are choosing to purchase products out of state to avoid paying fees.

A static fee does not stimulate innovation to improve system efficiency – If a static fee is established in legislation, the system finances programs at a steady state. This provides no incentives to system operators to improve efficiency of the programs in order to reduce costs to consumers or increase private profits.

## **End of Life Fees**

Boiled down further, the issue of responsibility comes down to “who pays?” In reality, in all approaches, the consumer ultimately pays for disposal of end of life products.

Currently, the burden is on those least able to pay - An associated issue arises in relation to end of life management costs; which consumer pays? Currently, a standard practice in the life of electronics is that they are often “handed down” to another person for use – whether a son or daughter going to college, a relative or donated. The recipient of the used equipment is generally of lower income and is the least able to pay for appropriate end of life management. Products are often abandoned, left with thrift or charity organizations or dumped illegally. This places an undue financial burden on government, society and its economy as a whole.

A method of financing end of life management of products that fairly places costs on those that are able to pay is needed. End of life fees do not do that.

Who ever is responsible for financing will work to create efficiencies in their end of life systems in order to minimize costs. When this is the manufacturer, reduced costs will either reflect lower product costs to the consumer or increased profit for the manufacturer. Private industry is in charge to create a competitive program within the marketplace.

## **Recommendation**

### Require Manufacturer Responsibility – Cost Internalization

Based on this review, it would be in the best interest of the citizens of Washington to require that manufacturers take responsibility for their brand products at end of life. If a retail company brands their own product for retail sale, that company is individually responsible for those products. End of life management then becomes another feature of the product, just like additional memory or external audio capability

Cost internalization, when used as the financing mechanism associated with the full program recommended herein:

- Minimizes government run programs and overhead costs;
- Relies on the private sector competition and economic drivers;
- Does not rely on instate sales to generate program revenues, eliminating the impacts of out of state and internet sales on revenue generation;
- Does not create a new state fee or tax to collect, manage and enforce;
- Creates surety for consumers over time that electronic products will be recycled at end of life - there will be a way to dispose of them; and
- Shares responsibility for end of life management of consumer electronic products between those that create the problem rather than making it a problem of government.

This approach relies on government to do what it does best; create rules that everyone lives by, leveling the playing field and enforcing against those that don't play by the rules. It leaves to the private sector what it does best; buy and sell materials and products in the competitive market place.

### Encourage Collaborative Approaches Between Manufacturers

Overall costs will be reduced when more material is handled through the same system. Individual programs will cost more as the volumes of material flow will be lower requiring fixed costs to be repaid from a smaller resource base. Duplication of facilities with high capacity and small flows does not make good financial sense and is not in the best interest of the citizens of the state. Individual manufacturers should collaborate with others to gain efficiencies of scale.

### Build on Existing Infrastructure and Washington State Businesses to the Practical Maximum Extent

Manufacturers should be encouraged to use systems and service providers within the state in order to minimize costs associated with collecting, transporting and processing. However, manufacturers should be encouraged to seek the most effective and least cost options for provision of these services. Consumers will benefit from allowing this kind of competition.

## Urban and Rural Recycling Challenges

A state as diverse as Washington faces many challenges. One size fits all solutions do not work well here. Our current solid waste management laws direct local governments to create solid waste management plans that determine the best systems for unique local circumstances.

Even though there is ubiquity of products, (materials and marketers throughout the country), it is difficult to reverse the product delivery system to take back product after they have been distributed. As population densities get smaller, cost effective collection options become limited.

Local governments have assured that services for collection of wastes and recyclable materials are available to all within their planning jurisdiction. In some areas, drop-off systems are effective, while in dense urban populations, curbside and drop-off opportunities might be offered.

Electronic products pose unique problems for collection. Among them, size and weight concerns related to worker health, safe handling of glass picture tubes containing lead and exposure of the product to moisture. These issues make certain kinds of collection, particularly at curbside, difficult if not impractical.

Collaborating with local government solid waste planning jurisdictions and taking advantage of available public and private infrastructure will assure that services are available throughout the state that are convenient and practical in both urban and rural settings.

### Urban and rural challenges and issues

The Census Bureau defines an urban area as a census “block” with a population density of at least 1,000 people per square mile and surrounded by blocks with an overall density of 500; rural areas are those areas outside of the urban area. There is more urban density in Western Washington, while eastern is mostly rural. Significant differences in population create challenges that call for different solutions in the state.

Some issues are more common to urban areas; others are associated with rural. It is difficult, however, to determine the effectiveness of the solutions because of other contributing factors. For example, is the amount of products collected through an event a result of incentives, good publicity, or buildup of materials in households? It may be any one or a combination of these.

Rather than rating and comparing the effectiveness of the programs, we looked at how each are designed to address some of the common challenges. We can use those program designs and modify them to fit the needs of Washington State. Tables 1 and 2 identify programs that meet the challenges.

### Rural recycling

#### The Effects of Disposal Bans on Rural Recycling of Electronics

Rural recycling, in some areas, cannot compete with landfilling, based strictly on traditional program cost modeling. For example, some collection sites charge end-of-life (EOL) fees, making it cheaper for citizens and businesses to dispose their equipments elsewhere<sup>8</sup>. The result is lower recycling rates in a number of communities.

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<sup>8</sup> Park, Sage, “Electronics Collection in Central Washington,” Department of Ecology, Oct. 2003.

If disposal is no longer an option, recycling becomes the primary mean for handling end-of-life equipments. A ban would support recycling and reuse as well as prevent hazardous materials from entering the waste stream. There are examples of various bans at national, state, and local government levels:

- The Netherlands bans all electronic equipments from landfills and incinerators<sup>9</sup>.
- Switzerland prohibits the disposal of combustible materials in municipal solid waste.
- Maine indirectly bans landfills by making household monitor and television recycling mandatory.
- King County landfills and transfer stations no longer accept computers and televisions for disposal.
- Douglas and Chelan Counties do not accept monitors, televisions, and computers from businesses for disposal.
- Snohomish County Health Department regulations does not allow disposal of hazardous wastes in landfills in the county. As a result, waste management facilities do not accept monitors, televisions, and computers from residents and businesses for disposal.

### Encouraging Participation in Rural Areas

Rural communities tend to have relatively low participation in recycling programs. For various reasons, a large percentage of the population would not bring in old products<sup>10</sup>. Some households have equipments in storage already and are reluctant to pay EOL fees; others are not even aware of recycling opportunities.

Mandatory recycling laws may prompt higher participation rates. It is unclear, however, if such laws will draw more materials out of storage. Some governments have authorized front-end fees, charged to consumer at the point of sales, to finance a program. Once the recycling is prepaid, consumers are more likely to bring back equipments. Such laws are currently in effect:

- The Netherlands Disposal of White and Brown Goods decree leads to front-end fees and “disposal levy” charged at the point of purchase.
- The Swiss Ordinance on the Return, Taking Back, and Disposal of Electrical and Electronic Appliances obligates all end-users to turn in covered equipments. The ordinance also establishes front-end fees.
- California SB 20 mandates advanced recovery fee program.
- City of Kirkland incorporates recycling fee into garbage collection fee, charged equally to all households. The recycling is, in a way, prepaid.

### **Incentives to Rural Consumers**

Electronics owners may be more willing take equipments out of storage if there are benefits or incentive provided them or if they can turn the product in for recycling for free. Fees can eliminate or reduce subsidies from the government, manufacturers, retailers, and other entities. Some manufacturers do sponsor “free”, no-EOL-fees events. Others offer discounts and rebates to consumers if they return their brands. Incentives vary, depending on the type of program:

- Manufacturers finance the Netherlands ICT-Milieu. Consumers may not be aware that manufacturers can internalize the cost and build it into price of new products.

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<sup>9</sup> “Electrical and Electronic Equipment: Waste in the Netherlands,” June 2001, The Netherlands Ministry of Housing, Spatial Planning and the Environment, 14 Apr. 2005 <[http://www2.vrom.nl/Docs/internationaal/14285\\_174elericalequipme.pdf](http://www2.vrom.nl/Docs/internationaal/14285_174elericalequipme.pdf)>.

<sup>10</sup> “Rural Community Electronics Recycling Project – Award #01, Final Report,” October 2002, North East Recycling Council, Apr. 13, 2005 <<http://www.nerc.org/documents/rlcmelrec1102.html>>.

- Gateway recycling offers rebate to consumers who purchase their brands when returning an unwanted computer.
- Hewlett-Packard, Best Buy, and Starbucks teamed up to hold a free event.
- Hewlett-Packard and Office Depot teamed up to hold a free event with consumers dropping off their used products at Office Depot stores. Consumers were limited to returning one item per day.
- Six manufacturers partially subsidize the NxtCycle Shared Responsibility program. The manufacturers pay a percentage for recycling their own brands. Consumers receive credits for bringing back brands of participating manufacturers.
- Financing for the Clark County Computer Reuse and Marketing program is from state funded grants.

## **Marketing and Promotion**

Advertising can also raise participation of a well-informed public. For example, advertisement of the Basin Disposal event in Franklin County occurred for several weeks on television, radio, flyers, and mailed newsletters prior to the event. It is hard to determine the effects of the ads because there were no similar events like it with which to compare. The Take-It-Back Network in King and Snohomish Counties also launched an ad campaign by radio, e-mail, website, and flyers passed out at transfer stations. A study done by the City of Seattle related to the Take-It-Back network showed that direct mail and billboards are the most effective means of promotion in rural areas<sup>11</sup>.

## **Transportation Costs**

Transport costs are usually higher in less populated areas where the travel distance between collection sites and vendors are greater. It becomes necessary to collect and store materials until there is enough volume to cost-effectively transport them directly to recyclers. There are several methods of consolidations:

- The Netherlands uses existing infrastructures. Consolidation points are already available in distribution centers, municipal centers, and regional storage stations.
- Japan relies on retailers and local governments for consolidation points.
- Maine set up statewide consolidation centers to take materials from residents and municipalities.

## **Capacity to Manage Hazardous Materials**

There are communities that collect “informally” whenever residents bring in used products<sup>10</sup>. These places are generally unprepared and unequipped to receive wastes containing hazardous substances. Concerns arise about the safe handling and storage of the products prior to recycling.

Staff training and education can help eliminate unsafe practices. The King County Take-It-Back Network provides technical assistance to its members on how to properly collect, package, and transport equipments for recycling. If effective programs were place informal, and intermittent recycling events would not be necessary.

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<sup>11</sup> “Tool Kits for Setting Up Electronics Recycling Programs: Section 1,” May 2003, Northeast Recycling Council, Apr. 19, 2005 <<http://www.nerc.org/adobe/NebraskaToolkitSection-I.pdf>>.

**Table 1. Rural Recycling Challenges and Issues.**

Programs addressing the issues are marked.

Program	Location Served	Challenges and Issues			
		Landfill competition	Low participation	High transport cost	"Informal" recycling
Netherlands Association for Disposal of "Metaelectro" Products (NVMP)	Netherlands	✓	✓	✓	
ICT-Milieu	Netherlands	✓	✓	✓	
Swiss Association for Information, Communication & Organisational Technologies	Switzerland	✓	✓		
Specified Home Appliance Recycling (SHAR)	Japan			✓	
Hewlett-Packard Mail-back	United States				
NxtCycle Shared Responsibility Program (SRP)	United States		✓		
Hewlett-Packard - Office Depot Partnership	United States		✓		
Gateway Trade-in	United States		✓		
Advanced Recovery Fee	California		✓		
Cost-Internalization	Maine	✓	✓	✓	
Franklin County - Basin Disposal Event	Franklin County, WA				
Computer Recycling and Marketing	Clark County, WA		✓		
Collection Event	Douglas- Chelan Counties, WA	✓			
Take-It-Back Network	King County, WA	✓			✓
Transfer Stations Drop Box	Snohomish County, WA	✓			
Curbside Collection	Kirkland, WA	✓	✓		
Hewlett-Packard - Starbucks - Best Buy Partnership	Seattle, WA	✓	✓		
Best Buy Event	Tukwila, WA	✓			

## **Urban Recycling**

### **Volume and Operational Capacity**

Urban areas face problems that come with serving a large population. Businesses and residents turn in large volume of equipment, especially during free collections. If the volume of products received exceeds the capacity of the event operators, a project may go over budget and experience traffic build-up, labor shortage, and lack of storage room. Controlling the volume, therefore, becomes critical<sup>12</sup>.

There are different ways for managing the volume. Ongoing collections prevent a rush of incoming materials. Because collection is done “continuously”, residents are not in a hurry to turn in equipments; there will be a steady, manageable flow of materials at all times. Restrictions can also be placed on the number of items accepted. If priced properly, end-of-life (EOL) fees can keep the volume down while generating revenues. Some of the solutions are simple:

- The Netherlands have one-to-one, old-for-new return of equipments at retail stores.
- Government in Switzerland, Japan, California, and Maine all implement ongoing collection.
- Hewlett-Packard and Gateway run ongoing manufacturer programs. Residents and businesses are able to choose their own pick-up time and location through a mail-back system.
- NxtCycle subsidized end-of-life fees may limit the number of materials received.
- Hewlett-Packard and Office Depot event only take one PC-monitor-printer system per customer a day.
- King County Take-It-Back Network and the City of Kirkland curbside electronics collection program are provide on-call, ongoing collection.
- Clark County Computer Recycling and Marketing established permanent sites and schedule for ongoing collection.
- Snohomish County established permanent electronics collection at its transfer stations.
- Franklin, Douglas and Chelan County have used end-of-life fees to finance the events and limit the number of participating businesses.
- Best Buy sets end-of-fees to defray recycling cost, which may help lower the number of participant vehicles in the parking lot.

### **Labor Intensity and Costs**

With more materials coming in, collection can be labor intensive. Staff is needed to unload, sort, package, and store materials in preparation for shipping. At one-time events, more staff must be present to monitor activities and control traffic. Some of the tasks require staff members to be well-trained.

Ongoing collection, with materials “trickling” in, reduces the need for large staffs. One-time events may have sponsors, such as retailers, who provide labor and in-kind support. Partnership with entities like repair shops, refurbishers, government, and manufacturers can bring in more trained staff. Help may be solicited from volunteers and non-profit organizations. Using prison labor has benefits for workers and communities as well as draw backs in losing jobs to low paid or no pay workers.

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<sup>12</sup> “Good Guys Electronics Take-back Pilot Project”, Northwest Product Stewardship Council, Feb 2005.

There are a number of strategies for dealing with labor demands:

- Ongoing collection programs reduce the number of staff required and other associated costs such as training as has been demonstrated in The Netherlands, Switzerland, Japan, and Maine
- California pays established rates to collectors and recyclers offering ongoing services and pay their own staffing.
- Hewlett-Packard, Office Depot, Best Buy, and Starbucks have their own employees work in the collection, transport, and recycling events.
- Participants in the King County Take It Back network are existing businesses that have integrated the services into their regular operations.
- Clark County Computer Recycling and Marketing program uses the Work Center prison labor to sort and dismantle equipments. Students at Clark College and a non-profit organization, Free Geek, refurbish the computers. The students transport the equipments through a “Van Training” program.
- Kirkland curbside recyclables collection program has added electronic products into the materials collected, using the same drivers and equipment that collect traditional recyclable materials.

### **Sorting for Reuse**

Communities that support both recycling and reuse face another challenge. In order to be reusable, the equipments must be functional and up-to-date. Most residents, when questioned, would reply that their equipment still functions even if that is not necessarily the case. Checking each item for reusability is time-consuming and can slow down collection<sup>13</sup>.

Rather than being checked on-site, equipments can be transported elsewhere for evaluation. This may be done at consolidation points or recycling facilities. Some recyclers screen materials and set aside a percentage for reuse:

- The Netherlands ship materials to Mirec and Coolrec. These recyclers are responsible for sorting out reusable items.
- Maine uses its consolidation facilities to count brands and separate reusable materials.
- King County Take-It-Back Network has members who specialize in refurbishing, repairing, and/or reselling the equipments.
- Clark County Computer Recycling and Marketing sends all materials collect to a Jail Work Center to separate functional units for refurbishing.

In general, ongoing collection seems to solve most of the problems associated with urban recycling. The large number of participants can be overwhelming, especially with the rapidly increasing population. Having a permanent program in place will keep systems from being inundated with products and reduce the overall cost of operation, particularly in relation to labor costs.

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<sup>13</sup> Homa, John, “Used Computer Recycling Collection Events,” Knox County, June 2004.

**Table 2. Urban Recycling Challenges and Issues.**

Programs addressing the issues are marked.

<b>Challenges and Issues</b>				
<b>Program</b>	<b>Location</b>	<b>Volume Control</b>	<b>Higher Staffing</b>	<b>Sorting for Reuse</b>
Netherlands Association for Disposal of "Metaelectro" Product	Netherlands	✓	✓	✓
ICT-Milieu	Netherlands	✓	✓	
Swiss Association for the Information, Communication and	Switzerland	✓	✓	
Specified Home Recycling	Japan	✓	✓	
Hewlett-Packard Mail Back	United States	✓	✓	
NxtCycle Shared Responsibility	United States	✓		
Hewlett-Packard - Office Depot Partnership	United States	✓	✓	
Gateway Trade-in	United States	✓		
Advanced Recovery Fee	California	✓	✓	
Cost-Internalization	Maine	✓		✓
Take-It-Back Network	King County, WA	✓	✓	✓
Computer Recycling and Marketing	Clark County, WA	✓	✓	
Collection Event	Douglas and Chelan Counties, WA	✓		
Franklin County - Basin Disposal Event	Franklin County, WA	✓		
Transfer Stations Drop Box	Snohomish County, WA	✓	✓	
Curbside Collection	Kirkland, WA	✓	✓	
Hewlett-Packard - Starbucks - Best Buy Partnership	Seattle, WA		✓	
Best Buy Event	Tukwila, WA	✓	✓	

## **Government Mandated Participation or Voluntary Programs**

The efforts to collect, transport and process electronic products in place today are voluntary. We believe, based on the agency's recycling survey, that these programs do not effectively capture a significant quantity of end of life electronic products. It has been reported that most electronic product presently collected for recycling are received from business, industry and governments, which are not the primary target of ESHB 2488. The quantities of consumer electronic products collected have primarily been collected at short term collection events sponsored by partnerships between retailers, local governments and manufacturers.

While by themselves, the quantities collected at these events look impressive, on the greater scale of the total electronic products available for recycling, these quantities are small in comparison.

Some manufacturers have set up voluntary take back programs that charge end-of-life fees (\$20 to \$30) to consumers for each unit returned. The consumer packages and pays for shipping. It appears that the participation in these programs has been relatively low. These voluntary programs are financed by the consumer.

Our research suggests that the most effective electronic recycling programs are mandated by laws and enforced by regulations. The laws not only mandate manufacturer responsibility and physical take back of products, but also create incentives for clean product design.

It should be noted that, aside from some preliminary discussion, the SWAC Subcommittee agreed that the program should not be voluntary, as voluntary programs did not meet the criteria set by the Subcommittee for successful electronics recycling (see facilitator's report).

### **Recommendation**

The Washington State Legislature should adopt a law for the state requiring manufacturer responsibility in the management of end of life electronic products. While this would be a state law requiring regulations to be developed, plans to be written and approved by the state, and reports to be made, it will not require the state to collect fees or taxes from consumers for program implementation. It will keep government out of the business of handling, managing or paying for end of life electronic products and recycling services. It will minimize government involvement, place responsibility between the manufacturer and consumer where it belongs, and provide the most cost effective alternative for the citizens of the state while realizing maximum recovery of end of life electronic products for recycling.

Government's role is to establish rules and agreements on how we are going to live together and enforcing those rules and agreements on behalf of the citizens the government represents. Government at all levels is not in a position to be involved in the handling the materials of commerce. Government does not manufacture products. Government should not be responsible for handling products and materials at any point in product life-cycles, other than its responsibilities as a user of those products.

## Accountability for Historic, Legacy, Orphan and Free Rider Products

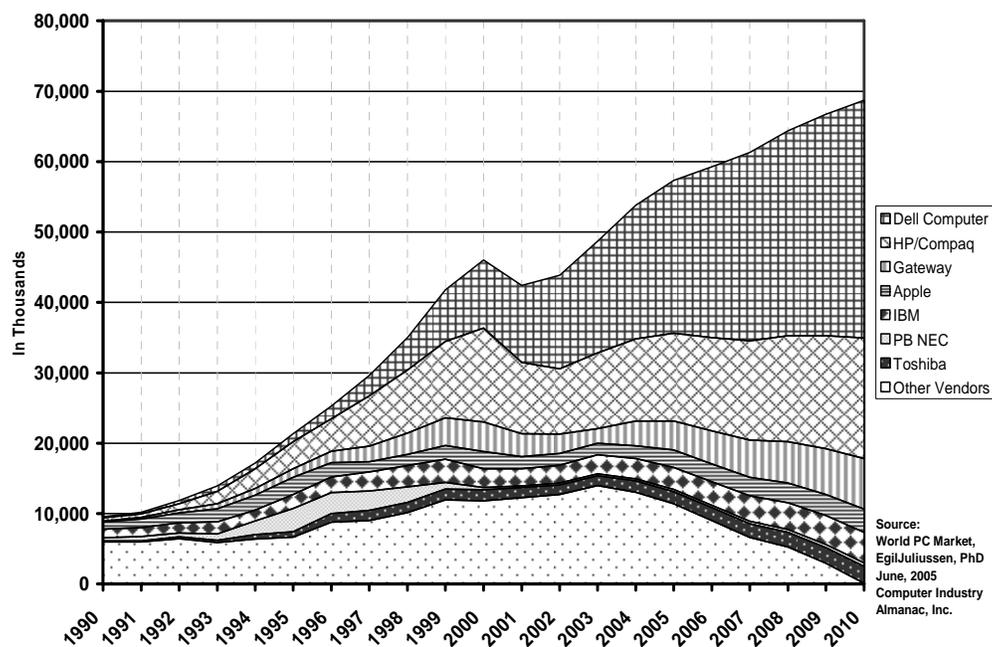
Historic and legacy products are those products that are collected first in any recycling program, the manufacturers of which may no longer be in business or no longer command a significant portion of the product market. Orphan products are those products that cannot be identified or ascribed to any particular manufacturer and are in possession of consumers prior to the adoption of any legislatively established program. This is another major problem that has held back progress in national efforts to establish electronic product recovery programs.

Lastly, manufacturers that are new entrants into the electronic product markets are termed "free riders" as it is their products that generally become "orphan at end of life. Some may only be in business for a short time. When their products reach end of life, the manufacturer may not be around to finance its collection, transportation and processing costs for recycling.

A couple other phrases that are important to understand in this discussion are "return share" and "current market share."

"Return share" refers to a portion of electronic products returned for recycling that is identifiable by brand. "Current market share" refers to the portion of current product sales commanded by a company.

**Personal Computer Shipments Within the USA by Manufacturer**



As this graph demonstrates, no particular company controlled a dominating market share in the early days of the high technology revolution. Apple, IBM and to a certain extent, Compaq, were the market leaders in the early 1990s and can be singled out. However, as the graph illustrates, competition dominates the market with the introduction of new products to the consuming public. There were many players vying for sales of only a few products that were expensive.

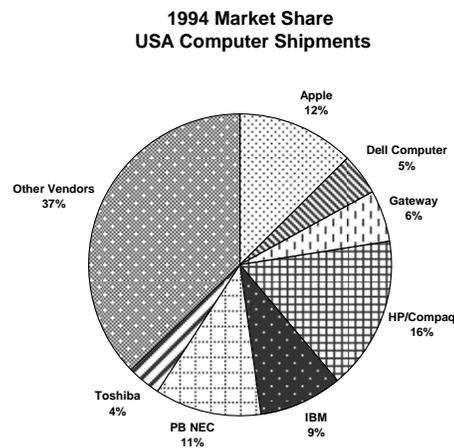
This began to shift in the mid 1990s and Compaq held the greatest single portion of the market through 2002, when Hewlett Packard acquired the company. Through 2002, the two companies combined held

market dominance. Dell Computer surpassed HP Compaq about the same year and has held the primary market share since. The many other computer manufacturers that held more than 50% of the market in 1990 have realized little growth and are expected to taper off significantly by 2010.

Only “early adopters”, consumers willing to pay the high prices, had computers. As markets mature, prices began to fall making products more affordable to more people. Manufacturers that provided a high quality product for less money than their competitors did won in this phase. While well-financed, mature and respected manufacturers benefited from brand familiarity and customer loyalty, they only retained their market share, as the above chart illustrates. Consumers that purchased later in the development cycle had no brand loyalty. Hence, the growth of lower priced products from maturing manufacturers like Dell and Gateway commanded the market for new consumers.

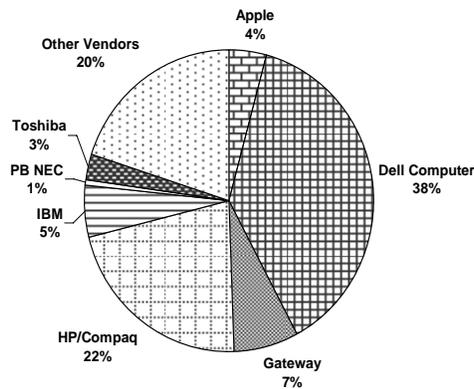
Using the “return share” approach makes sense. The return flow is small based on early market share; the overall cost of the start up program should be small. The return flow is composed of a small number of products generated by early adopters. As time goes by and the return flow increases when products begin to show up from the market expansion phase, in this case Dell Computer, and to a lesser extent, HP/Compaq and Gateway. The financial burden will be small for early flows compared to what is to come in the future.

Past brand sales will reflect the brand composition of returned computers. Therefore the return share for various manufacturers would be proportionate to those early market shares. Data collected in Minnesota and Florida suggests that the average age of collected computers is about eleven years. If we looked at the market the market share in percentages eleven years ago (1994), we would see the following:

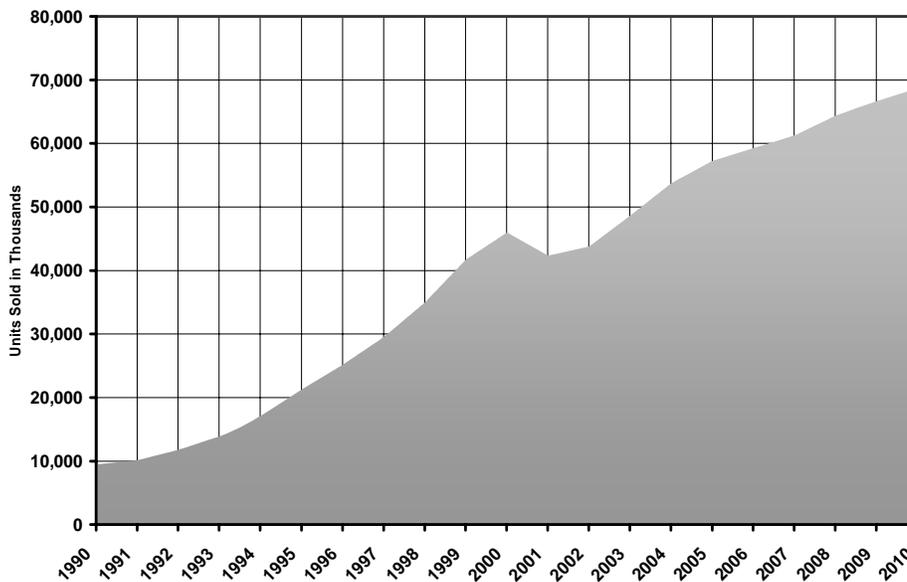


The number of units returned for recycling, however, will be small compared to current market share. We would anticipate that if a statewide recycling program for electronic products existed in 2005, there would be approximately 233,420 personal computers reaching end of life and would need to be recycled.

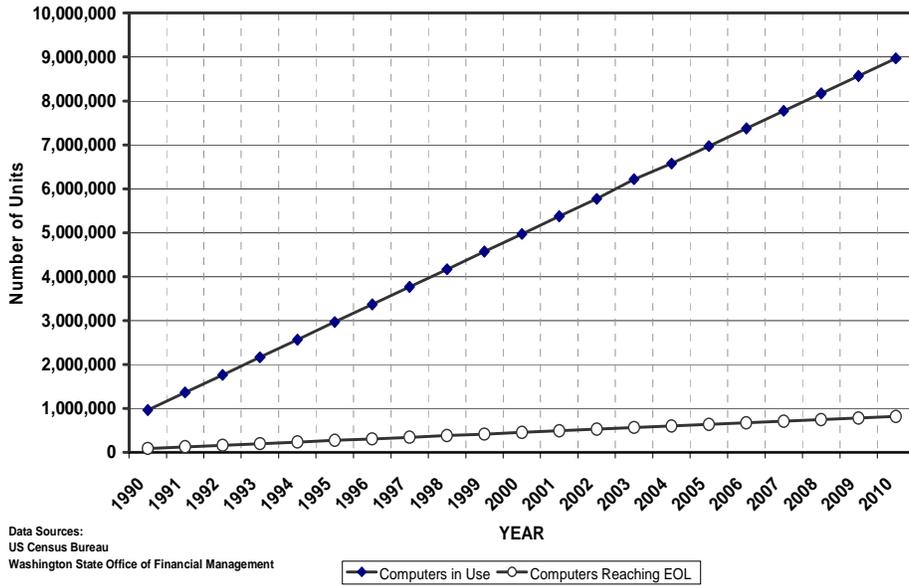
**2005 Market Share  
USA Computer Shipments**



**USA Computer Shipments All Manufacturers**

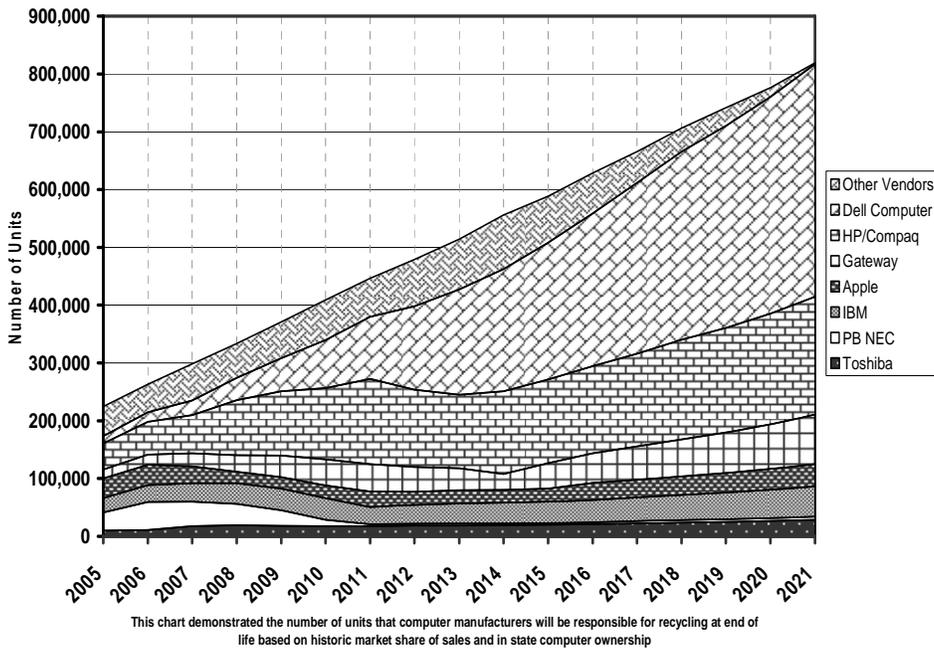


### Computers In Use in Washington State With Number Expected to Reach End of Life



The following graph represents the number of units for which each company will be responsible. The number of computers produced by “Other Vendors” represents half of their actual number of units produced. In this calculation we assume that the other half would be from out of business or unidentifiable sources. This second half is redistributed to all the others based on their share of returned product.

### Manufacturer Return Share of EOL Computers



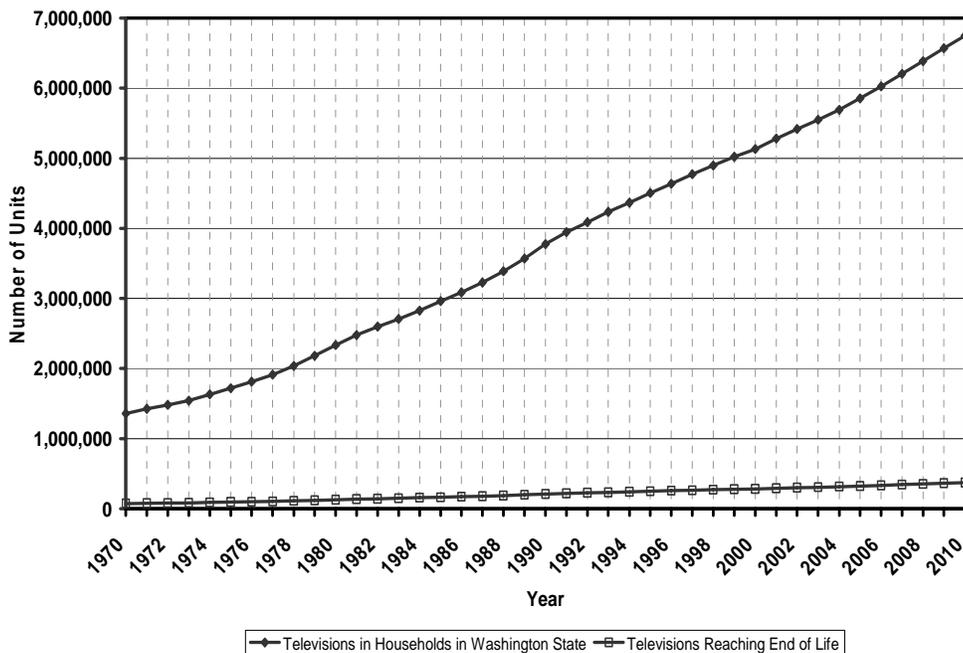
In the first couple years of the recycling program, the return share will be different from the current market share. HP/Compaq will maintain its dominating market presence and will grow slightly. Dell Computer dominance grew rapidly and will continue to do so. By 2010 and after, Dell will be the primary manufacturer responsible for returned electronic products. “Other Vendors” such as Sharp, Sony, Panasonic and retailer branded products will command less and less of the market. Their return share will continue to decline as Dell expands. With the exception of Packard Bell/NEC, the remaining companies are expected to maintain about the same market share and return share.

Televisions are a bit different. The first television broadcasting station in Washington State was KING TV, licensed in 1948. Broadcasting station licenses grew rapidly throughout the 1950s and 1960s, with few new stations added in the ensuing years. Cable television, rather broadcast television, started in the 1950s but did not have a strong share of the broadcast market until the 1980s and 1990s.

With household saturation of nearly 100% by 1970, one might assume that the only growth in television sales might have been equal to that of the growing population. However, that was not the case. In 1970 nearly all households had one television. By 2010, we estimate that the average household in Washington will have 3 televisions. The number of households in Washington has grown even more rapidly than the state population, reflective of the reduction in family size.

The average life of televisions is 17 to 18 years, as determined by sorts of recycled televisions in Florida and Hennepin County, Minnesota. The chart below illustrates the growth in the number of televisions in use in Washington and the number of televisions anticipated to be reaching end of life. Because of the rapid population growth experienced in Washington over the past 35 years, the number of end of life televisions will be low in the early years of a recycling program.

**Televisions in Washington State Households  
With Expected End of Life Units**



Presently in 2005, there are an estimated 2,738,947 computers and monitors, and 6,350,331 televisions in use in Washington households. There will be approximately 4 million new computers with their associated monitors and peripherals sold into the state from 2006 to 2010. In that same period, 3.2 million new televisions will be purchased. These numbers will grow each year beyond 2010. The number of products to be managed at end of life in the future far outnumbers the quantity historic, legacy and orphan products in existence prior to 2005.

This issue should not be a barrier to establishing an electronic product recycling program for the state. These products will be managed.

## **Recommendation**

The responsibility for financing the management of branded historic, legacy and orphan products will be that of the owner of the brand on a percentage basis of returned products of the prior year. A brand that has been acquired by another company will be the responsibility of the acquiring company. Responsibility for branded products from manufacturers that are no longer in business and non-branded orphan products will be divided among current manufacturers whose products are being sold in and into the state for use.

All covered electronic products sold to consumers for personal use must be labeled by the product assembler/manufacturer. The label must be affixed in a way that it cannot be removed. The owner of the product at end of life will return their product to the branded assembler/manufacturer according to the process established in the approved end of life management plans.

Companies with less than a 5% market share and less than ten years of sales history into the state must participate in the standard program run by the Materials Management and Finance Authority. The authority will use current market share to distribute the cost of the standard program among the participating manufacturers.

## Scope of Program

There are several aspects to consider when establishing the scope of the program, such as:

- Should the program include reuse?
- What products really should be included?
- Who should be able to use the services?

### Reuse

Reuse of products has generally been a private sector enterprise. With products other than electronic, thrift stores and charitable organizations have flourished. Used but usable items available in second-hand stores have value and a market demand.

Certain items loss value quickly, however, and do not have a strong market demand. When these products are donated, or even “traded in” at electronics retailers they are most often considered waste and are sent out for recycling. The intrinsic value to the products may have a lesser value than that of the cost of handling and processing, so a fee is charged for the service. For the thrift industry, these fees constitute a significant portion of their operating budget.

Most products have a cost associated with end of life disposal. The most known and active reuse system in the country is the used car industry. That market is strong, needs no intervention to cause it to work, and is very much part of the socio-economic fabric of our country. However, at the end of their functional life, vehicles go to wrecking yards, for a fee or payment. There they are shredded, with materials of value recovered and recycled.

A similar system for electronic products does not exist.

### Products

The legislature identified covered electronic products as televisions, computers and computer monitors sold in the state for personal use. This definition is very narrow in scope, avoiding the inclusion of those same electronic products from commercial, small business, governments and schools. The quantity of electronic products from these sources exceeds the number of the same products in use by consumers for private use.

In addition, there are large quantities of other electronic products available to consumers, many with short life cycles. Cellular telephones, audio equipment, video gaming equipment and home convenience appliances are but a few of them. Add to that the large quantity of office equipment used in small business, government, and schools other than computers, such as fax machines, copiers, printers, calculators, and telephones, the quantities become significant.

The quantity of electronics being recycled and the quantity of products covered by ESHB 2488 is small compared to the quantity available for recycling.

## **Scope of Service**

Due to the fact that the definition of covered electronic products in the law only focuses on consumer level televisions, computers and monitors, one could assume that any collection, transportation and processing system established for product recycling should only focus on the individual citizen's personal use products. However the bill did ask Ecology to evaluate options for small business, governments, schools and charities.

The objective for these sectors should be the same as for consumers; "to find the least cost alternative for the citizens of the state that results in the maximum amount of end of life product being recovered."

## **Recommendations**

Reuse – Reuse is dependent upon the value of the usefulness of a product. If the product remains useful, the value of the product is more than the intrinsic value of the materials of which it is made. When a product is no longer useful, when it can no longer perform the function for which it was designed, that functional value is reduced to zero. The product's remaining value is in the materials that can be recovered and recycled. When the value of the material is less than the cost of handling and processing, the product becomes a liability.

Reuse programs should remain, as they are, independent from a regulatory structure. Free enterprise will profit from the reuse of electronics with remaining functional value. If a product is determined to be of no functional value, the holder of that product will be able to send it through the collection, transportation and processing system identified by its manufacturer at no expense.

Products – It only makes sense that any system that is developed be used for all electronic products. At the point that the legislature is willing to address this issue, perhaps after some time and experience with computer and television recycling, it should authorize the study of recycling of those products.

Scope of Service - The service level provided to small business, government, schools and charities should be equivalent to services provided to private citizens. The economic theory of scale would indicate that the greater number of clients served, the lower the cost, as fixed costs can be spread over a broader population. With individuals, business, government, schools and charities involved, end of life management of any product will be cheaper for all. Creating individual programs sector by sector will be most costly and burdensome.

## **Recovery, Reuse, and Recycling Goals, Standards, Requirements**

There are no mandatory recycling requirements for any specific material type in Washington State. There is no mandatory state level recycling programs. The Revised Code of Washington requires that local solid waste planning jurisdictions assure that adequate recycling services are available for residents to access. What that access is, is determined by the planning jurisdiction. Local jurisdictions can establish mandatory participation if they choose. Mandatory participation is not required by state law.

In 1989 the legislature established a goal of recycling 50% of solid wastes generated in the state by 1994. The goal was not reached. Reasons for not reaching the goals are many, such as:

- Loss of funding to support public outreach and education programs that inform residents about recycling opportunities;
- The booming economy of the 1990s created more consumption of products while the recycling industry did not keep pace with the supply of recyclable materials available;
- The unprecedented population growth in the state brought new residents who were unfamiliar with recycling opportunities;
- Initiative 601 caused the elimination of programs that supported recycling, such as the tire recycling account and the solid waste management account.

The date to meet the goal was recently changed to 2007. However, it remains a goal without consequences should it not be met.

Goals, targets or standards are only effective if there is a system established to monitor progress and suggest process changes to achieve them. In addition, consequences need to be established and enforced. If such a system is not established, or worse, established and then closed down, the goal, target or standard will not be met.

Likely motivators for manufacturers include financial penalties, a loss of the ability to sell their products within the state or a combination of the two depending upon the severity of non-compliance.

### **Recommendations**

The intention of the legislature should be that all unwanted electronic products be collected and processed at end of life. This would essentially establish a requirement that all products that are no longer wanted must be processed through the established systems. By doing so, the need to establish a percentage recovery rate, along with the difficulties of doing so, are eliminated.

In addition to establishing the legislative intent, a fee for the privilege to dispose of electronic products should be levied. The primary incentive in our culture to encourage consumers to do anything is financial. Using a financial incentive to make the cost of disposal more expensive than recycling will stimulate the desired behavior. A consumer that desires to dispose of an electronic product should be assessed a fee of \$25 for that privilege in addition to any associated collection and disposal costs. Such a fee will provide enough of a financial incentive to drive products into the free recycling collection system.

Consequences – Consequences should provide an incentive to comply rather than a penalty for non-compliance. Penalties are only effective incentives when the cost is high enough to cause the desired behavior should there be resistance.

The target year for compliance with an established recovery rate should be 2010. Actions should be taken thereafter, any time that the target recovery rate is not met for two consecutive years.

Depending upon the level of compliance, corrective actions could:

- A market based “sale of excess recovery” achieved by those programs that exceed their target recovery rate to programs that under achieve.
- A penalty per percentage point not achieved could be assessed
- Required establishment of a reverse distribution system in collaboration with retailers in the state.
- Revocation of the privilege to sell covered electronic products within the state.

The preferred alternative to these corrective actions is a market-based approach using the “cap and trade” model developed for reduction of carbon dioxide emissions. Manufacturers that exceed their recovery rate based on return share would sell the excess to the companies that do not meet their target. This kind of market competitiveness should stimulate aggressive recovery programs.

## **What is Considered Recycling?**

ESHB 2488 directed Ecology to recommend an electronic product collection, recycling, and reuse program for the state. According to Chapter 70.95 RCW SOLID WASTE MANAGEMENT -- REDUCTION AND RECYCLING, “recycling” means transforming or remanufacturing waste materials into usable or marketable materials for use other than landfill disposal or incineration.”

Clearly, by this definition, incineration or landfill disposal of end of life products does not constitute recycling. Recycling is “transforming or remanufacturing waste materials into usable or marketable materials...” Since ESHB 2488 is focused on electronic collection, recycling and reuse, the use of materials contained in electronic products should only be recovered as a material for use within the economy. Combustion of waste materials as fuel for energy is not recycling.

This does not preclude the application of heat to transform recovered plastics into pellets or scrap metal into ingots or sheets for commercial application, for example. However, the heat source cannot be from combustion of the recovered material itself and be considered recycling.

### **Recommendations**

The definition of recycling is clearly stated in RCW 70.95. Directing recovered material to any other purpose other than “...transforming or remanufacturing waste materials into usable or marketable materials...” will not be considered recycling for purposes of meeting the target recovery rate. This does not exclude the ability to direct the material to an incineration or landfill facility should the manufacturer choose to do so within their plan, nor does it exclude disposal of by-pass wastes and materials with no recycling markets.

## Export of Electronic Products

The bill directed Ecology to work with the US Environmental Protection Agency to determine the amount of electronic waste being exported from Washington subject and not subject to federal regulation. The bill further directed Ecology to identify methods to determine if exports of electronic waste from Washington are in compliance with national laws in destination countries.

There is currently no way of knowing how much electronic product is exported for reuse or recycling in foreign countries. Exports are not track in the level of detail needed. Exports are tracked by codes established by the Census Bureau and assigned by the exporter. These codes are known as harmonized tariff codes. There are no separate codes for international trade in waste electronics for recycling and reuse. When electronic products are exported as a recyclable commodity, they are not subject to reporting requirements established by 40 CFR 262. The codes that can be used to record their export might include “recyclable materials” which includes everything from plastics to paper to scrap metals; or “televisions” which include all televisions use or new.

There is a potential of petitioning for additional codes to track recyclable materials separately. The amount of time necessary for that process is unknown.

We do know how much hazardous waste has been exported to foreign countries due to reporting requirements established by the federal government. Under 40 CFR 262, any hazardous waste that is exported must be reported to the US EPA. The EPA has made their information on hazardous waste exports from Washington available to Ecology. There is no reporting of electronic waste being exported.

According to anecdotal information from environmental groups and recycling businesses, the percentage of electronic waste collected for recycling that eventually is exported offshore is quite high.<sup>14</sup> The Basel Action Network (BAN), a Seattle based group that tracks this issue, believes that the figure for Washington State is probably around 50%<sup>15</sup>. Earlier, BAN estimated the figure at around 80%, but since then much of the waste has been directed to more responsible recyclers that refuse to export hazardous components. The 50% figure, while speculative, is realistic because the economics of the trade makes sense. Asian markets pay the highest for metal scrap, the labor costs there for low-tech and often dangerous recycling is very cheap, and due to environmental norms in North America, consumers are willing to pay recyclers to take their equipment. Material processors charge consumers to take their products for recycling and then, after processing sell the material to Asian scrap brokers. Further, due to the imbalance in trade between the US and China, the cost of sending back a container to China is at the low end of the shipping business because China needs containers for export.

In the mean time, there is no way to regulate the export of materials designated as recyclable. Materials can slide through the ports of Washington un-noticed. When delivered to the buyer in the receiving country, there are no mechanisms that create a traceable path back. The buyer owns the material and is at liberty to determine what is done with it, even if it is disposed.

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<sup>15</sup> “Exporting Harm: The High-Tech Trashing of Asia”, [www.ban.org](http://www.ban.org)

The Basel Action Network has provided these additional comments:

While the export of the electronic waste is not illegal, the importing of hazardous wastes by most Asian countries is. This is due to two reasons. First, there are national import prohibitions for electronic waste in some countries. China, most notably, has had an import ban in place for the last 5 years. The second reason is due to the Basel Convention on the Control of the Transboundary Movement of Hazardous Wastes and Their Disposal. Under the Basel Convention, certain electronic equipment at end-of-life, going for recycling and/or disposal, is considered to be a hazardous waste. Among other electronics, this includes cathode ray tubes found in monitors and TVs, as well as circuit boards, which are likely to qualify as hazardous waste because of their high leaded-solder content.

Most countries of the world are Parties to the Basel Convention (currently the number of Parties or ratifiers is 165). The United States is not a Party to the Convention. The Basel Convention stipulates that Parties cannot normally trade in hazardous wastes with non-Parties without a special multilateral or bilateral agreement, consistent with the Basel Convention. The US is Party to one such agreement for export and that is an agreement with the OECD group of 30 developed countries. However, developing countries in Asia and elsewhere, which are almost all Basel Convention Parties, are forbidden from importing hazardous electronic waste from the United States. In fact, the list of countries for which import of hazardous electronic waste from the US is illegal is around 130 countries (attached).

It is expected that despite the violation of the laws of importing countries, this export still takes place from Washington State and elsewhere in the United States, regularly. The reason for this is that it is very difficult for importing countries to enforce import bans due to the sheer volume of containers arriving at ports, the difficulty in assessing whether equipment is working or non-working (wastes), and a general lack of enforcement infrastructure in developing countries. Further, many exporters are known to provide bribes to ensure that containers arrive uninspected. Finally, as long as the US remains outside of the Basel Convention or otherwise refuses to control its hazardous electronic waste exports, the export is entirely legal in the US territory. However, it is not advisable for Washington to continue to allow such aiding and abetting of such illegality even if it technically occurs on foreign shores.

Meanwhile other developed countries are increasingly stepping up enforcement and controls on such exports. The European Union has banned such exports of hazardous electronic waste in accordance with a Basel Convention decision (Basel Ban Amendment) and has recently engaged in an enforcement exercise to educate their exporters and waste brokers. Canada has notified all recyclers that it is forbidden to export electronic waste to China (because of the Chinese import ban). Australia has strictly regulated its exports and requires significant testing to show that equipment being exported is not waste but is in working condition.

In the absence of similar federal action, States have tried to place restraints on export. It remains to be seen whether these efforts will prove effective in stemming the export tide. Lastly, will new information become known in relation to hazard characteristics of electronic products and the materials from which they are made? Concerns over materials such as polybrominated diphenyl ethers (PBDEs), the fire retardant contained in most covered electronic products, are being raised.

# **The Effects of Landfill Disposal Bans and Suitability of Lined and Unlined Landfills for Disposal of Electronic Products**

## **Disposal Bans**

Disposal bans of various products have been adopted by state and local governments throughout the country. Generally, disposal bans are imposed to improve the quality of the waste stream entering waste management facilities. For example, cathode ray tubes are banned from disposal in Massachusetts due to the fact that the state is heavily dependent upon incineration of solid wastes. Eliminating lead sources improves the quality of air emissions and ash that will be disposed.

Bans are also used to encourage utilization of particular materials rather than disposal. Materials have value that should be retained within the economic system. A metals disposal ban, for example, would assure that materials such as aluminum and steel are recycled.

Again, local government has lead responsibility for solid waste management. While there are no statewide product disposal bans in Washington, 13 counties in the state have initiated bans or actions that have the same result, on disposal of certain electronic products.

There is no evidence that disposal bans result in more illegal dumping of the banned product. Many local governments have exercised their authority to ban products from disposal in landfills within their jurisdiction. The following table describes local bans that are currently in place.

County	Landfill	Incinerator	Transfer Station	Export?	Bans	Bans on Residents or Business?				Recycling Programs						
						Computers	Televisions	Monitors	Others	Partnership	Ongoing	1 time	Type	Fee	Incorporated	Subsidized
Adams	0	0	2	Klickitat County landfill	N	-	-	-	-	N	N	N	-	-	-	-
Asotin	1	0	0		N	-	-	-	-	Pb	N	Y	Drop-off	Resident free, business pay	N	N
Benton	1				Y <sup>1</sup>	B,R	B,R	B,R	-							
Chelan	0	0	3	Douglas County landfill	Y	B	B	B	-	Pb	Y	N	Annual drop-off	Determined by weight		
Clallam	1	0	0	No	N	-	-	-	-	N	N	N	-	-	-	-
Clark	0	0	2	Morrow, Oregon landfill	N	-	-	-	-	Pb-Pr	Y	N	Drop-off	Resident free, business \$10/item	N	Y
Columbia	0	0	1	Walla Walla landfill	N	-	-	-	-	N	N	N	-	-	-	-
Cowlitz	1	0	0	No	N	-	-	-	-	N	N	N	-	-	-	-
Douglas	1	0	0		Y	B	B	B	-	Pb-Pr	Y	N	Annual drop-off	\$15,\$25/TV, \$10/PC, \$12/monitor	N	N
Ferry	0	0	1	Klickitat County landfill	Y <sup>2</sup>	-	-	B,R	-	N	N	N	-	-	-	-
Franklin					N	-	-	-	-							
Garfield	0	0	1	Asotin County landfill	N	-	-	-	-	N	N	N	-	-	-	-
Grant	1	0	0	No	Y	B	B	B	B	Pb	N	Y	Collection event	\$0.35 per pound	N	N
Grays Harbor	0	0	6	Klickitat County landfill	N	-	-	-	-	N	N	N	-	-	-	-
Island	0	0	4	Klickitat County landfill	N	-	-	-	-							
Jefferson	0	0	1	Klickitat County landfill	N	-	-	-	-	Pr	Y	N	Drop-off	\$0.35 per pound	N	N
King	1				Y	-	B	-	-	Pb-Pr	Y	N	Take-It-Back network	End-of-life fees	N	
Kitsap	0	0	1		Y	-	B,R	B,R	-	Pr	Y	N	Drop-off	\$17-40/TV, \$10/monitor	N	N
Kittitas	0	0	2		N	-	-	-	-	Pb	Y	N	Drop-off	Unknown	N	
Klickitat	1	0	0	No	N	-	-	-	-	N	N	N	-	-	-	-
Lewis	0	0	2	Klickitat County landfill	Y	B,R	B,R	-	-	Pb	Y	N	Drop-off	\$2/PC, \$8/monitor	N	N
Lincoln	0	0	1	Klickitat County landfill	N	-	-	-	-	N	N	N	-	-	-	-
Mason	0	0		Klickitat County landfill	N	-	-	-	-	N	N	N	-	-	-	-
Okanogan	0	0	3	Klickitat County landfill	N	-	-	-	-	N	N	N	-	-	-	-
Pacific	0	0	2		N	-	-	-	-	N	N	N	-	-	-	-
Pend Oreille	0	0	3	Klickitat County landfill	N	-	-	-	-	N	N	N	-	-	-	-
Pierce	1	1	0	No	Y	-	B	B	-	Pr	Y	N	Drop-off, curbside	Varied	N	N
San Juan	0	0	3	Arlington, Oregon	N	-	-	-	-	N	N	N	-	-	-	-
Skagit	0	0	3	Klickitat County landfill	N	-	-	-	-	N	N	N	Refer to King County	-	-	-
Skamania	0	0	1	Klickitat County landfill	N	-	-	-	-							
Snohomish	0				Y	B,R	B,R	B,R	B,R	Pb	Y	N	Drop-off	\$20/TV, \$10/PC, \$14/monitor, \$27/console	Y	
Spokane	0	1	2	Klickitat County landfill	Y	B,SQG	B,SQG	B,SQG	-							
Stevens	1	0	4	No	N	-	-	-	-	N	N	N	-	-	-	-
Thurston	0	0	1	Klickitat County landfill	Y <sup>3</sup>	-	B,R	B,R	-	Pb	Y	N	Drop-off	\$5 plus weight, \$10/CRT	Y	Y
Wahkiakum	0	0	1	Cowlitz County landfill	N	-	-	-	-	N	N	N	-	-	-	-
Walla Walla	1	0	0		Y	LQG	LQG	LQG	-	Pr	Y	N	Drop-off, pick-up	Varied		
Whatcom	0		4	Klickitat County landfill	Y	B	B	B	B,R							
Whitman	0		1	Arlington, Oregon	N	-	-	-	-	N	-	-	-	-	-	-
Yakima	2	0	1		N	-	-	-	-	N	-	-	-	-	-	-

<sup>1</sup>Electronics are not officially banned, but are not accepted at transfer stations. <sup>2</sup>Electronics are not officially banned. The county inspects load and diverts computer monitors from landfill whenever possible. <sup>3</sup>Electronics are not officially banned, but CRTs are collected separately from trash. B=Business, R=Residents, SQG=Small quantity generators, (SQG includes residents and unregulated generators that fall below LQG thresholds), LQG=Large quantity generators, Pb=Public, Pr=Private

## Suitability of Lined and Unlined Landfills for Disposal of Electronic Products

Contemporary landfills are designed to assure that, to maximum extent possible, contamination of groundwater, surface water, and air are minimized. Leachate collection systems gather and recirculate, or treat, the water within the landfill. Methane gas generated within the landfill is collected for energy use, but is most generally flared.

Because of the exemption to dispose of small quantities of household hazardous waste and commercially generated wastes in municipal solid waste landfills, rather than hazardous waste landfills, contemporary landfills have protection measures built in, such as liners and leak detection systems. The aim is to prevent the release of any waste into the environment. Design and performance standards have been adopted by the state of Washington to assure that all landfills in the state are constructed in this manner. Only lined landfills are suitable to receive the kinds hazardous wastes allowed for disposal under the small quantity generator and household hazardous waste disposal exemptions.

The Solid Waste Association of North America completed a study entitled “The Effectiveness of Municipal Solid Waste Landfills in Controlling the Releases of Heavy Metals to the Environment.” The study bottom-line was that MSW landfills, when designed and operated properly, provide sufficient controls in the release of heavy metals to the environment.

In a letter to Bill Smith, City of Tacoma, Washington, Solid Waste Division, from SWANA, Director John Skinner stated in reference to the report mentioned above: “It is very unfortunate that this report is being used to discourage product stewardship and recycling programs for electronics and other metal-containing products. As clearly stated in the report, SWANA endorses and actively promotes the implementation of economically and environmentally sound waste reduction and recycling programs for products containing heavy metals.

“As evidence of this support, in 2001, SWANA’s International Board of Directors unanimously approved our Product Stewardship Policy. The purpose of this policy is to establish guiding principles for SWANA and its members to use as they collaborate with manufacturers and designers in developing programs to manage products at the end of their life. To quote from that document, which can be found in its entirety on our web site:

*“Policies that promote and implement product stewardship principles should create incentives for the manufacturer to design and produce products that are made using less energy, materials, and potential pollutants, and which result in less waste (through reduction, reuse, recycling, and composting) and use less energy to operate...”*”

### Recommendations

Banning disposal of electronic products in landfills at this time should remain a local government decision. Local governments are best equipped to determine the capability of permitted facilities to handle products and the availability of market uses for the banned product.

However, the legislature should encourage recovery of electronic products. The best way to do that is by placing a surcharge on the disposal of electronic products. This should only be applied in areas of the state where reasonable opportunities to recycle electronic products by consumers exist.

Unlined landfills are not suitable for disposal of any product that causes or may tend to cause degradation of groundwater. There are very few materials that can fit that category.

## **Business Financial Incentives**

Financial incentives can be effective tools to encourage public policy. It is important that when considering incentives that they be used at leverage points that will result in the fastest and most complete adoption of the policy.

Within product life-cycles there are many potential leverage points. The state needs to consider the following when creating financial incentives:

- At what point within a product life-cycle can the incentive be applied and is that point within the influence of the state?
- What is meaningful, in financial terms, for an incentive to be effective?
- What will be the overall systems effect of an incentive? Will the incentive, if applied at one point of the life-cycle, have a “domino effect” throughout the system that results in the intended outcome? Will it have an unintended consequence?
- Will the incentive, while providing a positive effect related to the specific public policy, have a negative effect on a different policy?
- What will be the financial gains or losses to gross state product in terms of jobs and business and state revenues?
- Is the incentive an appropriate signal economically over the long term?

From analysis of the material flows from covered electronic products it would be safe to say that marketing to users of secondary materials to be used in the manufacture of new products provides a block to additional materials being used. If at any point along the material flow cycle there is a blockage, the flow slows down, prices drop and good, usable material becomes waste, destined for landfill disposal.

### **Recommendations**

The state of Washington could provide incentives to manufacturers that would use secondary materials in their manufacturing processes. Two incentives worth pursuing include:

1. A resource conservation tax credit against the company’s B & O tax liability based on the amount of secondary material used in the company’s products; and
2. Low interest loans to businesses to provide necessary capital to build manufacturing facilities within the state and use recovered materials as feedstock for their new products.

## **Economic Development Opportunities, Stimulating Materials Markets and Jobs**

It is generally accepted, and documented, that adopting public policy that directs materials to recycling creates more jobs and stimulates more economic activity than does waste disposal activity. The main activities in this state related to electronic product recycling have been collection and processing. There are no end use markets for recovered electronic products within the state. Material is exported out of state, with most going out of country.

What are the opportunities for business recruitment of users of recovered electronic materials within the state?

Are there ways to improve and increase processing capacity within the state in order to market a value added product, resulting in more economic activity staying state-side?

The recommendations for business incentives in the previous section, particularly the provision of low interest loans, would go a long way in attracting end users of recovered materials to Washington, creating markets for those materials and jobs for workers.

### **Potential Impacts on Jobs**

Recycling “stands out as a proven job creator and economic growth generator”, according to the Institute for Local Self-Reliance. Despite the rise in unemployment rate in the US, recycling has an annual increase of 8.3% in the number of jobs from 1967 to 2000. Although a part of this growing industry, electronics recycling does not have a long record of employment data. It seems logical that activities such as collection, transport, reuse, dismantling, and recycling would produce more jobs than waste hauling, disposal, or incineration. The assumption is supported in a number of studies. Experts use both raw data and economic modeling and analysis to predict the impact of e-waste on employment.

The Jobs and Market Development Working Group did a study on Oregon’s economy. The state can expect 40 new jobs for every 10,000 tons of e-waste collected each year. The study did not take into account advanced fees, collection from large businesses, improved rural infrastructure, change in product designs, and other externalities. It does, however, provide a basis for comparison should the state implements a program with such improvements.

The California University, Berkeley conducts a statewide study on the waste disposal and diversion system. Economic impact analysis and waste flow model estimate that recycling creates 47 jobs for 10,000 tons of e-waste per year. The report is submitted to the California Integrated Waste Management Board in 2001, prior to the implementation of the statewide advanced recycling fees on electronic equipments. The effects of the fees on employment are not yet known.

The Institute for Local Self-Reliance has documented jobs creations over the years. Data indicate that computer reuse generates 296 jobs for 10,000 tons per year; waste disposal only create 1 per 10,000 tons. Sorting and processing alone creates 10 times more jobs than disposal and incineration. There are concerns that recycling will lower employments in the disposal and raw materials industries. According to North Carolina data, having 100 recycling jobs would results in the loss of only 10 jobs in waste hauling and disposal and 3 in the timber harvesting industry. There is still an increase in employment overall.

Grassroots Recycling Network, made up of waste reduction experts and recycling professionals, does its own research on e-waste recycling. A total of 290 jobs is estimated for every 10,000 tons collected each year. The number applies to a full-scale, producer responsibility program.

Studies being done in Washington are also consistent with other researches. According to numbers from the Washington statewide recycling survey and recycling industries, 400 jobs are being created for 10,000 tons of computer and computer parts. The data, however, do not consider computers and television from households and small quantity generators only. For such a case, Cascadia Consulting Group has estimates for an e-waste take-back program in the state. By 2010 Washington is expected to see 245 jobs created for 10,000 tons of electronics.

All studies arrived at the same conclusion: recycling will lead to growth in employment. Recycling, overall, can support 2-10 times the number of jobs as disposal. E-waste recycling can have up to 40 times the number of jobs. A state or nation wide take-back program for electronics can create 245-290 times the number of jobs.

## **Impacts On Local Governments, Nonprofit Charities, Waste Haulers, and Other Stakeholders**

Local Government: Currently, the responsibility for planning for and managing municipal solid waste falls to local governments. Each county, and some cities, must write a solid waste management plan describing the systems that will be employed to manage waste generated within their jurisdiction, twenty years into the future. A system to provide recycling services within the jurisdiction must be described.

New waste streams pose new challenges to local governments in these planning and management processes. When recycling infrastructure is created, a capital investment is made to process that material based on the known waste stream. When the waste composition changes, as it has in relation to the increasing volume of electronic products being disposed, the need to modify the processing systems and upgrade capital facilities becomes necessary. These upgrades are most often paid by the citizen rate payers. Pressure to keep costs low, while continuing to respond to the demands for increased services places both local governments and their contracted service providers (waste haulers) in difficult positions.

Nonprofit Organizations: The use of computers and their rapid technological improvements have created a situation where their functional life is short. Even though they continue to function mechanically, they no longer serve the needs of users as new equipment is introduced that makes the older equipment obsolete.

Because it still “runs” consumers believe that the equipment still has value. Many consumers have turned to charities to donate older equipment. Charities have found themselves saddled with equipment that can not be sold to consumers and can not be disposed of or recycled without significant cost.

Organizations like Goodwill Industries have been the beneficiary of the giving spirit of Americans for years. When consumers donate unwanted usable items to charities, profits from re-sale of those used items support accomplishment of their charitable missions.

However, much of what the donating public considers usable is actually unusable and non-saleable. The giving public also holds a belief that the charities can repair items and make them usable again. This is not the case. There is a generally held belief by the public that computers and televisions have value regardless of condition. This is not the case, either. While there is value in the materials contained in those items, the cost of collecting, transporting and processing exceed that value.

The giving public drops off donations at charities at any time, day or night. Donors drop off many non-functioning electronic products after hours. This saddles charities with the expense of getting these non-functioning units to a recycling facility. This cuts deeply into their budgets, diverting funds from the needed charitable programs.

Charities are in an ideal situation to offer collection services for unwanted electronic products. Because they have been in the donation business, they understand how to handle material to maximize profit. They have facilities that can handle unwanted products. They have the capacity to train staff on proper handling.

It would be a natural fit to encourage charities to collect unwanted electronic products. A source of funds would make it cost effective for the charities.

Waste Haulers: The US Census Bureau 2002 Economic Census indicates that the solid waste collection and disposal industry had total sales of \$784,351,000 that year. Solid waste collection services generate 85% of those sales.

Electronic products make up a small percentage (one-half to one percent) of the disposed solid waste stream. Diverting electronic products from disposal to recycling would have no effect on the total collection sales, as collection services would continue. The types of wastes that are collected do not determine collection rates. Rates are based on number of can set outs collected at curbside. Diversion of electronic to recycling would not result in a significant reduction in the amount of waste collected at curbside. Therefore, there would be no loss in sales.

The overall impact on disposal sales may be as much as one-third of one percent of the total. Again, this is insignificant, about 4 hundreds of one percent, in relation to the total solid waste industry sales (not including hazardous waste).

**Table 3: 2002 Solid Waste Industry in Washington State**

	<b>Establishments</b>	<b>Sales (In Thousands)</b>	<b>Cost per ton</b>
<u>Solid Waste Collection</u>	141	\$666,090	\$132
<u>Solid Waste Landfill*</u>	27	\$95,855	\$20
<u>Solid waste combustors &amp; incinerators *</u>	2	\$22,406	\$72
<u>Total</u>		\$784,351	\$224

Source: 2002 Economic Census, US Census Bureau

School Districts: Many computers that are considered surplus from government agencies are given to school districts around the state. The functional life of these units is short, as most of the useful life was used by the government agencies. School districts, especially districts in lower income areas of the state, are recipients of these machines. They end up being responsible for end of life disposal. Many are returned to General Administration, Surplus Properties. Surplus Properties contracts for disposal or recycling or auctions these items in volume to the highest bidders.

Consumers and Small Business: Overall, the responsibility for disposal of end of life electronics falls upon the last owner, or recipient. Along with the responsibility comes the expense. Often times the last holder of the product is the least likely to be able to afford the disposal costs. Disposal costs are eliminated when costs are internalized in the purchase price of the product.

## **Future Considerations**

Growth and development of consumer electronics will continue in a fast pace in the near future. Television entertainment, video gaming, world wide web networking use and telecommunications will become more and more integrated. Household uses for computers will increase from today's word processing and spreadsheet applications to managing residential systems such as heating, lighting, security and more. As these new consumer grade applications are rolled out, new products will accompany them. We haven't seen the end of the consumer electronics development boom. Some might say that we are at its infancy.

## **Recommendations**

Any program adopted by the legislature to manage end of life consumer electronic products should be designed in a way to assure that future replacement products will be managed appropriately as well, without the need to revisit the legislature to add those future products.

## **Study of Additional Electronic Products**

The legislature should authorize an evaluation of the need to include additional electronics and electronic equipment in the future. This study should occur after the implementation of the television and computer recycling program described herein in order to gain information on costs and benefits of such programs.

Products to consider include, but not limited to:

- Cellular telephones;
- Home entertainment equipment, such as video cassette recorders and players, digital video disk players, compact disk players, speakers, amplifiers, tuners, portable players, etc.;
- Small kitchen appliances such as microwave ovens and other kitchen convenience devices;
- Consumer gaming equipment, electric and electronic toys;
- Electronic and electric tools, such as hand drills, table saws, welders, etc.;
- Anticipated future electronic, equipment, products and devices that may be developed over time; and
- Batteries and other power providing devices used to operate any of the above.

Full cooperation from the manufacturing and business communities, non-governmental organizations and local governments with the department in carrying out this study is necessary and anticipated.

**Appendix A:**  
**Facilitator's Report**



**Washington State Department of Ecology  
Electronic Waste Project  
Facilitator's Final Report**

*Submitted by  
Dee Endelman for  
Agreement Dynamics, Inc.  
November 15, 2005*





## **Introduction**

This report, prepared by the Department of Ecology's contracted facilitator, summarizes the collaborative efforts of Ecology and the Solid Waste Advisory Committee (SWAC) Subcommittee on Electronic Waste Recycling ("The Subcommittee") during 2005.

This report briefly reviews the Subcommittee composition, process and timeline. It also summarizes areas of agreement and disagreement among Subcommittee members. Finally, it provides a brief conclusion, based on the observations of the process facilitator.

## **Subcommittee Composition**

In response to the requirements of ESHB 2488 ("2488"), Ecology designed and implemented a process by which it would develop its recommendations to the State Legislature. This process included the conduct of Department research into the problem and possible solutions. Just as importantly, it included the convening of a Subcommittee representing the various stakeholders, as designated in 2488. The Subcommittee's purpose was to provide input to Ecology for its recommendations to the legislature.

The Subcommittee, which met six times from October 2004 through October 2005, had the following members:

- Nancy Atwood, American Electronics Association, Washington Council;
- Vicki Austen, Washington Refuse and Recycling Association;
- Dennis Durbin, Stevens County, Washington;
- Jan Gee, Washington Retail Association;
- Eric Hulscher, Tacoma Goodwill;
- Sego Jackson, Snohomish County Solid Waste Management Department;
- Craig Lorch, Total Reclaim;
- Mo McBroom, Washington Environmental Council
- Suellen Mele, Washington Citizens for Resource Conservation;
- Grant Nelson, Association of Washington Business;
- Bill Smith, City of Tacoma Solid Waste; and
- Frank Warnke, Advocates, Inc. (representing a consortium of electronic manufacturers).

In addition to Subcommittee members, others attended some—or all—of these meetings, including representatives from manufacturers (some of whom flew cross country to be with us), local government, charities, recyclers, members of the solid waste industry and the environmental community. A typical meeting had approximately 30 attendees. In the process of the meeting, all attendees had the opportunity to voice their thoughts and questions.

Jay Shepard was Ecology's Project Manager. Dee Endelman, for Agreement Dynamics, Inc., was the third-party neutral facilitator; and Ginny Ratliff of Agreement Dynamics, took meeting minutes and managed logistics and e-mail communications with the Subcommittee and interested parties.

## **Subcommittee Process and Timeline**

When the Subcommittee first met on October 29, 2004, all agreed to listen to one another's interests and to discuss recommendations that might respect the interests of all stakeholders, as represented by the Subcommittee. Attachment 1 to this report is a list of interests articulated by each Subcommittee member. Although recognizing that the Subcommittee might not come to consensus over all aspects of the recycling solution, all members agreed to make their best efforts to hear one another out and find common ground, where possible.

Subsequent to that first meeting, the Subcommittee met five additional times, from March 19, 2005-October 7, 2005. During each of these day-long meetings, the Subcommittee listened to research prepared by Ecology staff and the Technical Team which assisted Ecology (Attachment 2)—and questioned it—as well as discussed critical aspects of the e-waste recycling system: collection, financing and processing.

By its third meeting, the Subcommittee had come to agreement not only on a statement of the problem but also on criteria for a successful program. They also began evaluating various financing models, using the criteria and came to some agreements as a result of this exercise. Following that third meeting, Ecology began developing more detailed proposals for review and discussion by the group.

At its fourth meeting, on July 12, 2005, the Subcommittee decided to meet two additional times to attempt to hammer out differences. Moreover, throughout the process, Subcommittee members met in smaller groups to discuss points of agreement and disagreement and prepare proposed solutions for Subcommittee discussion at the meetings.

As a result of these meetings, some Subcommittee members, having relatively diverse interests, were able to come to agreement on some major issues, including a general financing mechanism. However, full consensus was not achieved. At its final meeting, on October 7, 2005, the Subcommittee concluded that “reasonable people sometimes disagree,” even after valiant attempts to forge a solution that solves the problem while respecting interests of all parties.

### **Agreements**

The following are areas about which all Subcommittee members agreed.

The Problem Statement: After several discussions at, and between, Subcommittee meetings, the group agreed on the following statement of the problem:

”Although members of the E-Waste Subcommittee do not agree on all issues related to e-waste or the full scope of the problem, we have come together to work on how to better manage, reuse and recycle e-waste because we all agree on the following:

- E-waste is projected to grow in the foreseeable future.
- Proper management of e-waste can be a cost/burden to charities, local governments, businesses and citizens of the State.
- Electronic waste, if managed improperly, is a risk to human health and environment.

- Current infrastructure may not be sufficient to handle increasing volumes of e-waste.
- Costs of recycling most electronic product waste are greater than current material value.
- People are generally unaware of opportunities that currently exist to recycle their electronic products.<sup>16</sup>
- Current collection options for recycling electronic products are not adequate across the state.
- Proper e-waste recycling can result in job creation here in Washington State and can offset the need for new resource extraction.”

**Criteria for a Successful Recycling Program: Following are the criteria that the group agreed would be important for a successful program. They stated that:**

“Any solutions we come up with should:

- Promote convenient, effective, and responsible reuse and recycling for consumers throughout the state;
- Create long-term opportunities for Washington business;
- Result in a long-term system financing;
- Solve environmental issues here without creating them somewhere else or violating international law;
- Enable shared responsibilities and shared opportunities for different sectors of the economy (business, government, charities, consumers) involved with electronics;
- Support a level playing field for businesses relative to one another and on the national level;
- Create regulatory certainty for businesses;
- Ensure environmentally sound end-of-life management of electronics;
- Encourage design for reuse and recycling and design for the environment;
- Support the conservation of natural resources;
- Take advantage of current infrastructure, where feasible;
- Be available and effective throughout the state as well as flexible for different parts of the state;
- Educate consumers regarding e-waste;
- Support protection of human health;
- Have goals, accountability for meeting the goals, and performance standards;
- Address the problems;
- Be stand alone for the state of Washington and be able to transition to a national system;
- Accommodate future changes in technology;
- Prevent/avoid sham recycling;
- Ensure that the benefits of any modifications to the current system of collection, disposal and recycling and the financing of the system, be commensurate with the costs of these modifications.”

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<sup>16</sup> Facilitator’s note: The Subcommittee members worked hard and collaborated well to come up with these descriptions. However, one difference remained on which agreement could not be reached. Two members of the Subcommittee believe this bullet should read: “People are generally unaware of opportunities that currently exist to recycle **or properly dispose of** their electronic products.”

The Subcommittee subsequently used these criteria in several evaluation exercises.

### **Collection**

At its second meeting, on March 19, 2005, the group reviewed a matrix produced by Ecology, which summarized various e-waste recycling programs and discussed alternative collection methods. The group agreed that there was no one superior collection method, that a variety of collection methods could be used depending on local needs and convenience. The group also agreed that existing infrastructure for collection should be used, where feasible.

### **Mandatory Nature of Program**

At its third meeting, on June 8, 2005, the Subcommittee evaluated four financing models. The fourth model advocated *not* financing an e-waste recycling system, i.e., maintaining the voluntary “status quo” system. Based on the agreed-upon criteria, all Subcommittee members who responded to the evaluation exercise<sup>17</sup> rated this model as unacceptable. In subsequent discussions, no Subcommittee member continued to advocate for a voluntary approach.

### **Unlined Landfills**

Although Subcommittee members disagreed regarding whether electronic products should *ever* be disposed of in landfills, all agreed that disposal of unwanted electronic products in unlined landfills should be banned. It was assumed that some people will continue to dispose of covered electronic products by disposal, even after a recycling program is in place.

### **Other Areas of Agreement**

The Subcommittee generally agreed on certain principles associated with the design of a good e-waste recycling system, as indicated in the criteria they approved. Among these principles were:

- The need for a stable funding mechanism that works “on the ground”;
- The importance of continuing to encourage reuse, not just recycling;
- The advisability of recycling targets to assure that the program is working;
- The importance of a level playing field for businesses so that all have responsibility in a recycling program;
- The need to assure that recycling is valid recycling and that “sham” recycling does not occur as a result of the system;
- The importance of supporting environmental protections for workers who process recycled materials that have hazardous contents.

## **Areas of Disagreement**

### **Funding**

Although all agreed that the system had to include a stable and ongoing funding mechanism and with most strongly favoring front-end financing as a way to achieve this, there was disagreement beyond these general principles.

Many manufacturers generally favored an advanced recovery fee (ARF), an externalized fee paid by consumers specifically at the point of retail. The preference was particularly strong among manufacturers who had televisions as a major product line, although some large computer companies also favor an ARF.

Other manufacturers, as voiced by the representative from Hewlett Packard, favor an internalized cost approach, with manufacturers financing the cost of the recycling program. Retailers and environmental representatives at the table also supported this point of view.

Some Subcommittee members indicated that either approach could meet their interests (e.g., charities, solid waste industry representatives), while two members were unable to commit to either approach as their membership was divided on the matter (American Electronics Association and the Association of Washington Business). Local governments voiced a need to make sure any financing system works “on the ground”.

### **Performance Standards**

The Subcommittee agreed that performance targets are valuable and that manufacturers should have a “level playing field” in the area of responsibility for the amount of materials that should be recycled.

There was disagreement regarding the following performance-related issues:

- How should we determine the amount of e-waste that we should target as an industry standard?
- What should be the consequences of industry’s failure to meet such a target?
- How should we determine the level of individual company responsibility for the amount that should be recycled each year by various companies? (A company’s current sales “market share” versus their “return share” of products for recycling were the indicators most deeply discussed.)
- What should the consequences be of individual company’s failure to meet their responsibilities?

One participant suggested an alternative means of determining amounts to be recycled by each company which provided financial incentives for excellent recycling rates and avoided the need to set specific performance standards. Most Subcommittee members found this alternative interesting and wanted to see it further fleshed out.

### **Processing Standards**

With respect to environmental and other standards, all Subcommittee members, of course, agreed that worker safety was an important issue in processing electronic materials for recycling. Further, all were sympathetic to the need to make sure we are not exporting our wastes to countries where workers must process in the absence of basic protections.

However, it was clear that Subcommittee members had a spectrum of views regarding what these standards should be and some—while agreeing with principles—were concerned about whether they should all be covered under a state law, particularly those relating to international standards. Indeed, although processing standards were discussed at various meetings, this is an area where the process did not allow sufficient time for a full vetting of all views and a clear understanding of the level of agreement among participants.

## **Conclusion**

Throughout the process and continuing even now, various Subcommittee members are in contact working to hammer out areas of disagreement. The group did not come to consensus regarding the e-waste system and some of the differences are crucial ones, particularly those related to funding mechanisms.

Nevertheless, Subcommittee members—without exception—worked to create productive conversations that were open, listening and respectful in nature. There is more than one way to gauge the success of groups such as this one.

On the important score of building shared understanding of one another's viewpoints and needs and developing an ability to continue talking so that the problem eventually can be solved—this group was clearly successful.

**Attachment 1: Draft: Interests Articulated by Subcommittee Members**  
**(As edited based on Subcommittee feedback at 10/29/04 meeting)**

*What are your organization, member or client needs, interests and concerns regarding solutions to the e-waste issues?*

**Sego Jackson (Snohomish County Solid Waste Management)**

- Finance system that covers collection through processing costs without reliance on government taking over costs/taxing
- Environmentally and financially sustainable system that leads to smart private sector decisions
- Manufacturer responsibility
- Solution that solves environmental problems here without creating them elsewhere
- Easy and convenient collection System

**Suellen Mele (Washington Citizens for Resource Conservation)**

- No system that creates disincentives to recycling
- Environmentally and financially sustainable system that leads to smart private sector decisions
- Manufacturer responsibility
- System that leads to convenient, effective and responsible recycling
- Solution that examines financing options for schools, government and small businesses as well as individuals
- System that promoted design for environment

**Eric Hulscher (Tacoma Goodwill)**

- Solution that enables us to continue accepting electronic items without the liability Goodwill currently has
- System in which we will not lose money when we recycle items we can't sell
- Financially sustainable system

**Grant Nelson (Association of Washington Business)**

- Decisions based on sound and balanced assessment of facts
- Solution that does not pit one sector of business community against another
- Solutions that keep businesses in Washington competitive in bigger markets
- Solutions that include existing infrastructure

**Craig Lorch (Total Reclaim)**

- Level playing field for e-waste recyclers: Regulatory certainty regarding exporting materials
- System that supports conservation of natural resources
- Financially sustainable recycling system

**Mo McBroom (WashPIRG)**

- System that serves the public interest, rather than special interests
- Manufacturer responsibility
- Environmental protection and the prosperity that allows for it
- System that promotes clean design and responsible recycling

**Bill Smith (City of Tacoma Solid Waste)**

- E-waste should not be an unfunded mandate on Tacoma’s rate payers
- Cities reimbursed for costs of collecting and transporting materials
- No competitive disadvantages (level playing field across the State)
- Shared responsibility—manufacturers and consumers

**Nancy Atwood (American Electronics Association, Washington Council)**

- Level playing field that doesn’t disadvantage one company against another
- Shared responsibility: manufacturers should participate but not have the system completely on their backs
- National solution so that businesses can operate in Washington State as well as other states
- Decisions based on sound and balanced assessment of the facts

**Dennis Durbin (Stevens County Public Works)**

- System that is financially viable for businesses
- Program that encourages legal recycling
- No system that requires government to bear the costs of recycling with current resources or forces them to increase fees to cover costs

**Frank Warnke (Advocates, Inc., representing a consortium of manufacturers)**

- Decisions based on sound and balanced assessment of the facts
- Shared responsibility: one segment of the industry shouldn’t have to pay the entire cost
- System that will result in a long-term solution
- Solutions that are financially viable for manufacturers

**Vicki Austin (Washington Refuse and Recycling Association)**

- Decisions based on sound and balanced assessment of the facts
- System that includes our current infrastructure (both haulers and landfill operators)
- No “one size fits all” solution (rural counties and urban centers require different delivery systems)
- Financially sustainable recycling
- No landfill ban of electronics without another solution

**Jan Gee (Washington Retail Association)**

- Decisions based on sound and balanced assessment of the facts
- No requirements for retailers to take back and hold products
- No complex, bureaucratic bookkeeping
- Compensation for administrative costs to retailers
- System that educates consumers regarding e-waste
- Solution that does not penalize Washington businesses/brick-and-mortar retailers versus e-commerce

## **Attachment 2: Technical Team**

Frank Dick, P.E., Environmental Engineer, Sharp Microelectronics of the Americas

Kim Ducote', Director, Public Education, CCA Consulting for Rabanco Companies - Allied Waste

Larry King, Product Recycling Solutions, Hewlett Packard

Brian Miller, Manager, Environmental Health & Safety, Apple Computer

Lisa Sepanski, Project Manager, King County Solid Waste

Jerry Smedes, Smedes & Associates

David Stitzhal, Council Coordinator, Northwest Product Stewardship Council

Dale Swanson, Environmental Engineer/ISO 14001, Matsushita Kotobuki Electronics Industries

Delmer "Butch" Teglas, Director of Facilities & Environmental Affairs, Philips Consumer Electronics North America

Ha Tran, Washington State Department of Ecology

Sarah Westervelt, Toxics Research Analyst, Basel Action Network



## **Appendix B:**

### **Verbatim Comments Received From Stakeholders About the Contents and Recommended Program Contained in this Report**





## King County

### Solid Waste Division

Department of Natural Resources and Parks  
King Street Center  
991 South Jackson Street, Suite 701  
Seattle, WA 98104-3898  
206-286-6542  
711 TTY Relay

November 23, 2005

Jay Shepard  
Washington State Department of Ecology  
PO Box 47600  
Olympia, WA 98504-7600

Dear Mr. Shepard:

Thank you for the opportunity to submit comments on the report to the State Legislature titled "Implementing and Financing an Electronic Product Collection, Recycling and Reuse Program for Washington State."

King County's 2001 Comprehensive Solid Waste Management Plan includes product stewardship as a key strategy to successfully manage electronic products. Our primary interest is the creation of a comprehensive electronic products collection system that serves all of our residents and small businesses without relying on public funding.

The recommendations offered in this report support the County's position with regard to the end-of-life management of electronics. By requiring electronics manufacturers to finance the collection and recycling programs, the costs to manage this equipment are appropriately transferred from local governments and their ratepayers to the consumers who ultimately benefit from the purchase and use of the product.

The report provides a good overview of the current state of electronics disposal and recycling in Washington State. King County supports many of the recommendations in the report including:

- A quasi-governmental third party organization – the Materials Management and Finance Authority - would be created with the purpose of collecting, transporting and processing electronic products on behalf of the manufacturers. This organization would be funded by the electronics manufacturers selling products into the state of Washington.
- Manufacturers meeting certain criteria could opt out of this standard program and fund and operate their own collection, transport and recycling program.
- The system would be designed so that there is incentive to recycle all available materials.
- Manufacturers would be required to obtain licenses to sell the products in the state and manufacturers that fail to get a license would be prohibited from selling into the state.
- The use of the existing collection, transport and recycling infrastructure would be encouraged.

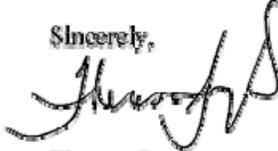
Jay Shepard  
November 23, 2005  
Page 2

We realize consensus was not reached on methods for financing the electronics recycling program. King County believes that a "cost internalization" system that requires the manufacturers to pay for the recycling and processing of the equipment by internalizing the costs of this service as a price of doing business, rather than a separate visible fee, is an innovative strategy worth serious consideration. In addition, we believe a cost internalization approach will encourage manufacturers to increase durability, recyclability, the use of less toxic materials, and better address end-of-life management and the costs in designing their products.

In order to discourage the disposal of electronic products, the programs should provide recycling with no end-of-life fee for residents, as well as small businesses, charities, small local governments, and school districts – those that are underserved by the current system.

Thank you for the opportunity to comment on this report and for all the hard work that you have done to deliver this noteworthy report. If you have any questions, please call me at 206-296-4385, or Lisa Sepanski, Project/Program Manager, at 206-296-4489.

Sincerely,



Theresa Jennings  
Division Director

TJ:mw  
11/23/05

# ADVOCATES, INC. GOVERNMENT RELATIONS & PUBLIC AFFAIRS

P.O. Box 4430, Tumwater, WA 98501 - Telephone (360) 705-3464 Fax (360) 705-3563

November 28, 2005

Jay Shepard  
Department of Ecology

I am providing comments on the Washington Department of Ecology final draft on financing an electronic waste recycling system on behalf of the Manufacturer's Coalition for Responsible Recycling. Our Coalition is a group of sixteen electronics companies that have come together out of a belief that the Advance Recovery Fee (ARF) is the best approach to financing management of end-of-life electronics. Coalition companies include major manufacturers of televisions, as well as personal computer and monitor manufacturers/sellers such as IBM, Sony, Sharp, Panasonic, JVC, Samsung and Philips.

I represented the Coalition during the Solid Waste Advisory Committee (SWAC) process and many coalition members participated in the SWAC meetings. While we appreciate the efforts made by the Department of Ecology and the other SWAC members, we strongly object to the current draft. It makes numerous conclusions without any supporting data and ignores existing data that are inconsistent with what appears to be preconceived notions. As a result, the draft report recommends a financing scheme that is inconsistent with the notion of shared responsibility, is costlier and more complex than an ARF based system, will not provide any incentive for the manufacturer of more environmentally preferable products, is not financially viable, misstates support for the report's conclusions and ignores the benefits of an ARF based system currently operating in California.

1. The proposal is inconsistent with the notion of shared responsibility.

The report says that a manufacturer-responsibility approach creates direct accountability to the manufacturer, presumably because it is the manufacturer put the product on the market. Manufacturers do sell products into the distribution chain. But it is retailers in the state who sell those products, providing jobs to local citizens and tax revenues for the state and local governments in the process from sales, income and property taxes. Consumers choose to purchase the products for their personal enjoyment. The notion that manufacturers solely need to be accountable ignores the role of consumers and retailers. This approach seems fundamentally flawed since it attempts to make manufacturers responsible for key activities such as collection that they have no inherent capacity to fulfill.

Under the California ARF system, manufacturer responsibility includes consumer education, retailer notification, reporting to the state, and compliance with restrictions on use of certain hazardous substances.

The California ARF system used the existing solid waste infrastructure for recycling by funding that infrastructure without the need for establishment of third party organizations.

2. The proposed system is costlier and more complex than an ARF based system.

The report suggests that the proposed system will result in lower costs than an ARF based system. There is no support provided for such a conclusion. But the proposed legislation itself demonstrates that the

proposed system is costlier than an ARF based system. The proposed legislation sets an initial fee at \$10 per unit. Fees in California under the existing ARF system are \$6-10 depending on the size of the video screen. And since the California program is raising much more money than it needs to operate the program it is likely that California will be lowering its fee. How is the proposed Washington program cheaper than an ARF based system if the proposed fee is higher than the comparable fee for the California ARF based system?

Again without any evidence the report also says that an ARF is a static fee that will not stimulate system efficiency. This is simply incorrect. Every ARF bill allows flexibility in the establishment of the fee to raise only the money that is necessary to fund the program. A TPO, or state or local government administering the program can rely on bids for collection and recycling and as a result reduce the ARF as the competitive process drives down the cost of the program.

3. The proposed system does not provide an incentive for the manufacture of environmentally preferable products.

The document continues to state that a manufacturer responsibility approach will provide an incentive for better product design. Not only is there no evidence to support such a statement, it is controverted both by common sense and by existing evidence.

Televisions have an average life of around 17 years. The argument that manufacturer responsibility will lead to better design assumes that product designers today will be concerned about returns of products in 17 years. Most executives seek much shorter payback times for the investments they make and will not be motivated by the idea of investing now in product design improvement in the hope that they will benefit financial 17 years hence. Frankly, I know of very few people let alone companies that spend a great deal of time worrying about what will happen in 17 years.

Moreover, the environmental record of our members demonstrates that no such incentive is necessary. Motivated by market demands in developing chemical content regulations, our member companies are leaders in designing environmental improvements. Our member companies have won recognition for their environmental improvements and it is simply unquestionable that products manufactured today are much more energy efficient and use much less toxic materials than in previous years. Our companies support the recycling of spent products with video screens through a number of pilot projects and currently are providing funding for the Northwest Third Party organization projected together with other manufacturers and EPA to work on developing a strategy to have a third party organization operate the electronics recycling effort. Our companies also supported the Consumer Education Initiative at [www.eiae.org](http://www.eiae.org), the industry-wide, web-based recycling information system that helps consumers locate recycling programs for end-of-life electronic products.

If the notion that manufacturer responsibility is necessary to provide a market incentive to manufacturers to make more environmentally responsible products were true, then there would have been no environmental improvement in our company's' products because there would have been no incentive without the "producer take back" requirement. This statement is demonstrably false.

4. The proposed system is not financially viable.

The report simply ignores whether the proposed system is financially viable. The system proposes a manufacturer fee on sales of specified products to Washington households. As was pointed out numerous times in the SWAC proposed and ignored by the authors, manufacturers do not sell products to consumers

in Washington. There is simply no way a manufacturer can know 1. What state a product is sold in and 2. Whether a purchaser is a household or a business.

More importantly the report fails to even make an attempt to evaluate whether the proposed system is viable in the economic market that currently exists. Despite extensive information provided by one of our Coalition members that the system is not economically viable, the report simply ignores this issue.

As discussed in great detail in information provided to the Department of Ecology, even if manufacturers could know what products were sold to households in Washington, they have little to no ability to include the costs in the price of the products because of the intensely competitive nature of the market and the power of large retailers. It is large retailers rather than manufacturers that are benefiting from increased sales of electronics products. And because of the intensely competitive market, these manufacturers are not making adequate profits to cover the costs of the program.

5. The report misstates the impacts on local governments, non-profits, waste haulers, retailers and others.

The report misstates the impact of the proposed program on other players. It says that local governments will benefit from the proposed system because local government is relieved of the burden of collection. But under the California ARF system there is no burden to local governments because the state uses the ARF funds to pay for anyone who collects electronic waste. The implication of the report that local governments would benefit under the proposed system but not under an ARF is wrong. The statement in the report that an ARF externalizes costs to local governments is erroneous.

The report says that non-profits bill benefit from the proposed system. But non-profits are benefiting greatly under the California ARF system because they can become collectors and be paid for their efforts. That is why Goodwill testified at a Congressional hearing that it supported an ARF program.

The report says that waste haulers or collectors will benefit from the proposed program. But these same waste haulers are benefiting under the California system. And in a survey conducted by Rifer Environmental concludes that 66% of the registered collectors (who are often waste haulers) saw the California system as a good national model.

The report also says that an ARF externalizes costs to retailers. This is incorrect for two reasons. First, retailers benefit from the sale of these products and thus should have a role in their recovery. Second, under the California system retailers can recover costs in at least four ways: 1. They can keep 3% of collected fees; 2. They can keep interest on collected funds until they have to make quarterly payments to the state; 3. They can hold collection events and be paid as a collector for what they recover, and 4. They can use such collection events to encourage people to come to their stores and purchase more products. If these methods are not adequate to recover costs, the state can consider a higher level of fee retention by retailers. So an ARF system can be designed so that there is little of no effect on retailers.

Finally, the report complains that an ARF externalizes costs to consumers. But the proposed system would require manufacturers to internalize recycling costs in the price of the product. So under the theory behind the proposed system consumers are going to have to pay for recycling anyway. It is again quite possible that an ARF will result in lower costs to consumers because there is no markup of the internalized costs each time the product changes hands in the distribution chain and no sales tax on the higher priced product. Consumers would benefit under an ARF system as compared to the proposed system.

6. The proposed system misstates support for the report's conclusions.

The report makes a number of exaggerated claims regarding support for the program.

First, the report says that some manufacturers support the proposed system and that the lack of consensus in the report is due to the lack of manufacturer consensus on funding and sharing responsibility. These statements are absurd. Our coalition represents 16 of the major electronics manufacturers. Another manufacturer, Apple Computers, which participated in the Washington SWAC effort, supports the Coalition position. Only one manufacturer that participated in the SWAC effort did not agree with this position. There is virtually a complete lack of manufacturer support for the proposal and the manufacturers do have a consensus position that the authors of the report conveniently neglect.

The authors also claim support from Goodwill and other non-profits. Yet on September 8, 2005, Mr. Gerald L. Davis, Chairman of Goodwill Industries International, Inc. testified before the US House of Representatives Subcommittee on Environment and Hazardous Materials and made the following statement:

“We do support collection of “point of sale” fee/deposit shared by consumer and manufacturer...”  
(Pages 9-10) <http://energycommerce.house.gov/108/Hearings/09082005hearing1631/Davis.pdf>

Both Goodwill and the Salvation Army are participating in the California ARF program and being reimbursed as collectors.

The report also suggests that some recyclers will support the proposal. But the recycler survey mentioned above suggests strong recycler support for the ARF system.

7. The draft report ignores the benefits of an ARF based system currently operating in California.

- The ARF is visible to the consumer. That delivers an educational message that consumption implies environmental and economic impacts at end-of-life, and that old products should be returned for reuse and recycling.
- The ARF system will not burden local governments with the costs of collecting and transporting products since these costs are covered.
- The ARF provides a consistent and adequate source of funds for recycling of historic and orphan products.
- The system will build efficiencies and economies of scale in the infrastructure through competitive contracting.
- The system will maximize local reuse.
- In contrast to internalized costs, which are taxed and marked up through the distribution system, the ARF cannot be marked-up by retailers nor have sales taxes applied.
- The ARF maintains a level playing field in the market because it is equitable for all products and sellers, and it offers the least opportunities for manufacturers and others to escape their responsibilities.
- The system can directly engage manufacturers in managing the end-of-life system through participation in the TPO.

We urge the Ecology Department to rewrite this seriously flawed report.

Sincerely,

Frank J. Warnke



November 29, 2005

Jay Shepard  
Department of Ecology

Dear Jay,

Thank you for this opportunity to comment on the Department of Ecology's draft report on e-waste, "Implementing and Financing an Electronic Product Collection, Recycling, and Reuse Program for Washington State."

Washington Citizens for Resource Conservation (WCRC) supports the approach recommended in the draft report. We believe that the proposed shared responsibility system is a smart approach that meets the interests of the majority of stakeholders and – most importantly – the citizens of the state. This approach will provide convenient, no-charge e-waste recycling for residents throughout Washington as well as for schools, charities, small businesses and small governments. Responsible e-waste recycling will conserve resources and is good for the economy of the state, creating business opportunities and jobs.

In the recommended approach, all the stakeholders have a role to play. Diverse collection sites, including retailers, local governments, recyclers, and charities, will be encouraged. Consumers will bring e-waste to collection sites. State government will provide necessary oversight and enforcement. Manufacturers will establish and pay for the collection, transportation and recycling programs.

WCRC strongly agrees with the draft report that, "it would be in the best interest of the citizens of Washington to require that manufacturers take responsibility for their brand products at end of life. . . End of life management then becomes another feature of the product, the same as memory chips or external video capability" (page 27).

A manufacturer paid system will result in recycling costs being included in the price of the product. This accomplishes two critical things. First, it avoids the disincentive to recycle that occurs when fees are charged at the time unwanted electronic products are recycled. Second, it gives manufacturers a built-in financial incentive to design greener products. When manufacturers pay for recycling, they will design products that use fewer toxins and are more easily recycled.

---

Washington Citizens for Resource Conservation  
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206-441-1790 [www.WasteNotWashington.org](http://www.WasteNotWashington.org)

In addition to supporting a manufacturer paid system, WCRC supports the following specific recommendations included in Ecology's report:

- Provide a network of locations for consumers to drop-off their unwanted electronic products. Convenient collection will be provided for every county of the state in both rural and urban areas, making it as easy for citizens to recycle a computer or TV as it is to buy one.
- Cover computers, monitors and TVs from residents, schools, charities, small businesses and small governments. All of these entities are currently struggling with how to handle e-waste at end of life.
- Include historic, future and orphan products.
- Establish a standard program for collecting, transporting and processing electronic products that is operated by a quasi-governmental organization on behalf of participating manufacturers. It is important that this "safety net" program be in place and that small manufacturers have an easy way to comply with the legislation.
- Allow manufacturers that meet certain criteria to finance and operate their own collection and recycling programs (individually or collectively). Allowing independent programs will stimulate competition and creativity, and result in more effective programs.
- Manufacturers participating in the standard program will fund that program. Manufacturers with independent programs will fund those independent programs.
- Assign responsibility for recovery of electronic products to the standard program and independent programs based on "return share." This will create a level playing field for manufacturers. There has been much discussion about whether responsibility should be based on return share (the percent of products returned for recycling bearing the manufacturer's brand name) or market share. A major concern expressed with using return share is that new entrants to the market, which often go out of business after a few years, won't pay their fair share because their products will be returned for recycling after the companies are out of business. Ecology's recommendation addresses this concern by requiring that new entrants join the standard plan and immediately begin to pay into that program.
- Shipments from processors registered in the State of Washington must comply with all applicable laws of receiving countries and all applicable international laws and agreements.

WCRC recommends that the report be strengthened in the following ways:

- Include language that no electronic products shall be sold or offered for sale in Washington State unless those products comply with the European Union's RoHs Directive.
- Recommend the development of recycling standards for e-waste processors in Washington and utilized by Washington's e-waste system. These standards should include environmental health and safety standards; environmental management systems; compliance with all applicable laws of recipient countries and all applicable international laws and agreements; and financial assurances.
- Export of Electronic Products: The Basel Action Network (BAN) estimated that 50 – 80% of electronic waste collected for recycling is exported offshore. They have not tracked this percent over time. Therefore, the following sentence is not accurate (first paragraph page 49) and should be deleted: ~~Earlier, BAN estimated the figure at around 80%, but since then much of the waste has been directed to more responsible recyclers that refuse to export hazardous components.~~

- The Effects of Landfill Disposal Bans and Suitability of Lined and Unlined Landfills for Disposal of Electronic Products: WCRC disagrees that lined landfills are suitable to receive the kinds of hazardous wastes allowed for disposal under the small quantity generator and household hazardous waste disposal exemptions. We request that the last sentence of paragraph 2, page 53, be deleted. We also recommend that the results of TCLP tests on monitors, computers and TVs be included in this section.

WCRC urges Ecology and elected officials to move forward to implement an effective e-waste solution in the state, using the approach recommended in Ecology's draft report. During the study process, Ecology and stakeholders researched important issues, explored the interests of each stakeholder, and worked creatively to solve problems and develop solutions. Observers at the six stakeholder meetings provided information and opinions throughout the meetings. Ecology staff listened carefully to all views as they developed their recommendation. The majority of stakeholders believe that the approach summarized in the draft report is a workable and smart one.

Thank you again for this opportunity to comment and for your excellent work to develop a solution that is in the best interests of citizens. Please feel free to contact me if I can be of further assistance.

Suellen Mele,  
Program Director



November 29, 2005

Jay Shepard  
Washington State Department of Ecology  
PO Box 47600  
Olympia, WA 98504-7600

Dear Mr. Shepard,

Thank you for the opportunity to submit comments on the report to the State Legislature titled "Implementing and Financing an Electronic Product Collection, Recycling and Reuse Program for Washington State."

Seattle Goodwill and Tacoma Goodwill both strongly support the recommendations Ecology has given to the Legislature. We appreciate the fact that Ecology kept the opinions of charities at the forefront of the discussions regarding implementation on electronics recycling program. Organizations like ours have the existing infrastructure to collect consumers' unwanted electronics and to put the working units back into the reuse market. Together, Seattle and Tacoma Goodwill's operate 32 retail stores along with 61 attended donation sites in Western Washington. All of our attended donation sites collect the public's gently used donations to sell in our retail stores. Each of our stores offer gently used product to the consumer at an affordable price, including electronics. While we would like to accept computers, monitors and computers at our donation stations, for the most part, we do not at this time. The reason for this is the recycling costs for these items make it cost prohibitive for us to collect them any longer. Recently though, Seattle Goodwill has began to occasionally accept working televisions and monitors as donations at their retail stores. However, the costs for recycling are still outweighing the revenue generated from the sales of working equipment.

We understand through the stake holders meeting process, consensus was not met for the financing portion of the electronics recycling and collection program. We support the cost internalization method for recovering un-wanted computers, televisions and monitors from the public. While other fee-based programs have been discussed, the cost internalization method is the best for charities like ours and the consumer. The advanced recovery fee method can be seen as a tax to consumers and a burden on retailers. The end of life fee method is not feasible to our organizations. We are not able to collect fees from our donors in the field and feel that we would see an increase in over night dumping of unwanted electronics at our doorsteps from those who are trying to get around the fees. Through the Materials Management and Finance Authorities creation and the manufactures creation and funding of collection programs, we would be able to once again collect the public's unwanted monitors, televisions and computers. The items collected would be tested and if working, sold in our retail stores to provide funding for our social and education programs. Instead of paying for the non-working electronics, we would be able to recycle them at no cost to our organization and pass a cost savings for the collection of the product to the manufacturers. We see this system as the most advantageous for our organizations, the public and the manufacturers.

On behalf of both Seattle and Tacoma Goodwill's, I would like to thank you for all of the hard work you have put into this process. We appreciate you keeping an open mind during this process and allowing all of the stakeholders to have their thoughts heard and vetted.

Sincerely,

Tiffany Hatch  
Operations Coordinator  
Seattle Goodwill





Jay Shepard  
Department of Ecology

November 29, 2005

Dear Jay,

Thank you for this opportunity to comment on the Department of Ecology's draft e-waste report.

Washington Environmental Council supports the approach recommended in the draft report. Although Ecology's e-waste study process brought together extremely diverse industries and interests, Ecology was able to work creatively to arrive at recommendations for a workable approach that the vast majority of participants can live with. Although the group could not reach complete consensus on every issue, we believe the report contains many of the best possible recommendations to meet the needs of stakeholders in Washington State.

In particular, we believe Ecology draft recommendation makes sense because it promotes:

- **Shared responsibility:** a comprehensive system where everyone has a role to play -- manufacturers will establish and pay for the programs, consumers will turn in their old electronics for recycling, government will provide oversight and charities and retailers will serve as collection points.
- **Cost internalization:** a system that requires the manufacturers to pay for the recycling and processing of the equipment by internalizing the costs of this service as a price of doing business, rather than a separate visible fee. This approach is favored by the environmental community because it will encourage manufacturers to increase durability, recyclability, use of less toxic materials and better address end-of-life management and costs in designing their products.
- **Flexibility:** allowing manufacturers to choose their own approach – either an independent program or participation in a third party organization – to meet their collection goals. By establishing the Materials Management and Finance Authority, but also allowing manufacturers who meet certain criteria to opt out, Ecology has devised an approach that should satisfy the differing needs of the manufacturing sectors involved in the process. Free market incentives: ensuring programs operate as efficiently as possible by encouraging the creation of multiple competing systems, rather than a single responsible entity.
- **Convenient service:** creation of a network of locations for consumers to drop-off their unwanted electronic products that is available in both rural and urban areas.

Although we are generally pleased with the draft recommendations, we hope that Ecology will consider (1) including language that no electronic products shall be sold or offered for sale in Washington State unless those products comply with the European Union's RoHs Directive, and (2) adding a recommendation to develop standards for e-waste processors that include compliance with all federal laws, all applicable laws of recipient countries, and all applicable international laws and agreements; environmental health and safety standards; environmental management systems; and financial assurances.

We urge Ecology and elected officials to move forward to implement an effective e-waste solution in the state, using the approach recommended in Ecology's draft report.

Mo McBroom,  
Policy Director

November 29, 2005

Jay Shepard  
Department of Ecology

Dear Mr. Shepard,

Thank you for the opportunity to submit comments on the report to the state legislature titled "Implementing and Financing an Electronic Product Collection, Recycling and Reuse Program for Washington State."

Ecology provided a fair and open process for involving multiple stakeholders in its effort to provide the Legislature with well-founded recommendations regarding a statewide e-waste program. The resulting report and recommendations represent a majority view and a strong model, which the Basel Action Network (BAN) can support if some important shortcomings (listed below) are addressed.

We note that Ecology does not make any recommendations regarding export in this report, despite the fact that much toxic electronic waste is exported, frequently in violation of laws in recipient countries. Even though export regulations are a federal jurisdiction, it is critical to address export issues in a Washington State program as best as possible (suggestions below). Otherwise, increased collection and 'recycling' of e-waste could easily result in Washington's toxic e-waste tragically impacting communities in developing countries.

We look forward to continuing to work with Ecology to implement this program, which we hope will be adopted by the Legislature with a few small but important changes.

We fully support most aspects of the model, particularly the following, which:

- Establish a standard program for collecting, transporting and processing electronic products that is operated by a quasi-governmental organization on behalf of participating manufacturers, and that the manufacturers finance this program.
- Provide an 'opt out' option for individual or collective manufacturers who wish to finance, collect and recycle electronic waste separately from the standard program in the state. This option can drive ingenuity, competition, possibly lower costs, and give manufacturers a number of choices in response to Washington's requirement to address the toxic electronic waste problem.
- Include computers, monitors and TVs from residents, schools, charities, small businesses and small governments. All of these entities are currently struggling with how to handle e-waste at end of life, and they must be covered.
- Provide a network of convenient locations for consumers to drop-off their unwanted electronic products, in both rural and urban areas, making it as easy to recycle a computer or TV as it is to buy one.
- Cover historic, future and orphan products.
- Assign responsibility for recovery of electronics to the standard program and independent programs based on "return share." This will create a level playing field for manufacturers.
- Processors must identify destinations of recovered materials sold for recycling and assure compliance with applicable environmental, labor and business laws by the end user in the receiving location. However, important improvements need to be made to this requirement, as it does not go far enough.

The shortcomings, however, are critical to address. These are listed below.

- Under Plan requirements, agreements with processors must include documentation of compliance not only with US laws, but also compliance with laws in recipient countries, as many countries have legally binding obligations not to trade in hazardous wastes, as defined internationally, with the US, a non-Party to the Basel Convention. This requirement would require, among other things, that exporters have copies of government-issued import permits for specific facilities in specific countries to import specific wastes from the US.
- The recommended requirement for identification of destinations of recovered materials sold for recycling must also include materials or equipment, whole or in part, going for disposal and going for refurbishment,

if that refurbishment results in the transboundary movement of hazardous wastes, as defined internationally.

- For exported material other than tested working electronics, manufacturers must report the destination, disposition, contents, and volume of the electronics going for disposal, recycling or refurbishment in other countries. This reporting requirement provides at least transparency of exports where states have no clear jurisdiction to restrict exports of hazardous wastes, as defined internationally.
- Any Washington State program must set and enforce minimum standards for responsible recycling of electronic materials, as they contain toxins, standards that include environmental health and safety standards; environmental management systems; financial assurances; compliance with all federal laws, all applicable laws of recipient countries, and all applicable international laws and agreements. Almost all participants in the multi-stakeholder meetings fully supported setting basic recycling standards for processors, and yet they are missing from Ecology's recommendations.
- Recovery or collection target rates must be set, and gradually increased, in order to motivate manufacturers to provide a significant program for Washington State citizens. Without minimum targets for collection, token efforts to advertise and collect used electronics will not effectively deal with our large volume, toxic waste problem. At a minimum, Ecology's recommendation should include a requirement to set target rates after the first few years of program implementation.
- A disposal ban across the State would increase recovery of toxic e-waste, generate more jobs as a result, support meeting recovery goals, and address liability concerns of knowingly allowing toxins into non-hazardous landfills.
- Eventually, setting minimum rates for (rather than asking for a 'description' of) using recycled content materials in the manufacture of new electronics would provide a market driver for the recycling and reclamation of materials.

The Basel Action Network urges Ecology and elected officials to move forward to implement an effective e-waste solution in the state, using the approach recommended in Ecology's draft report with the changes suggested. BAN looks forward to working with other stakeholders to assist in establishing this new comprehensive system.

Thanks for the opportunity to comment on this report.

Sarah Westervelt  
E-Waste Project Coordinator  
Basel Action Network  
122 S. Jackson St. Suite 320  
Seattle, WA 98104  
206 652-5555

Mr. Jay Shepard  
Washington State Department of Ecology  
PO Box 47600  
Olympia, WA 98504-7600

November 29, 2005

Dear Mr. Shepard:

I appreciate the opportunity to provide comments with regard to the Washington Department of Ecology's final draft on financing an electronic waste recycling system. Sharp is an active member of the Manufacturer's Coalition for Responsible Recycling, a group of television and computer electronics manufacturers that supports advanced recycling fee (ARF) based systems to fund electronic recycling programs. Sharp employs nearly 400 persons at a facility in Camas, Washington and ships products through the ports of Tacoma and Seattle. Frank Dick, environmental coordinator for the Sharp – Camas facility, was selected as a member of the SWAC subcommittee's technical advisory team and participated in respective meetings and discussions.

Sharp joins other coalition members in objecting to the current draft of the report titled, "Implementing and Financing An Electronic Product Collection, Recycling, And Reuse Program For Washington State". Our specific objections are numerous and reflected in the response letter signed by Frank Warnke on behalf of the Manufacturer's Coalition. We view that much data were ignored and wrong conclusions were made concerning ARF based systems.

For example, the report ignores the successes of the current California ARF system. Currently the California program of fees of \$6 - \$10 per unit shows a surplus of funding needed for collection, transportation and processing of electronic waste. This program already demonstrates that the ARF system works at less than anticipated costs as set by the ARF structure. Mechanisms are set in the program to monitor such costs and where justified reduce the ARF on consumers.

Another section in the report concludes that with an ARF system manufacturers will be less likely to design their products for ease of recycling or to minimize hazardous substance content. This is simply a wrong assertion. Electronics manufacturers continually make substantial improvements in reducing and eliminating hazardous substances from products and make them more energy efficient. Such improvements are created by technological breakthroughs and borne by market demands and reductions in manufacturing costs. Manufacturers will continue to make great improvements regardless of the type of end-of-life program.

Finally, Sharp emphasizes that it strongly supports responsible management of end-of-life electronic products and to that end a true shared responsibility by all stakeholders, including manufacturers. Sharp sees that the ARF model provides the most important elements of a shared responsibility system: program sustainability, cost effectiveness, education and participation for consumers, and fairness to all participants.

We urge that Department of Ecology assess its claims concerning the ARF model and re-write the report.

Sincerely,

Frank Marella  
Senior Manager, Corporate Environmental Affairs  
Sharp Electronics Corporation





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November 29, 2005

Jay Shepard  
State of Washington  
Department of Ecology  
P.O. Box 47600  
Olympia, WA 98504-7600

Dee Endelman  
Agreement Dynamics, Inc.  
1521 17th Ave. East  
Seattle, WA 98112

Dear Jay & Dee:

Bravo and congratulations on a job well done on the electronic waste study process and final report in response to HB 2488 (2004). The Washington Retail Association (WRA) believes that the study process was extremely productive, open and fair. Everyone had an opportunity to share his/her views fully in an effort to reach consensus recommendations and the report fairly represents the discussions that occurred. Although a consensus was not reached among all stakeholders, the WRA is supportive of the final recommendation. We are especially appreciative of the finance recommendation that minimizes the administrative impact on all stakeholders. We believe the recommendations represent the best possible blend of stakeholder interests. Finally, the members of the WRA appreciate that we had a voice in the process through the appointment of Jan Gee as our representative. Our impacted members were fully engaged and impressed with the management of the process.

The WRA encourages the passage of legislation in the 2006 session that embodies the Department of Ecology recommendations. Although we are not generally supportive of state-by-state remedies of issues impacting business across boundaries, we are sensitive to the desire of local communities to address disposal of electronic products now. We believe that a federal solution is not forthcoming in the near future and therefore state action is appropriate at this time. Section 17 of the proposal emphasizes an important public policy to sunset the state plan and defers to a comprehensive federal plan once adopted.

The "shared responsibility approach" to electronic recycling as recommended, minimizes the creation of a complex, expensive and bureaucratic government program. It recognizes the natural partnerships that have developed in recent years, around electronic recycling programs between manufacturers, retailers, local government and recyclers/processors. It allows and encourages the continuation of innovative private sector programs. Retailers have three important roles in these recommendations:

1. Retailers who brand label, build computers or directly import product from an entity that has no U.S. presence or assets are considered a manufacturer and are subject to the same requirements as all manufacturers. We accept these responsibilities as fair and equitable.
2. Any successful collection and recycling process must have the involvement of all parties including retailers. A number of retail businesses have voluntarily partnered with local government, Hewlett

Packard and/or local recyclers to create and implement innovative and successful models for collection. Our commitment is to continue and grow this partnership role through the flexible recommendations of this "shared responsibility" proposal.

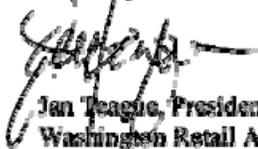
3. Education of consumers is the centerpiece to developing a "shared responsibility" partnership with the consuming public. Retailers are in a position, along with the expertise of the Department of Ecology, to inform consumers of their responsibility to recycle electronic waste and the convenience of recycling under this recommended proposal.

We would like to further comment on the financing mechanism of the recommendations. We believe that the "manufacturer responsibility" model: 1) is the most cost effective and least bureaucratic; 2) avoids cumbersome product distribution tax liability tracking systems required by a "first sale" system; 3) avoids a new consumer tax at retail (ARF) thereby neutralizes the price competitiveness of ALL retail sales; and, 4) drives innovative product design to reduce the cost of recycling. The finance recommendation of "manufacturer responsibility" requires the cost of recycling to be imbedded into the cost of the product just as other costs such as design, manufacture, marketing, and transportation. The imbedded cost removes any barrier to competitiveness between in-state brick and mortar retailers and remote sellers that would be created by an advance recovery fee "ARF" at retail or a "first in-state sale" taxation model. Washington State's sales tax is already a major barrier to competitiveness, and cost recovery models other than the "manufacturer responsibility" would have a dramatic impact on in-state sales. This barrier would also reduce government revenue from loss of sales tax, B&O Tax and property tax.

Finally, the third party quasi-government organization that develops and services the standard manufacturers' plan will substantially relieve manufacturers and small retail/manufacturers from the burden of creating independent recycling programs and reports to the DOE. This creative approach to a streamlined process for business deserves significant recognition.

The WRA and its members are committed to continued efforts to develop an electronics recycling proposal that can be embraced by the majority of the state's stakeholders and the 2006 Washington State Legislature. We support the fundamental principals of the Department of Ecology's proposal and Jan Gee will be an active voice on behalf of retailers throughout the Legislative Session in an effort to seek passage of acceptable electronic waste recycling legislation. She can be contacted at 253.209.5079 or [jan@gg-public-affairs.com](mailto:jan@gg-public-affairs.com).

Sincerely,



Jan Teague, President/CEO  
Washington Retail Association



City of Tacoma  
Public Works Department

November 23, 2005

Jay Shepard  
Department of Ecology  
P.O. Box 47600  
Olympia, WA 98504-7600

Dear Mr. Shepard:

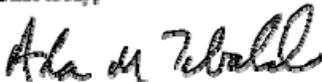
Thank you for the opportunity to submit comments on the report to the State Legislature (Legislature) titled "Implementing and Financing an Electronic Product Collection, Recycling and Reuse Program for Washington State."

The City of Tacoma (City) strongly supports the approach recommended to the Legislature by the Department of Ecology (DOE). The City feels that product stewardship approaches are the most effective and the fairest way to assess costs when dealing with hazardous materials. Product Stewardship encourages the manufacturers of these products to use less toxic materials and to make their products more environmentally friendly at the end of their useful life.

We realize consensus was not reached on methods for financing the Electronics Recycling Program. Apparently, the divide between the manufacturers who prefer a fee collected at retail and those who prefer cost internalization approaches cannot be bridged. The City believes that a cost internalization system that requires the manufacturers to include the costs of recycling and processing of their equipment in the price of the product is the correct way to proceed. We also believe a cost internalization approach will encourage manufacturers to increase the durability and recyclability of their products and will encourage the use of less toxic materials. Our current system of relying on end of life fees for proper disposal of wastes does not work well when applied to potentially toxic or hazardous materials.

The City would also like to commend you personally for the hard work and effort you put into the process and for your even-handed approach to dealing with the various positions and points of view that were brought to the table.

Sincerely,

  
Alan M. Tebaldi, P.E.  
Division Manager  
Solid Waste Management

AMT:SRM:ec (DOE, Shepard, Nov 2005)

File: DOE

Environmental Services/Solid Waste Management ■ 3510 South Mulina Street ■ Tacoma, Washington 98469-2200 ■ (253) 591-6543  
[www.cityoftacoma.org](http://www.cityoftacoma.org)



RECEIVED

DEC 01 2005

Department of Ecology  
Industrial Section

803 Valencia  
Walla Walla, WA 99362  
November 29, 2005

Jay A. Shepard  
P. O. Box 47600  
Olympia, WA 98504-7600

Subject: Comments on 2488 Legislation -- Electronics Reuse/Recycling Draft Report

Dear Mr. Shepard

We appreciate the opportunity to review the report, "Implementing and Financing an Electronic Product Collection, Recycling, and Reuse Program for Washington State." We are especially impressed with the work that went into identifying an approach for financing such a program and support the basic premise of the report: "... that the state establish a standard program for collecting, transporting and processing electronic products that is operated by a quasi-governmental organization - the Materials Management and Finance Authority ... [which] would be funded by participating manufacturers."

We would appreciate your taking the following into consideration before finalizing the report and recommendations:

- Word in the strongest way practical the need to avoid disposing of electronic products even in permitted lined landfills
- Consider replacing "into" with "in" for "sell products into the state of Washington." "Selling into" implies the legislation would only apply to companies outside the state of Washington selling into it.
- Consider financing of the program in a form that will give incentive (if not drive) manufacturers to make electronic equipment with 1) the least amount of hazardous material, 2) internationally interchangeable parts, and 3) easily recyclable materials
- Consider having the standard required of electronic equipment recyclers be in tune with the Federal standard

We look forward to passage of the 2488 legislation.

Sincerely,



Sandra Cannon, Chair  
Walla Walla Resource Conservation Committee





**Snohomish County**  
**Public Works**

**Aaron Reardon**

County Executive

(425) 388-3488

FAX (425) 388-6494

2930 Wetmore Avenue  
Everett, WA 98201

November 21, 2005

Jay Shepherd

Department of Ecology

Transmitted as an e-mail attachment

Dear Jay:

Thank you for this final opportunity to comment on Ecology's recommendations and report regarding an Electronics Reuse and Recycling System. Snohomish County Solid Waste Management Division supports the approach taken in your recommendations.

ESHB 2488, which passed both houses unanimously in the 2004 Legislature, tasked Ecology with gathering information from a diversity of stakeholders. You have done a thorough job gathering local and national stakeholder information, concerns and suggestions through a variety of mechanisms, including:

- convening a technical support team made up of a diversity of manufacturers and others
- convening a diverse stakeholder advisory group which held six meetings and provided much information to each other and Ecology via e-mails, individual calls and meetings, and providing documents
- conducting significant research on the issues and seeking information from all stakeholders as well as other states and national interests
- posting information on a Website and distributing meeting materials and other information to a broader e-mail list serve
- providing multiple drafts and "strawman" models to elicit ideas, comments and alternatives
- allowing observers attending stakeholder meetings to speak and provide their expertise and opinions throughout the meetings
- providing luncheons whereby stakeholders could intermingle and discuss ideas with each other

Ecology's recommendations and report fairly represent the information, preferences and needs expressed by the vast majority of the local stakeholders. The 2488 stakeholders listened carefully to each other, sought solutions together, and were able to find much common ground with each other. Your recommendations show that Ecology was also listening carefully to these discussions and you incorporated nearly all of the key elements discussed among the stakeholders.

It is now time to implement these recommendations and have all stakeholders assist the manufacturers in establishing a comprehensive electronics recycling program in Washington State. We have had several rounds of legislation, culminating in this nearly 2-year study process. Several of us participated for four years in the National Electronics Product Stewardship Initiative, seeking a national program, but to no avail. Meanwhile residents, small businesses, local governments, charities and schools struggle with properly managing these products when they are obsolete. Questionable practices and sham recycling abound. Potential new jobs and economic development opportunities are lost. The status quo is inefficient, ineffective, and not adequately protective of human health and the environment.

The recommendations provide the design for a convenient, effective system that will greatly benefit the citizens of the State. There is nothing left to study before we can move forward and there is no possibility of national legislation in the near future that we can rely on to solve this problem. Now we must implement the program.

Snohomish County Solid Waste Management Division looks forward to working with other stakeholders to assist in establishing this new comprehensive system.

Sincerely,

A handwritten signature in black ink, appearing to read "Sejo Jackson", written in a cursive style.

Sejo Jackson  
Principal Planner

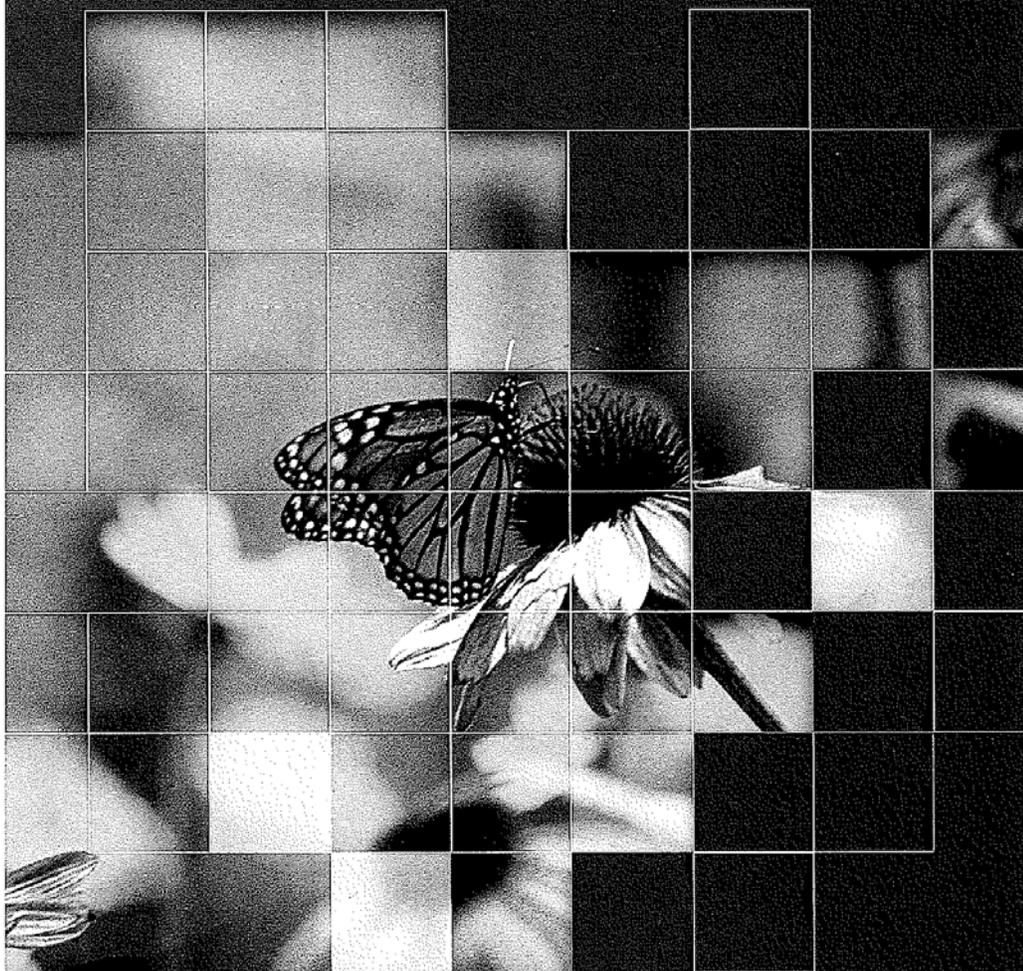
**Appendix C:**  
**Electronic Manufacturers' Coalition Draft Model Legislation**



# END-OF-LIFE MANAGEMENT OF ELECTRONICS

Implementation of an ARF-Financed and  
Stakeholder-Managed System

Prepared by  
Electronic Manufacturers' Coalition  
for Responsible Recycling



Canon

HITACHI  
Inspire the Next

IBM

LG Electronics

JVC  
The Funnel Economy

MITSUBISHI  
ELECTRIC  
DIGITAL TECHNOLOGIES

Panasonic Ideas for life

PHILIPS

RCA

SANYO

SAMSUNG

SHARP

SONY

MAY  
2005

## □ □ Introduction

The Manufacturer's Coalition for Responsible Recycling (Coalition) is a group of electronics companies that have come together out of a belief that the Advanced Recovery Fee (ARF) is the best approach to financing management of end-of-life electronics at the state and national levels. Coalition companies include major manufacturers in the consumer electronics sector including the major manufacturers of televisions, as well as personal computer and monitor manufacturers/sellers such as IBM, Sony, Sharp, Panasonic, JVC and Samsung.

The Coalition companies have been active participants in the development of end-of-life management systems in Europe, Japan and elsewhere, each with different conditions and stakeholder interests. The Coalition members are committed to developing the best system for the U.S., and many were active participants in the National Electronic Product Stewardship Initiative (NEPSI) dialogue. Also, many have provided funding for collection events and other pilot initiatives. While Coalition members continue to prefer a national resolution to this issue, the inability to reach agreement on a national system leads us to propose a system for implementation at the state level that will work effectively and can transition to an eventual national system.

*This paper describes an ARF-financed recycling system for electronic products that is managed by a shared responsibility framework and designed for state implementation. This proposal is modeled on the system developed in the NEPSI dialogues.*

**Part 1** describes the proposed system including its benefits and drawbacks.

- 1.1 Background
- 1.2 Summary of the Proposed System
- 1.3 Primary Benefits and Drawbacks
- 1.4 Detailed Description, including Recommended State Implementation Provisions

**Part 2** provides the Coalition's view of producer responsibility.

**Part 3** concludes and summarizes the main arguments.

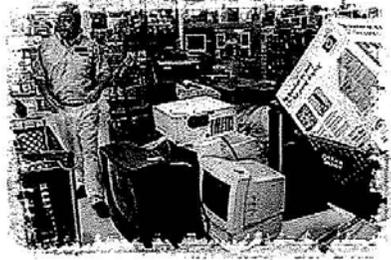
**Part 4** consists of attachments to provide greater detail on selected issues. They include:

- 4.1 Model state legislation
- 4.2 Responses to Critiques of the ARF Approach
- 4.3 EPEAT - Incentivizing Environmental Design through the Market

For further information contact: David Thompson at [thompsond@us.panasonic.com](mailto:thompsond@us.panasonic.com), or Wayne Rifer at [wrier@concentric.net](mailto:wrier@concentric.net).

## Part 1

### The ARF Financed, Stakeholder Managed System



#### 1.1 Background

The Manufacturers Coalition believes that an ARF-financed system with active stakeholder management, as broadly outlined in the NEPSI dialogue, provides a sound basis for moving forward, both at the national and state levels, with an efficient and effective system for collection and recycling of electronic products. This paper presents the Manufacturers' Coalition's model for state-level implementation of an electronics recycling system.

State-level action is not the ultimate solution – this is a national challenge that should be addressed at that level. However, states can contribute to a national solution by adopting legislation that includes essential consistent elements and defers to a national solution when implemented.

#### 1.2 Summary of the Proposed System

The underlying principle of the Coalition's proposal is that the stakeholders in the electronics' chain of commerce should manage the end-of-life system, and that stakeholders' responsibilities should be proportionate to their ability to implement and affect the system. This is the principle of shared responsibility.

- » It places manufacturers in a key role as the primary managers of the recycling infrastructure through governance of the management entity.
- » Consumers provide system funding through paying the ARF, and they discard their end-of-life products at appropriate collection stations.
- » Retailers and manufacturers that sell their products directly collect the ARF from the consumer and remit it as directed.
- » Recyclers compete to provide environmentally responsible collection and processing.
- » Government provides leadership by helping assure that all stakeholders perform their duties and the rules are followed.
- » Manufacturers, retailers, recyclers, and municipal governments voluntarily participate in collection of products, and are reimbursed for these activities from the ARF.
- » All stakeholders share responsibility to educate and inform the public.

The model developed in NEPSI<sup>1</sup> proposes a **hybrid financing system** whereby an initial system builds an infrastructure and cleans out historic product, and a future system can be instituted

<sup>1</sup> See section 1.4 for details on the NEPSI model. This is a greatly simplified introductory description.

when these challenges have been surmounted. Financial support for the initial system is provided by an **Advanced Recovery Fee (ARF)** – a visible fee paid by consumers at the point of sale.

The ARF is collected on retail sales of all PCs, monitors, TVs and large peripherals. While the NEPSI product scope includes only products that are sold to the public (residents) and small businesses or organizations, the Coalition sees benefits to including products that are sold to large commercial and institutional customers, that is, all sales.

Note that this is *not a traditional ARF* that is run by government. The ARF in this system simply provides funding, in an efficient and equitable way, while the system is structured so as to assure that management responsibilities are shared by stakeholders. Unlike a traditional ARF, the collected **funds will be managed by a private third-party organization** (TPO). This organization will have a multi-stakeholder governance structure with majority industry participation. The TPO will use **competitive contracting** to manage end-of-life products. A portion of the funds, the **Collection Incentive Payment**, will pay for local collection so these costs are not left on government's back.

**At the appropriate time in the future the ARF may no longer be needed, or it may be determined that an alternative financing system is more appropriate.** The NEPSI proposal called for an eventual transition to partial cost internalization (PCI) based on government taking responsibility for collection, and manufacturers taking responsibility for recycling. However, the NEPSI stakeholders were never able to fully describe the design of a partial cost internalization system and how it would work in practice. The Coalition proposes a thorough stakeholder re-evaluation of the recycling system at a time-certain, with all options being on the table. This paper will not discuss the options at this time.

The system, based on NEPSI documents, includes several other essential elements:

- » A set of **interim actions** to be taken after an agreement is reached but before legislation puts the ARF-system in place.
- » A definition of **Base Service Level** that assures a consistent set of basic services, while providing local flexibility.
- » **A diverse collection network**, made viable by funds from the ARF, that builds on existing businesses and facilities to provide convenience to the public.
- » **A materials processing system** that is made cost-effective through competition and economies of scale.
- » Numerical **performance measures** for collection and processing.
- » **Standards for environmentally sound recycling** that are enforced through contracting procedures.
- » **A program to develop markets** for recovered products and materials that builds toward long-term self-sustainability.
- » Governing principles that assure a **level playing field** and **uniformity**.

NEPSI achieved consensus agreement on these elements, though detailed work is still needed to complete some documents. But in the NEPSI system there was **a missing piece – an alternative financing mechanism** that would allow, within the ARF structure, certain manufacturers to benefit from their initiatives to design more easily recycled products and to create internal recycling infrastructures by taking individual responsibility for the collection and recycling of their products. This was assigned to industry negotiators to develop.



that there are answers and/or fixes to these perceived drawbacks.

**Identified Concerns about the ARF System And  
Methods to Address those Concerns**

1. Enforcement on remote sales – by Internet, catalogue or phone – may be difficult for states.
  - » California has addressed the remote sales problem in their legislation by ensuring that any sellers of electronic products that do not collect and remit the fee will be ineligible for government procurement. This is a powerful incentive for remote manufacturers to collect and remit the fee on direct sales. In fact, major manufacturers who sell via the Internet voluntarily collect the California ARF.
  - » Moreover, enforcement is a concern with virtually all financing approaches. It will be difficult to force a remote manufacturer to develop and implement a collection and recycling system. Overall, the Coalition believes that the ARF will result in the highest level of compliance.
2. It is claimed that a flat fee on all products lacks any direct incentive for improved environmental design.
  - » In the Coalition model manufacturers will participate in managing the end-of-life system, and will work directly with the problems and opportunities in that system. This experience will provide an incentive to reduce costs by improving environmental design.
  - » Additionally, the Coalition proposes requirements for environmental design, such as imposition of the European Union Restriction on Hazardous Substances (RoHS) in states where the ARF model is implemented.
  - » Though the cost internalization approach would appear to provide a strong financial incentive for environmental design, the Coalition believes that this incentive is in reality very limited. See Section 1.4.12.
3. It lacks the simple, ideological appeal of simply making manufacturers responsible for their own products.
  - » Experience has shown that producer responsibility systems are not simple to implement.
  - » What the ARF lacks in ideological aesthetics, it makes up for with practical effectiveness.

**1.4 Detailed Description and Recommended State Implementation**

This section describes the elements of the Coalition model. It also includes recommendations that the Coalition makes regarding state implementation.

#### **1.4.1 Product Scope**

The product scope includes the list of products upon which the ARF would be levied, and also products for which collection and recycling would be paid for by the system.

- » TV/TV Monitors (CRTs and flat panels)
- » Stand alone computer CRT and flat panel monitors greater than 9 inches
- » Laptop/notebook computers
- » CPUs
- » Consumer desktop devices (printers and multifunction devices)

In addition to this list, small peripherals such as keyboards, mice, cables and speakers would be paid for by the financing system, but would not carry an ARF.

As opposed to limiting the ARF to sales to households and small business users, as does the NEPSI system, the Coalition sees benefits to including products that are sold to large commercial and institutional customers, that is, all sales. This has several advantages:

- » It solves the problem for all sectors of consumers and not just the public/small business sector.
- » It avoids confusion about what sales are covered and which are not.
- » It avoids confusion about what returned products are covered, and which are not.
- » It increases economies of scale and helps to minimize the cost per product.

#### **Implications for State Legislation**

- » Legislation must define the categories of Covered Products. This includes both:
  - » A list of products on which a fee will be charged, and
  - » A list of products which are eligible to be paid for by the financing system.
- » This may be the same list; however some products like smaller peripherals (keyboards, mice, etc.) will likely not carry a fee but would be paid for.
- » Legislation should establish which classes of customers will be covered – the public, small businesses/organizations and/or large commercial accounts.

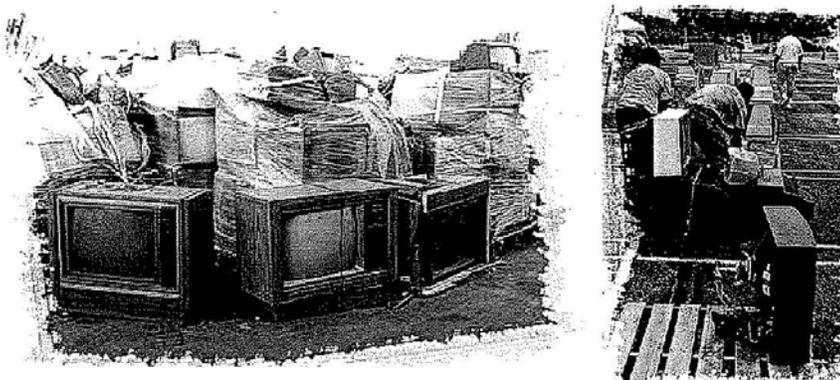
#### **1.4.2 Financing Mechanism**

State legislation should establish an Advanced Recovery Fee<sup>3</sup> to be charged on all covered products, whether sold locally or via remote sales, such as the Internet, phone or catalogue sales. The fee should be adequate in order to cover the costs of collecting, transporting and processing all products that are returned into the system.

The ARF should be kept at a level that is just adequate to pay for the quality and breadth of services needed to meet the system performance goals and assure environmentally responsible management. It is proposed that the fee have a cap, which is estimated to be approximately \$10. It should have a mechanism to be lowered over time since it is believed that the maturing of the infrastructure will lower system costs.

<sup>3</sup>The ARF is basically an "advanced user fee" since the beginning-of-product-life leads eventually to the end-of-life.

The ARF should be variable by product type, so that any one product type covers its own costs, and some product types do not cross subsidize other product types. Televisions are likely to be more costly to recycle, especially since old console TVs add considerable cost.



#### **Implications for State Legislation**

- » Legislation should specify that the fee will be collected by the seller (retailer) at the point of retail sale for all sales in the state, whether by local retail establishment or by a remote seller.
- » The fee must be remitted by the seller to a designated authority, such as to a department of revenue, to a dedicated trust fund, or to a designated organization.
- » The seller should be permitted to deduct a specified percentage of the fee for administrative costs, e.g. 3 percent.
- » The fee should be capped. A \$7-8 cap should be adequate, but a higher cap, not to exceed \$10, may be prudent.
- » There should be a mechanism to adjust the fee to cover system financial needs, though not to exceed the cap.
- » The fee on each product category should cover the costs for that product type, depending on the costs to collect and recycle.
- » There should be a safeguard to prevent the monies generated by the ARF from being used for general government purposes.

#### **1.4.3 Fund Management**

The management of the ARF money, including paying for collection and recycling services, is one of the more complex aspects of the system. NEPSI stakeholders worked on creative ways to manage the funds to assure maximum efficiency, to protect the fund from being raided for other purposes, and to engage stakeholders in realizing the ongoing success of the system.

**Models for Fund Management** Two very different models have been proposed for fund management, and each has been implemented in different settings.

» **Government-managed system** – Under California SB 20 the fee is passed into a State fund and the CA Waste Management Board provides funding for recycling services.

› Pros

- It is relatively simple to establish and there are many precedents.

› Cons

- Funds are not protected from diversion for general government uses.
- Governmental contracting has constraints on how funds are spent, which can significantly increase system costs.
- Government overhead costs can be relatively high.
- Government lacks strong incentives to constrain system costs.

» **Private TPO-managed system** – Under the NEPSI model and the Coalition's proposal, a private third-party organization (TPO)<sup>4</sup> is formed, under multi-stakeholder governance, but with significant representation of manufacturers. The TPO is a non-profit business entity that contracts for recycling services, assures environmentally sound recycling, manages data on system performance, is responsible for meeting performance goals, and handles other management functions. See also the Part 4 attachment for more detail.

› Pros

- This system will protect the fund from being diverted for other purposes.
- It engages the stakeholders, especially manufacturers, in managing the end-of-life system, incentivizing improvement in environmental design.
- Stakeholders share an incentive to constrain system and administrative costs because they have an incentive to keep the ARF as low as possible.
- A private TPO, operating under public oversight, can use more efficient and effective business practices in contracting and performance monitoring.

› Cons

- It can be more difficult to establish.
- There are few precedents for such a system in the U.S., although many exist in Canada and Europe.

The privately-managed system was preferred by NEPSI stakeholders over a government-managed system for several reasons.

- » It would greatly reduce the burden on government. New governmental programs should not have to be created if private enterprises can deliver the desired services.
- » It engages manufacturers directly in the management of the system.
- » It helps bridge the present disconnect between product design and end-of-life management by providing information to manufacturers to improve design for recycling.
- » It helps protect the fund from being raided by government for other purposes.

<sup>4</sup> Other names for equivalent organizations include: "Not-for-Profit Corporation" (NFPC), "Electronic Stewardship Association" (ESA), and "Producer Responsibility Organization" (PRO).

- » The recycling infrastructure is a business system and can be more efficiently managed by businesses than by government.

**Alternative Approaches for Forming a Private TPO** There is much to learn about the best way to organize a private non-profit organization that would use legislatively approved funds to run the end-of-life system. Some pilot projects<sup>5</sup> are currently being initiated to increase our understanding about these questions. See additional information in an attachment to this document.

There are three different ways that such organizations can be formed. The first is a voluntary initiative by industry:

**1. A Voluntarily Initiated Organization** Manufacturers can group together to form a TPO in the absence of any governmental requirements. This model has been implemented in Canada, Europe and Australia. It is often done in anticipation of, and as an attempt to influence legislation.

This model is currently in the early stages of implementation as the National Center for Electronic Recycling (NCEER), organized by the MARCEE project of the Polymer Alliance Zone in West Virginia<sup>6</sup>.

The types of services that a voluntary organization could provide are described in Section 1.4.5 on the Interim System. These voluntary initiatives do not include a comprehensive funding method, and so are not seen as the total solution.

The other two ways of forming a private TPO involve legislation. These generally do include a funding method and so a part of a total solution.

**2. A Legislatively Established Organization** The legislation can create a TPO, establishing its membership, structure, duties and funding. This has been done in some Canadian provinces.

**3. A Legislatively Authorized Organization** Legislation can define the standards and authorities for a TPO and provide a mechanism for privately initiated entities to be licensed or contracted. Then funding could be disbursed to a licensed TPO, or more than one TPO, for specified services based on the volume of product handled. Generally it is required that the TPO submit a business plan as to how it intends to deliver services for approval by the environmental agency, as well as annual reports.

Option 2 establishes a single, exclusive TPO, which may be able to most efficiently contract for transportation and processing services, but must, as any monopoly, be carefully monitored to avoid inefficiencies. Option 3 can stimulate multiple TPOs, which would compete to secure product from collection entities and process at the lowest cost. The environmental agency could develop a TPO licensing or contracting process that stimulated efficiencies while assuring convenience of service and environmentally sound management.

<sup>5</sup>One is a TPO Pilot project in the Northwest with partial funding from EPA and currently seeking further funding from manufacturers.

<sup>6</sup>For up to date information contact Jason Linnell, Executive Director, National Center for Electronics Recycling, Parkersburg, WV, 304-374-8144, [jlinnell@electronicsrecycling.org](mailto:jlinnell@electronicsrecycling.org)

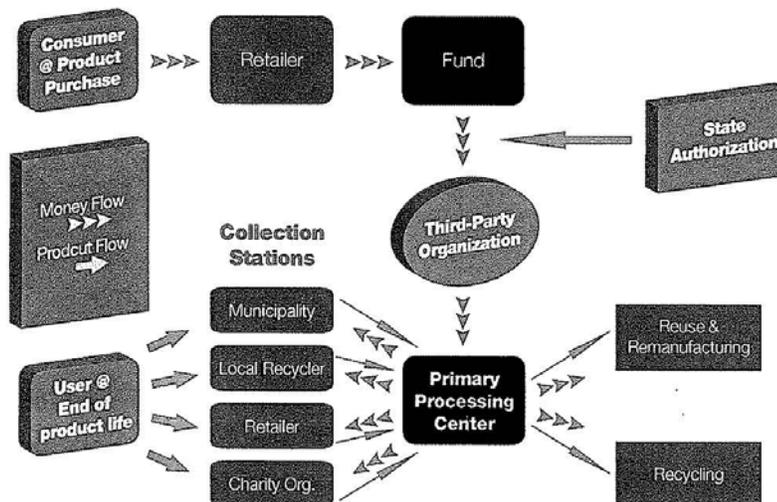
Implications for State Legislation
The Coalition recommends that state legislation form a private TPO for fund management via either direct legislative establishment or legislative authorization.
» The State needs to decide how it wishes to provide fund management, including the options for TPO formation, and develop their legislation accordingly.
» The TPO should be required to develop and submit a management plan for approval to the state environmental agency that describes how they will contract for services and select contractors, qualification standards and environmental requirements for processors, processor monitoring and auditing procedures, a plan for how performance goals will be met, and methods to provide public education.
» Legislation should require an annual report from the TPO, to be reviewed by the state environmental agency, and the agency should periodically provide a report to the legislature that documents the progress and effectiveness of the system.

**1.4.4 Collection, Transportation and Processing Infrastructure**

The NEPSI model includes guidance about the infrastructure in the document "Base Service Level". The graphic on the following page depicts how the money and product would flow in the system considered by NEPSI. Variations on this model are feasible and NEPSI did not finalize any specific system.

**Flow of Dollars and Product** The following key principles are important in order to effectively and efficiently manage the collection, transportation and processing infrastructure:

- » Services should be provided through competitive contracting.
- » The number of contracts should not be too large, for the purpose of management effectiveness and to keep administrative costs to a minimum.
- » All product management services should adhere to high standards of environmental and worker health and safety protection.



**Role of Primary Processors** Contracts for processing and recycling services should be between the TPO and selected regional or local businesses and entities, which may be called Primary Processors. These entities are contracted to provide specific services:

- » Receipt of product from collection entities and payment of the Collection Incentive Payment, a pass through payment included in the contract
- » Processing the product for shipment downstream
- » Securing downstream product management, assuring adherence to environmental standards and tracking the downstream destination of product
- » Accounting for product and money and periodic reporting to the TPO.

There are several other services that these entities may provide at their own option, including:

- » Triage, sorting and/or processing for reuse – this should be encouraged at either the primary processor or the collection stations
- » Dismantling for recovery of components
- » Dismantling and/or shredding to separate materials into recycling streams
- » Recording of brand information and product serial numbers.

To achieve these principles the ARF-based system should employ competitive contracting, with environmentally sound management standards incorporated into all contracts. Which of these services are provided at a primary processor under contract to the TPO will be a function of the scale, available markets and business model.

**The Collection Network** The network of collection entities should be highly diversified with multiple locations in each community. This enhances convenience to the public. Many different types of entities can provide collection:

- » Retailers
- » Local computer assemblers (white box stores)
- » Electronics manufacturers
- » Charities and non-profit organizations
- » Local multi-material recycling centers
- » Municipal waste collection and recycling facilities
- » Waste haulers

There is no intent to require or mandate any of these entities to provide collection. Rather they should be incentivized to do so by covering their primary costs. Then electronics collections can be incorporated into ongoing business models.

Due to the large number of likely collection entities, it may be impractical for the TPO to contract directly with them. Rather, the contracted Primary Processors will, according to terms of their contract, provide pass-through payments of the Collection Incentive Payment to anyone who collects qualifying products from the public. This would likely be a flat amount per pound, though perhaps adjusted for rural collection sites, that will be calculated to cover the costs of a basic collection program. More costly collection efforts can be undertaken – for example on-call

curbside pick-up – but the additional costs would be the responsibility of the sponsor. Primary Processors would also pay for transportation of efficient volumes of material from collection sites to their door.

This approach should establish a broad and convenient collection network, but covering the basic costs of collection and allowing any entity to incorporate collection services into their business or operations. It would do so at the most reasonable cost by providing an adequate, but not excessive Collection Incentive Payment.

**How Does Reuse Prosper in this System?** Reuse plays an important role in both the NEPSI national system and the Coalition's proposed state approach. Encouraging reuse is important for several reasons:

- » It captures the highest environmental and economic value of still useful equipment.
- » It provides opportunities for local organizations and businesses to incorporate or expand reuse activities, and creates local jobs.
- » It reduces system cost by saving on transportation and processing.
- » It provides low-cost used equipment to local schools, organizations, communities and individuals, and helps to cross the digital divide.

The Coalition expects that most reuse will be initiated locally by charities, non-profit organizations and small businesses. Contractors under the ARF system will either work directly with reuse organizations, or encourage collection entities from which they receive product to work with such organizations to triage equipment for local reuse.

#### **Implications for State Legislation**

- » Legislation should specify qualified costs that will be covered by the ARF, including administration.
- » Principles should be spelled out for competitive contracting of services, the establishment of a diverse and convenient collection network, and programs to maximize reuse.

#### **1.4.5 Performance Goals**

The primary purpose of performance goals is to measure whether a system is meeting expectations and whether intervention is warranted. Goals should measure the two main parts of the product recovery system – collection and processing/recycling.

- » **Collection** There are different approaches to measurement of collection. A numeric goal can measure how effectively product is being recovered from the public in different areas and whether local services to the public should be enhanced. NEPSI recommended that a pounds/capita/year goal should be set for collection based on the achievement of the better-performing, long term collection programs in the US. The goal that NEPSI discussed was 1.75 lbs./person/year. Recent collection programs have exceeded this amount and a higher goal may be considered. In truth, due to the lack of good information about long-term results of collection, any number will be somewhat arbitrary.

Alternatively, in some communities it may be possible to measure the convenience of collection services and the amount of publicity through a more qualitative assessment, which may represent a more direct determination of the quality of the collection effort.

<sup>1</sup> See section 1.4 for details on the NEPSI model. This is a greatly simplified introductory description.



» **Processing/recycling** A numeric goal for processing or recycling measures how effectively recovered product is being managed for reuse or recycling by contractors. NEPSI relied on the goals set by the European program: the rate of component, material and substance reuse and recycling shall be 60 percent by an average weight per product category. This goal will ramp up to 70 percent in 5 years.

#### **Implications for State Legislation**

» State legislation should define performance goals for collection and processing/recycling, and direct the state environmental agency to establish and periodically revise numerical goals. Legislation may establish initial numerical goals.

#### **1.4.6 Environmentally Sound Management Standards**

Environmentally sound management standards (ESM) for recycling are an essential part of any electronic waste recycling system, since the cheapest way to handle e-waste is not always the most responsible. The U.S. EPA has developed a set of ESM standards, with the intention of creating a verification system, which is one of the most difficult challenges in assuring ESM. The Coalition recommends utilizing these guidelines since it has been reviewed by stakeholders and it will include a verification system. These guidelines are available at: <http://www.epa.gov/epaoswer/osw/conserve/plugin/pdf/guide.pdf>

#### **Implications for State Legislation**

- » State legislation should establish that all recycling paid for under the state program should comply with ESM standards, and delegate the development of such standards to the state environmental agency.
- » The state environmental agency should look at the EPA Guidelines and should accept public input in the development of ESM standards. The ability to verify adherence to the standards, especially by out of state or country processors, is essential.

#### **1.4.7 Market Development Program**

The development of markets for recovered equipment, components and materials is essential for the economic sustainability of electronics recycling. As the collection system grows, markets for recycled materials must expand to keep pace. Several activities were identified by NEPSI as important to develop markets:

- » Requiring manufacturers to report on their use of recovered materials in their products
- » Providing research and development grants of new uses of materials.
- » Requiring state purchasing of electronic products to require the incorporation of recovered materials in products and/or to offer refurbished equipment using recovered components.

#### **Implications for State Legislation**

- » State legislation should direct the TPO to institute a market development program and to spend a portion of the ARF funds on market development, perhaps up to one percent of the available funds.
- » State legislation should require manufacturers to report annually on their use of recycled materials in their products.

#### **1.4.8 System Re-evaluation**

At an appropriate time in the future the ARF may no longer be needed, or it may be determined that an alternative approach to financing the electronics recycling system is more appropriate going forward. The NEPSI proposal was a "hybrid" financing system that called for an eventual transition from the ARF to a partial cost internalization approach (PCI) based on government taking responsibility for collection, and manufacturers taking responsibility for recycling. However, NEPSI stakeholders were never able to fully describe the exact design of a partial cost internalization system and how it would work in practice.

The Manufacturers' Coalition shares the commitment to perform a full system evaluation at a definite point in the future, to evaluate if the system is working well, and, if not, to make appropriate changes.

However, the Coalition does not believe that future decision makers can or should have their hands tied by today's stakeholders. Future stakeholders will have several years of experience and be much wiser. In fact, the future stakeholders may find that the subsidy from the ARF is no longer needed. The system may be self-sustaining:

- » The ARF will have built an effective and cost-efficient infrastructure.
- » The costly-to-recycle stockpile of old products will have been depleted.
- » Value-based markets will have been built for product reuse and material recycling.
- » CRTs will be replaced by flat panel displays, reducing one of the main financial burdens.

Moreover, the Coalition believes that the main argument for producer responsibility – to incentivize the reduction of toxics and increased recyclability – will not be as urgent as it seems today. Better environmental design will become increasingly common practice. And this too will lower end-of-life costs. Several factors are moving in this direction:

- » Implementation of the RoHS Directive continues to affect product design worldwide.
- » The advent of market-based incentives like the EPEAT program will raise the bar for environmental design.
- » The increasing flow of information from recyclers to manufacturers through participation in the TPO will enhance the knowledge and sophistication of product designers.

#### **1.4.9 Design for Environment Incentives and Reporting**

Within the framework of the ARF system there are a number of opportunities to enhance manufacturers' responsibilities for end-of-life management and to incentivize improvements in environmental design. This section outlines some proposals that the Coalition would like to see developed in state legislation.

**Compliance with the RoHS Directive** The European RoHS Directive (Directive 2002/95/EC) requires companies to reduce and eliminate a variety of hazardous substances in products.

While the Directive's scope is limited to Europe, it is expected that over time, most products sold in the U.S. will comply with the requirements. However, for a period some manufacturing facilities and/or companies may still manufacture products for the North American market that do not comply. For this reason California SB 20 requires compliance with the RoHS directive for products sold in California after July 1, 2007. Other states can do so also. However, an exemption should be provided for substances that are essential to meet U.S. consumer health and safety requirements.

**Manufacturers' Reports on Environmental Design** Manufacturers may be required to provide reports to the state environmental agency that address a number of product design factors. These reporting requirements should be consistent with those in California SB 20, including:

- » Estimated contents of certain hazardous substances that are in RoHS-exempt applications
- » Estimated amounts of recycled materials contained in covered products
- » Efforts to improve products design for recycling.

**Utilization of the EPEAT Rating System** The state should be encouraged to make use of the EPEAT<sup>7</sup> rating system, now under development, in state and local government procurement of electronic equipment. See the Part 4 attachment.

**Provide Data to Recyclers** Manufacturers should be encouraged to provide data and information to recyclers regarding the presence and location of hazardous substances and components contained in electronic products.

**Financial Reward for Environmentally Superior Design** It may be practical, in the future, to develop a method to provide direct financial rewards for environmental design, possibly as a part of the end-of-life financing system. The EPEAT rating system may provide an objective measure of environmental performance. One option may be to provide tax credits for use of recycled materials in products. But these options are difficult to implement fairly and effectively, and they should be addressed after an effective end-of-life system has been put in place.

## □ □ Part 2

### □ □ **The Coalition's View on Producer Responsibility**

The Coalition is opposed to the implementation of programs that are based on pure producer responsibility.

**What is producer responsibility?** The producer responsibility approach assigns responsibility for financing end-of-life management to the manufacturer. It does so through a mandate that generally prohibits sales of products by manufacturers that do not meet certain requirements. Under this approach, each company that originally made an electronic product, which is presently in the marketplace, would be retroactively responsible for funding its collection and recycling whenever it reaches the end of its useful life.

In some "partial producer responsibility" approaches, the financial responsibility for collection of products may be assigned to local governments. Sometimes government is required to pick up costs for orphan products, which can represent a large portion. Under this approach manufacturers implement a system to pick up products from consolidation centers, and recycle them. A few manufacturers may develop their own system, but the great majority, individually representing a small market share, contract for services through collectives. If manufacturers

<sup>7</sup>The Electronic Product Environmental Assessment Tool ([www.epeat.net](http://www.epeat.net)) is being designed for use by government and institutional purchasers.

choose to receive back their own brand, then expensive costs of sorting and separate handling must be paid. Generally producer responsibility is simply a means to allocate the financial obligation to companies for managing a stream of products, not their individual brands.

#### **2.1 Producer Responsibility is a Government Regulated Mandate**

The idea of producer responsibility is attractive because it sounds so simple – just make producers responsible for their products. But this approach implies laws, regulations and enforcement that mandate companies to fulfill their obligations. The obligations that must be enforced include that financial obligations are met by all manufacturers, recycling services are environmentally responsible and meet performance targets, and pick-ups from consolidation centers are timely and fairly distributed – the tendency to “cherry pick” shipments from population centers must be controlled.

Government must ensure that many small and often foreign manufacturers meet their obligations. Enforcement can be expensive, and a lack of enforcement – one of the Coalition's chief worries – results in an uneven playing field in the marketplace.

#### **2.2 Producer Responsibility Skews the Marketplace**

Producer responsibility skews the marketplace by giving advantages to newer market entrants and companies with the largest current market share at the expense of smaller, established manufacturers. It is important to recognize that the vast majority of companies have a very small market share, well down in the single digits, and many are based outside of the U.S.

#### **2.3 Producer Responsibility Provides a Weak Design Incentive**

Many advocates for producer responsibility claim that internalization of the costs of end-of-life management will motivate companies to reduce toxics and to improve design for recycling. Unfortunately, this is better in theory than in reality.

First of all, only only a few companies will feel the incentive. It is simply not practical for manufacturers to get their own products back from consumers. The vast majority of manufacturers will be forced to work through collective recycling systems, if they participate at all. If product is handled by collectives, it would require expensive brand sorting and separate handling to deliver a direct design incentive.

Moreover, the costs of end-of-life management are simply too small to incentivize much significant design change. The majority of costs are relatively fixed, related to collection, logistics and common processing. Improved environmental design can reduce only a minority of the system costs. And what's more, those savings will be experienced too many years in the future to have much impact on today's design choices.

#### **2.4 Producer Responsibility is a Poor System Model**

Producer responsibility has several drawbacks as a model to organize an end-of-life management system. For one, nearly all of the extended producer responsibility approaches – such as the great majority of European programs, including the WEEE directive itself – leave the costs for collection on local governments. This is 1/3 to 1/2 of the system cost.

For another, when individual companies go it alone, they develop proprietary arrangements between themselves and recyclers. These arrangements, versus competitive contracting by a TPO, do not provide a level playing field for recyclers and they can constrain competition in the recycling marketplace, especially for smaller local companies.

The most difficult and costly challenge in an end-of-life system is to build a functioning logistics network that aggregates and transports large quantities of product to recyclers. Individual proprietary arrangements for these services will miss economies of scale and efficiency.

**Relative Costs** There is much debate about which system is more costly. Advocates of each side claim that their system is the cheapest and most efficient. Only one independent study<sup>8</sup> has been done to our knowledge that looked at costs. Following are a couple key points from that study:

- » In fee systems with a TPO, administrative costs seem to be reasonable, ranging from 3.5% to 7.5%, depending on how much auditing and monitoring is done of recyclers.
- » Costs being paid by ARF-based programs for transportation and recycling are reasonable by U.S. standards, between 20 and 37 cents per pound.

### **2.5 Individual Responsibility Should be Encouraged**

The Coalition applauds initiatives by companies that have voluntarily established programs for collection and recycling of electronic products. When manufacturers are willing to set up their own return logistics system and contract for recycling, they should be rewarded. The Coalition companies, too, have provided considerable voluntary support to jump-start the end-of-life infrastructure through providing funds for pilot efforts by local governments and others.

The challenge is to build a system that accommodates both the interests of many manufacturers to build a collective infrastructure and the interests of a few who wish to go it alone. Under the ARF system, individual companies can receive compensation for the recycling they provide. In some cases they can establish their own independent TPO. The Coalition believes that the interests of those who wish to operate independently can be accommodated within an ARF system.

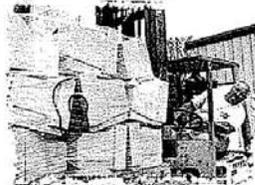
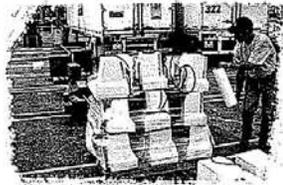
## □ □ Part 3

### **Conclusion**

The members of the Manufacturers' Coalition stand ready to work with any state that wishes to implement an ARF-based financing system to manage end-of-life electronics. The Coalition has developed model legislation and will provide support to address particular issues needed to work within existing state law. Coalition manufacturers will then help establish the private third-party organization that will run the system, entailing the least burden on government and avoiding creation of a new bureaucracy.

The system we propose is based in part on the thorough work of NEPSI. The system uses every means possible to minimize costs to the public – employing competitive contracting for services, working with existing businesses and organizations, incentivizing product design improvements to lower recycling costs, encouraging an extensive collection network to improve economies of scale, etc.

The attempt to reach full agreement nationally is stalemated, but the problem of electronics waste management remains unsolved. Meanwhile, states can take a positive step to address the e-waste challenge by adopting legislation that includes the essential elements in this document, and that defers to a national solution when implemented.



<sup>8</sup>"Study into European WEEE Schemes", prepared for the UK Department of Trade and Industry by Energy Futures Solutions, November 2003.

## □ □ Part 4

### **Electronics Recycling Act of 2005**

#### **4.1 Model State Legislation**

**Purpose:** To establish a recycling program in [STATE] to encourage and promote the recycling of used electronics and to promote the development of a national and state infrastructure for the recycling of used electronics.

**Whereas:**

- (a) Communities may lack the infrastructure needed to provide for the convenient and affordable collection, refurbishment, processing, and recycling of electronic products.
- (b) Used electronic products should be diverted from disposal and collected for recovery and recycling where practicable.
- (c) It is the intent of the legislature to develop a flexible electronics recycling system ensuring that programs are available to assist cities, counties, and recyclers of electronic products that will safely collect and recycle the materials contained in used electronic devices.
- (d) Recycling of electronics should be a market-based system with sufficient flexibility and incentives to create a sustainable infrastructure where needed and to incorporate the existing solid waste and recycling infrastructure as much as possible
- (e) The U.S. Environmental Protection Agency convened a multi-stakeholder dialogue called the National Electronic Product Stewardship Initiative (NEPSI) and brought nationally recognized experts from various fields together to develop policy recommendations for a national collection and recycling program for certain electronic products.
- (a) The program should work towards ensuring that economically viable and sustainable markets are developed for recycled materials generated through the recycling processes.
- (b) The program should include environmentally sound management principles to ensure that
- (c) The program should include an educational element for consumers so that they can understand the program and make informed decisions.
- (d) The [STATE] desires to create a state program that anticipates and reflects the national program recommended by the National Electronic Product Stewardship Initiative.

#### **Section 1: Definitions**

For the purposes of this chapter, the following terms have the following meanings:

- (a) "Agency" means the [State Environmental Agency]
- (b) "Cathode ray tube" or "CRT" means a vacuum tube or picture tube used to convert an electronic signal into a visual image.
- (c) "Consumer" means a person who purchases a covered electronic device in a transaction that is a sale.
- (d) "Computer" means an electronic, magnetic, optical, electrochemical, or other high speed data processing device performing logical, arithmetic, or storage function, and may include both a computer central processing unit and a monitor, but such term does not include an automated typewriter or typesetter, a portable hand held calculator or device, or other similar device

- (e) "Covered Electronic Device," for the purposes of this bill, is desktop/personal computers, computer monitors, portable computers, desktop printers, televisions, and video displays.
- (f) "Not-For-Profit Corporation" or "NFPC" means the organization established under Section 7.
- (g) "Manufacturer" means any person who, either as of the effective date of this legislation or thereafter, and irrespective of the selling technique used, including by means of remote sale: 1) manufactures electronic equipment under its own brand; 2) manufactures electronic equipment without affixing a brand, 3) resells equipment produced by other suppliers under its own brand and label; or 4) imports or exports electronic equipment into the United States.
- (h) "Monitor" means a separate visual display component of a computer, whether sold separately or together with a computer central processing unit/computer box, and includes a cathode ray tube, liquid crystal display, gas plasma, digital light processing, or other image projection technology, greater than nine inches when measured diagonally, its case, interior wires and circuitry, cable to the central processing unit, and power cord.
- (i) "Orphan products" are covered electronic devices for which 1) the manufacturer no longer exists and a successor cannot be identified or 2) no manufacturer can be identified
- (j) "Portable Computer" means a computer and video display that can be carried on a person.
- (k) "Product Category" means computer monitors, portable computers and televisions as defined in "covered electronic devices".
- (l) "Purchase" means the taking, by sale, of title or of the right to use, in exchange for consideration.
- (m) "Recycling" means any process by which covered electronic devices that would otherwise become solid waste are collected, separated, and processed to be returned to use in the form of raw materials or products.
- (n) "Retailer" means a person who owns or operates a business that sells new covered electronic devices by any means to an end user
- (o) "Reuse" means any operation by which a covered electronic device changes ownership to be used for the same purpose for which it was originally put on the market without additional processing or remanufacturing.
- (p) "Sell" or "sale" means any transfer for consideration of title or of the right to use to a consumer, by lease, donation, or sales contract, including, but not limited to, transactions conducted through sales outlets, catalogs, or the Internet, or any other, similar electronic means, and excluding wholesale transactions with distributors or dealers.
- (q) "Television" means a stand-alone display system having a viewable area greater than nine inches when measured diagonally and able to adhere to standard consumer video formats such as PAL, SECAM, NTSC and HDTV and has the capability of selecting different broadcast channels and support sound capability.
- (r) "Video Display " means an output surface having a viewable area greater than nine inches when measured diagonally that displays moving graphical images or a visual representation of image sequences or pictures, showing a number of quickly changing images on a screen in fast succession to create the illusion of motion, including, if applicable, a device that is an integral part of the display (and cannot be easily removed from the display by the consumer) that produces the moving image on the screen. Displays typically use a cathode ray tube (CRT), liquid crystal display (LCD), gas plasma, digital light processing, or other image projection technology.

- (s) "Visible fee" means a fee that is added to a new product at the point of purchase and is identified to the consumer separately from the product price.

### **Section 2: Scope of Products**

"Covered Electronic Device," for the purposes of this bill, is desktop/personal computers, computer monitors, portable computers, desktop printers, and televisions with video displays having a viewable area greater than nine inches when measured diagonally.

"Covered electronic device" does not include any of the following:

- (a) A covered electronic device that is a part of a motor vehicle, or any component part of a motor vehicle assembled by, or for, a vehicle manufacturer or franchised dealer, including replacement parts for use in a motor vehicle.
- (b) A covered electronic device that is contained within, or a part of a piece of industrial, commercial, or medical equipment, including monitoring or control equipment
- (c) A covered electronic device that is contained within a clothes washer, clothes dryer, refrigerator, refrigerator and freezer, microwave oven, conventional oven or range, dishwasher, room air conditioner, dehumidifier, or air purifier.

### **Section 3: Fee, Vendor Compensation, Cap, Use of Funds**

On July 1, or 9 months following enactment of this section, a covered electronic device recycling fee is hereby imposed upon every sale in [STATE] of a new covered electronic device. Products will carry a fee of no greater than eight dollars (\$8.00). The maximum allowable fee shall be increased only by the legislature upon recommendation by the NFPC.

- (a) Every retailer that sells a new covered electronic device shall collect at the time of sale the fee imposed under this section for each new covered electronic device sold to an end user in [STATE].
- (b) Each retailer shall transmit all fees collected under this section, minus 3% of total fee revenues which may be retained by the retailer for administrative costs associated with collecting the fee, to the NFPC on or before the last day of the month following each quarter, accompanied by any forms prescribed by the Agency. If a covered electronic device for which the fee has been paid is returned to a retailer under warranty, the fee may be refunded, and the retailer may deduct the amount of returned fee from their remittance to the NFPC.
- (c) Funds collected by the NFPC shall be used solely for the purpose of funding collection, transportation, and recycling of covered electronic devices, including the discretionary use of funds by the NFPC to promote the collection and recycling of covered electronic devices and market development. Collected funds may not be used to pay for activities associated with refurbishment or reuse of covered electronic devices.
- (d) The Agency shall establish separate fees for different categories of products based on the estimated costs of collection, transportation and recycling for similar products. Fees collected on one category of product shall not be used to subsidize the collection, transportation and recycling of different categories of covered electronic devices.
- (e) The fee imposed under this section shall be a visible fee at the point of sale, and imposed post any state, local or federal sales tax.
- (f) The NFPC shall submit a plan to the Agency for approval. The plan shall provide a funding methodology for collectors and recyclers authorized under Section that utilizes competitive bidding to set reimbursement rates. The development of the funding methodology shall be done so in an open process consistent with state agency rule making standards, including at least two public hearings in different geographical regions of the state.

**Section 4: NFPC Responsibilities/Enforcement**

1. The NFPC shall do all of the following:

- (a) Establish procedures for the imposition of the visible fee on covered electronic devices sold in [STATE].
- (b) Beginning two years after passage of this Section, the NFPC shall report to the legislature on an annual basis. The purpose of the report shall be to update the legislature regarding the progress on the implementation of this chapter, including recommendations for changes to this chapter that will ensure the most effective collection of electronic product recycling fees and whether the cap on the fee imposed under Section 3 should be adjusted.
- (c) Working with the Agency, publish the schedule of fees for covered electronic products based on product category six months after passage of this section, and every two years thereafter, taking into consideration the following factors: 1) current collection, transportation and recycling costs of covered electronic devices, 2) projected sales of covered electronic devices, 3) projected volume of returns of covered electronic devices to meet the performance measure in Section 13, and 4) actual collection rates during the previous 12 month period plus a yearly growth projection). The NFPC and the Agency may also take into consideration any surplus funds carried forward and reduce the fee when making fee amount determinations. Any changes in fee levels would take effect on January 1st of the following year, provided the Agency publishes the new schedule at least six months in advance.
- (d) Organize and coordinate public outreach using existing funds and resources appropriated to the NFPC. The NFPC shall utilize local and/or regional authorities to reach local residents and determine appropriate methods for education.
- (e) Achieve the Performance Goal as specified in Section 13. The NFPC must establish the first year baseline performance goal as measure of pounds collected per capita, and project the performance goal for subsequent years to meet the goal established in Section 13.

**Section 5: Prohibition of EOL Fees**

This Section shall prohibit any party who is receiving funding under this program from charging fees for collecting and/or recycling covered electronic devices, except under specified situations to be addressed by the NFPC in the development of its plan. Such situations may include when funding from the NFPC does not fully cover the net cost of collection and/or recycling of the covered electronic devices. This chapter shall not impact end-of-life fees in effect for products not covered by the chapter.

**Section 6: Electronics Recycling Fee Not-for Profit Corporation**

1. [NAME, a Not-For-Profit Corporation or NFPC] is hereby established as a 501(c)(3) organization to administer collected fee proceeds from the retail sale of covered electronic devices pursuant to this chapter. The purpose of the NFPC will be to collect fee proceeds from retailers, distribute fee proceeds, work with the Agency in development and approval of an electronics collection and recycling plan, provide reports on the program to the Agency and the legislature, and make recommendations regarding the improvement of the collection system. The NFPC will submit a budget annually to the Agency and utilize for administrative expenses no more than 5% of the total funds collected under authority of Section 3.

**Section 7: Not-for-Profit Corporation Responsibilities and Structure**

1. The NFPC is intended to operate as an industry-led, multi-stakeholder, entity for fulfilling the responsibility for management of a collection and recycling system for covered electronic devices 2. The plan submitted should incorporate, to the extent feasible, a geographic scope to serve all consumers who are subject to the fee. The plan shall also rely primarily on existing collection and consolidation infrastructure available for handling covered electronic devices.
2. The NFPC is hereby established to receive funds collected by the retailers, provide a funding methodology for reimbursement of collectors and recyclers, and to create a recycling system that will result in the environmentally sound and cost efficient collection, transportation, and recycling of covered electronic devices.
  - (a) The NFPC shall utilize the funding for the sole purpose of carrying out the duties of this chapter. In the event that expenses from collection, transportation, and recycling activities exceed revenues from the NFPC, the NFPC is authorized to borrow up to 10% of the projected annual net fee funds from outside sources. Borrowed funds must be repaid within 2 years.
  - (b) By July 1 or 12 months after enactment of this section, whichever is later, the NFPC shall submit a plan to the Agency describing the details of the program. The plan shall be re-submitted to the Agency every two years, and presumed approved if the plan includes all of the following:
    - i. An estimate of the weight of covered electronic devices expected to be recycled to meet the Performance Measures
    - ii. Details on the funding methodology to be used to fund the system
    - iii. Details on how the state's existing solid waste and recycling collection infrastructure will be used to maximize product collection activities.
    - iv. A demonstration that the collection system will provide collection opportunities across the state, covering all areas where products are sold.
    - v. Procedures for monitoring the performance of product recyclers, including periodic audits, to meet Section 8, Environmentally Sound Management Requirements. In no case, shall the NFPC activities interfere with or supersede existing roles and responsibilities of applicable state regulatory agencies.
  - (c) Once the NFPC plan has been submitted to and approved by the Agency, the NFPC may begin to disburse the funds and implement the plan. Should the Agency, upon review of the plan, find that it fails to meet any of the requirements, or that the plan cannot reasonably be expected to achieve the performance measures, then the Agency shall have the authority to suspend fee collection until the plan has been modified and the modifications approved by the Agency.
  - (d) Once per calendar year, the NFPC shall file a report with the Agency that describes the implementation of the system during the year. The report shall identify the total weight of covered electronic devices received during the preceding year by product category, together with the total weight of products recycled in each product category. The report shall also include a list of all parties participating in the system.
  - (e) The NFPC shall have a Board of Directors consisting of 11 members appointed by the Agency. The Board members shall be appointed for two-year terms, except that for the initial term, three members shall be appointed to one-year terms and four members shall be appointed to two-year terms. The Agency shall appoint a replacement if any vacancy occurs. The Board shall consist of representatives from

- i. Five Manufacturers of covered electronic devices,
  - ii. Two Retailers of covered electronic devices,
  - iii. One Recyclers of covered electronic devices,
  - iv. One Environmental not for profit organization with experience in the recycling of covered electronic devices, and,
  - v. Two Government representatives, including one from local government.
- (f) The Board shall select the CEO along with the officers of the NFPC. The CEO and officers will run the day-today operations of the NFPC and report to the Board at least once a year.
4. The NFPC shall encourage collectors, transporters, and recyclers to coordinate their efforts in order to minimize costs. All contracts issued by the NFPC for recyclers shall be competitively bid and such contracts shall in no manner prohibit or effect any contract, franchise, permit, or other arrangement regarding the collection or recycling of other solid or household hazardous waste.

**Section 8: Environmentally Sound Management Requirements**

1. The NFPC may not disburse funds unless the plan demonstrates that the covered electronic devices collected by the applicant will be recycled, refurbished, or disposed in a manner that is in compliance with all applicable federal, state, and local laws, regulations, and ordinances, and that the devices will not be exported for disposal in a manner that poses a significant risk to the public health or the environment.
2. The Agency shall establish performance requirements for recyclers eligible to receive funds from the NFPC. The Agency shall require recycling vendors, at a minimum, to demonstrate compliance with the United States Environmental Protection Agency's Guidance on Environmentally Sound Management of electronic products in addition to any other requirements mandated by state law.
3. The Agency shall keep on file and update a list of recyclers approved to recycle the covered electronic devices. A copy of the list, including all changes to list since the previous year, shall be sent to the NFPC annually for use in fulfilling its requirements under Section 7 of this chapter.
4. The Agency shall immediately remove from the list any recycler, who, as the result of an audit by the NFPC or the Agency, has failed to meet the criteria established under (1.) above, or, who has been convicted of violating any federal, state, or local statute related to the collection, transport, or processing of covered electronic products.
5. The NFPC and its board shall not be held financially liable for any violation of a Federal, state, or local law, by a recycler appearing on the list created and updated by the Agency.

**Section 9: Level Playing Field Penalties**

1. Beginning January 1 or 9 months after enactment of this chapter, a manufacturer may not offer for sale in [STATE] a covered electronic device unless a visible, permanent label clearly identifying the brand or manufacturer of that device is affixed to it.
2. By October 1, or 6 months after enactment of this chapter, manufacturers of covered electronic devices must notify retailers or distributors that the covered electronics device is subject to the advance recovery fee.

3. Beginning July 1, or 12 months after the date of enactment of this chapter, whichever is later, it is unlawful for a retailer to sell a covered electronic device in the state unless a visible fee is collected and remitted back to the NFPC.
4. In the event that a company is found in violation of this section, a civil penalty of the amount \$25 per violation will be assessed by the Agency. Penalty amounts and violations will be calculated based on the number of individual units sold.
5. Any fine collected pursuant to this chapter shall be transferred to the Agency. The money collected and distributed shall be used to offset enforcement expenses.
6. Manufacturers and retailers, upon providing 60 day notice to the Attorney General and to a manufacturer or retailer who is not collecting and remitting the fee, shall have the right sue that manufacturer or retailer for failure to collect and/or remit the fee to the NFPC. During the 60-day notice period, if the Attorney General initiates action against the manufacturer or retailer, then the ability of the manufacturers to sue is extinguished. Manufacturers and retailers who successfully challenge a non-compliant manufacturer shall be entitled to receive their litigation costs as well as double the penalties assessed under this chapter.

#### **Section 10: Disposal Ban**

1. The Agency, upon review of the report of 2nd annual report of the NFPC, shall have the authority to ban the disposal of covered electronic products in the state. When making that determination, the Agency must find that the program has sufficient infrastructure in place to handle the collection and processing of all covered electronics products generated annually in the state. The Agency must also take into account market development for uses of the recycled materials, both within and outside the state, and other factors prior to proposing a disposal ban.
2. If the state does institute such a ban, the state shall have the authority to fine anyone who knowingly disposes of a covered product in violation of the ban \$25 per unauthorized unit of product plus the cost of recycling that product.

#### **Section 11: Market Development**

The NFPC shall establish a market development program to enhance existing and/or develop new end markets for remanufactured products and recycled materials. No more than 1% of the funds may be spent on this program.

#### **Section 12: Procurement Requirement**

1. Any state agency or local government that purchases or leases equipment, materials, or supplies shall require each prospective bidder, to certify that it, and its agents, subsidiaries, partners, joint ventures, and subcontractors for the procurement, have complied with Section 3 and any regulations adopted by the Agency. Failure to provide the certification shall render the prospective bidder and its agents, subsidiaries, partners, joint ventures, and subcontractors ineligible to bid on the procurement.
2. Any person awarded a contract by a state agency or local government that is found to be in violation of Section 3 is subject to the following sanctions:
  - (a) The contract shall be voided by the entity to which the equipment, materials, or supplies were provided.
  - (b) The contractor is ineligible to bid on any contract for a period of three years.
  - (c) If the Attorney General establishes that a contractor as a result of violating Section 3

obtained any money, property, or benefit, the court may, in addition to any other remedy, order the disgorgement of the unlawfully obtained money, property, or benefit in the interest of justice.

#### **Section 13: Performance Measures**

1. The 5th year collection goal is 1.75 pounds per capita of covered electronic devices. After the 5th year or upon achievement of this collection goal, the Agency, working with the NFPC, will establish the performance goals as measure of pounds collected per capita for future years.
2. In establishing annual performance goals for the first 5 years, the NFPC shall take into consideration the time required for ramping up the required infrastructure for such a system. If at any point following enactment of this chapter the NFPC concludes that the 1.75 pounds per capita goal is not practicable, the NFPC shall report such a finding to the agency and the legislature and recommend that the goal be adjusted.
3. The NFPC will be responsible for achieving the collection goal.

#### **Section 14: Manufacturer's Responsibility and Reporting**

Manufacturers shall be responsible for all of the following:

- 1) Collecting and remitting the Advanced Recycling Fee on all direct sales to final customers in the state, including telephone, catalogue, and internet sales.
- 2) Making information available to consumers describing where and how to return, recycle, and dispose of the covered electronic products, through the use of product operation manuals, industry or manufacturer websites, product labels, packaging inserts, or toll-free telephone numbers.
- 3) Providing recyclers with information on the type and location of hazardous substances in the covered products
- 4) Beginning January 1, 2007, or on or after the date Directive 2002/95/EC adopted by the European Parliament on January 27, 2003 and as amended thereafter, takes effect, no manufacturer shall offer for sale in the state any product or electronic device that is prohibited from being sold or offered for sale in the European Union on or after its date of manufacture, to the extent that Directive 2002/95/EC adopted by the European Parliament on January 27, 2003 and as amended thereafter by the Commission of European Communities, prohibits such sale due to the presence of heavy metals. The agency shall exclude from this requirement any product that contains a substance that is used to comply with consumer health, or safety requirements that are required by Underwriters Laboratories, the federal government, or the state. The agency may not adopt any regulations that are in addition to, or more restrictive than the requirements expressly authorized in this section.
- 5) Beginning 18 months following the enactment of this section and annually in subsequent years, manufacturers must submit a report to the state agency on their environmental improvements. As a minimum, the report shall contain
  - (a) The estimated sale of the covered products within the state in the past year,
  - (b) A baseline, or set of baselines that shows the total estimated amounts of lead, mercury, hexavalent chrome, cadmium and PBB's utilized in RoHS exempt applications in products sold within the state in the previous year.
  - (c) A baseline, or set of baselines that shows the total estimated amounts of recyclable materials contained in covered electronic products sold within the state in the previous year, and increases the use of those materials over previous years.
  - (b) A baseline, or set of baselines that describes any efforts to design covered electronic products for recycling and goals or plans for further increasing design for recycling.

- 6) In lieu of an individual report, manufacturers submit the information in a collated report submitted via a trade association provided that information about an individual company can be made available to the state upon written request by the Agency. The agency can only make such a request for auditing purposes and not more than once during a 5-year period. The state shall not make public any confidential business information claimed by the manufacturer in the report.
- 7) A report submitted to another state or to the Federal Government that contains the same information as required in this section shall be accepted by the Agency in lieu of a separate report for the state.

**Section 15: Regulatory Authority**

The Agency may adopt rules and regulations for the purpose of administering this chapter.

**Section 16: Program Review**

On or after January 1, 2014, the Agency shall convene a stakeholder group to evaluate the program and make recommendations to the legislature by January 1, 2015 as to whether to:

- (a) Continue the advanced recycling fee.
- (b) Implement another financing alternative, or
- (c) Determine that no outside financing mechanism is required to ensure that the system is financially solvent.

**Section 17: Federal Preemption**

Upon implementation of a national program to collect and recycle the covered electronic products, all of the requirements of these chapters, to the extent that they are inconsistent with the national program, shall become inoperative.

**Section 18: Effective Date**

Unless otherwise specified, this chapter shall take effect 90 days after the date of enactment.

#### **4.2 Special Topics: Implementation of the California ARF**

One in eight Americans are fully served by locally administered and fully funded collection/recycling systems for electronic waste. California's Electronic Waste Recycling Fee became effective January 1, 2005. Implementation of the SB 20 in 2003 and the revisions of SB 50 in 2004 contain important lessons that deserve consideration.

The rapid growth in state-certified collectors (249 as of early May 2005) and a commensurate growth of in-state recyclers (34 as of early May 2005) provide early evidence of a sustainable system at this formative stage. In the first quarter of 2005, the state collected recycling fees totaling nearly \$15 million, well in line with the State's revenue forecasts.

Unlike mandated producer responsibility, the ARF approach:

- » does meet the needs of the local infrastructure tasked with collection;
- » is the only system that provides a forward looking fair playing field for new market entrants;
- » affords the state with decision making authority over where the waste is sent and how the waste processed; and
- » avoids Commerce-protected flow-control and property "takings" issues.

This paper in no way disparages the many voluntary efforts taken by individual producers, retailers and local government officials. Although it is too early in the process to fully understand the systematic impacts of the ARF model, opponents to the California system have expressed three primary criticisms, and the Coalition offers the following additional information to gain better perspective on the system.

#### **1. Local retailers are unfairly disadvantaged because the ARF is perceived to be unenforceable on Internet retailers – the issue of enforceability, free riders, a level-playing field or equity.**

This criticism is based on the legal opinion of the California Board of Equalization (equivalent to the Department of Revenue in other states) that the fee cannot be applied against retailers lacking a physical presence (a nexus) in the state. Without disputing the legal opinion, the Coalition asks what is the true impact of Internet sales and the likely magnitude of non-compliant Internet retailers.

The Coalition believes the notion that local bricks and mortar sellers will be disadvantaged has been overstated. Current marketplace realities will minimize any tangible impact. Three factors are responsible for the negligible impact:

1. Many of the larger Internet sellers have a physical presence in California and in most states - 94% of Internet sales originate with the top 10 sellers; 8 of who have nexus (Best Buy, Circuit City, CompUSA, Radio Shack, et al.). The Coalition recognizes that some retailers have incorporated their online sales operations as separate legal entities, but hopes these retailers will act responsibly by collecting the fees on their online sales in order to help ensure the longer term viability of the California recycling system.
2. Voluntary compliance by major sellers, e.g., Dell, HP, Gateway, Apple, Sony, and others who have expressed their intent to collect and remit fees in compliance with the law.
3. Compliance by sellers that fear losing business sales to the State of California.

**Marketplace Realities** Putting the marketplace realities into context, is the belief of the Coalition that the Internet offerings generate an overall increase in sales for retailers including brick and mortar establishments. Note that all companies derive a small percentage of total sales from

the Internet: Dell, the leading Internet retailer, for example, generates less than 7 percent of sales via the Internet. You will find similar results looking at top on-line retailers including Amazon, Dell, Office Depot, HP, Staples, Soy, Sears, CDW, Best Buy, Target, and Wal-Mart. Based on the available data, the Coalition believes impact of the Internet sales issue is being misconstrued. MIT's Technology Review, April 2005, showed a brick and mortar 5 fold sales increase based on consumers using the Internet for research. Practically, the problem, if one exists, is in the low single digit percentile, and thus not significant enough to command additional enforcement efforts and resources

Maine's program requires a brand count, followed by a parity calculation, preceded by price-fixing through rule-making process, and no legislated funding for local governments. Based on a recent report from state officials, Maine DEP has received collection plans from 24 or so TV brand owners and 25 computer monitor brand owners. Some manufacturers have multiple brands, so the count could be less than the given number.

**The "Fairness Issue":** When comparing Maine's version of producer responsibility with the California ARF approach, it is important to compare which brands are being returned and those currently still sold in the market.

Today there are approximately 180 new TV brands and 235 new computer display monitor brands sold in the market place. Under Maine law all manufacturers / brand-owners must file a collection plan with the state Department of Environmental Protection in order to sell their products in Maine. As of early April 2005, compliance is 13% for TVs and 10% for computer monitors. That means more than 85% of brand names are not meeting their legal obligations yet are financially benefiting. In essence, these "free riders" are being rewarded in the market place by not paying the mandated regulatory cost of doing business.

The brands populating today's marketplace contrast greatly with the historic waste stream. A recent Hennepin County (Minneapolis, MN) brand sort revealed there are 281 brands of TVs and 458 brands of computer monitors in the current waste stream. On a brand basis, comparing current brands to the historic waste stream, the Maine compliance is at 7% for TVs and less than 5% for computer monitors.

The net result is that market newcomers can evade their financial obligations under the Maine "model" and likely many of today's newcomers will likely represent tomorrow's orphan products. The short-time manufacturers will have been able to sell their products without ever paying for their fair share of the end-of-life system.

**Conclusion:** Additional compliance analysis; looking at both models is needed in order to determine the most equitable and enforceable approach. The Coalition believes while the ARF enforceability needs to be addressed, in no way will it reduce sales from brick and mortar stores. To the contrary, already in California, at least one computer and electronic retailers is using program to increase customer traffic in their stores.

## **2. ARF systems are expensive to administer and create a large bureaucracy.**

There are administration costs to every pilot program conducted and any system already established or to be devised. While few comparative studies exist, a late 2003 report by the UK Department of Trade and Industry concluded that recycling fee systems administered by a third-party organization (TPO) had reasonable cost efficiencies ranging from 3.5 to 7.5%, depending on the level of auditing and monitoring of recyclers.

The study also found that costs paid for transportation and recycling under ARF-based programs were between 20 and 37 cents per pound; reasonable by U.S. standards. Depending on the population density and other organizational efficiencies an ARF system operated by a state government agency may carry greater administrative costs than a system utilizing a TPO

Of course, any analysis of the ARF system costs based on the early California experience must take into account the differences of scale when comparing costs and efficiencies. That is, any program in California will be inherently more costly to operate in an absolute sense because of the state's enormous population—nearly one-eighth of the total U.S. population – but will be more efficient when measured specifically because of economies of scale not seen in more dispersed areas.

Contrary to some unsubstantiated claims made by detractors of the California ARF system, the state's Integrated Waste Management Board, Department of Toxic Substances Control and Board of Equalization (as of May 2005) have assigned a combined 65 employees (many of whom will no longer be needed after the program has been established) to help manage the program. Given the enormity of the task for a state whose GDP exceeds that of France, this does not appear to be excessive.

A more practical question related to the ARF system cost is the true costs of any end of life system. In the US, the only other model nearing implementation is the Maine manufacturer responsibility model. Under this model, all manufacturers are prohibited from selling products in the state until and unless they agree to fund the specific recycling of their historical products, plus a share of all other products for which there is no current manufacturer, so called orphan products.

Compared with a centrally managed ARF system, the Maine manufacturer responsibility system is managed locally, with each collector, consolidator, and recycler sorting the products to identify manufacturer, many of whom will be out of business or otherwise not registered or agreeable to pay the costs. Orphan shares must constantly be recalculated and allocated. No figures are available, but the inherent inefficiencies should push the cost per pound far above the levels cited for an ARF system. Looking to California's initial month's collection weight of approximately 2.275 million pounds, the cost difference per pound in Maine becomes significant

An ARF system or a manufacturer mandate must be administered centrally, whereas the consolidation collection model being implemented in Maine will essentially add another administration layer at each consolidation center. All products coming in to the consolidation centers will be sorted by brand so that costs can be allocated to each brand owner. Orphan shares must constantly be recalculated and allocated by the state. The ARF system avoids this costly and burdensome task, whereas in Maine, this critical aspect will be hidden from the public view. In essence the consolidation center concept trades a more central and visible ARF "bureaucracy" for a thousand mini-bureaucracies.

### **3. Fee setting is a political process and does not reflect actual waste management costs.**

Fees initially introduced based on estimates of the cost to manage materials and on the amount of material returned. It is essential to be able to initially set and then adjust the fee based on real costs. California's SB 20 allows for that process.

SB 20 is very clear about what costs are to be covered by the fee, and that the fee level shall be reviewed every two years and adjusted "to ensure that there are sufficient revenues in the account to fund the ... program". Therefore, over time, the fee level should be fine tuned to accurately fund waste management costs and associated expenses that government will incur.

### **4. Fee systems require government spending that manufacturer responsibility avoids.**

The alternative approach of manufacturer responsibility seems less expensive for government only because many system costs are left unaddressed. A take-back scheme leaves uncovered the costs for promotion, advertising, and administration of the so-called parity, collection, intrastate transportations and storage. Recycling is typically all that is considered under this

approach. By stark contrast, only the ARF guarantees funding for a comprehensive system.

Other uncovered costs under a manufacturer responsibility program includes:

- » Review and approval of manufacturer plans – As in Maine, and other proposed take-back schemes, government must review plans submitted by manufacturers and approve or reject them. This will require adoption of regulations, probable negotiations with individual manufacturers, monitoring and enforcement of the plans over time, and calculating the fair level of responsibility.
- » Enforcement against free riders – Government will be responsible to enforce against manufacturers, many of them foreign-based, who do not comply with the law, by not submitting plans. An unintended consequence of manufacturer takeback gives the no-name or short-term brand a reward of “no compliance cost” in the market place. The long-term sustainable companies, which invest hundreds of millions of dollars designing new products to be compatible with future societal needs, will pay higher compliance cost especially for the former short term and now defunct orphan brands.
- » Collection and transportation services – In most manufacturer responsibility schemes, local government must provide collection and transportation services, or assure those services are provided, from the public to the point where manufacturers assume responsibility for collected product, as well as extensive public education. Depending on what is included, these costs range from 40 to 80% of the total program costs. In other words, manufacturers cover 20 to 60% and government is left to pick up the rest, or charge fees to the public. When the cost of sorting the discarded products is added in (this cost is not present in an ARF system), the municipalities are paying more for less.
- » Administration of the supplier base – In a free market economy, supported by an ARF, the system will flow to the lowest cost, most efficient supplier. In the Maine manufacturer responsibility model, it appears that anyone may enter the market and obtain payment after registering with the State, by-passing the normal power of supply and demand and the efficiency of a free market economy.
- » Oversight to Assure Public Service – Local and state governments will inevitably have the responsibility to oversee and assure that the system is providing convenient and effective service to all residents of the state. Neither single manufacturer nor other agent will have that responsibility, and so all the activities of diverse actors must be overseen from the public's perspective. Government may be left to fill the gaps.

In conclusion, critics of the California plan are trying to discredit an ARF-based system by misrepresenting the reality in California, by rushing to preliminary judgments, or by neglecting comparable implications of the system they advocate. Both the California program, as in the Maine system once developed; need time to mature before we will have a definitive comparison of their impacts on the electronics marketplace or their costs.

The Coalition believes that the ARF-approach has more merit as a sustainable, workable, industry consensus solution. We are pleased that recycling services desired by the public are now being delivered in California. In the long run, the quality of those services, and their reasonable cost, will be the ultimate test of an effective program.



#### 4.3 Electronic Product Environment Assessment Tool: Voluntary Environment Performance Criteria for Computers, Laptops and Monitors

EPEAT is an environmental procurement tool designed to help institutional purchasers in the public and private sectors evaluate, compare and select desktop computers, laptops and monitors based on their environmental attributes.

The development of EPEAT was prompted by a growing demand by institutional purchasers for an easy-to-use evaluation tool that allows the comparison and selection of electronic products based on environmental performance. The electronics industry welcomed EPEAT as a tool to provide a clear and consistent set of performance criteria for the design of products, and provides an opportunity to secure market recognition for efforts to reduce the environmental impact of its products.

##### How EPEAT Will Work

EPEAT will evaluate electronic products according to three tiers of environmental performance – Bronze, Silver and Gold. The complete set of performance criteria includes 22 mandatory criteria and 33 optional criteria in 8 categories. To qualify for acceptance as an EPEAT product, it must conform to all the mandatory criteria. Manufacturers may pick and choose among the optional criteria to boost their EPEAT baseline "score" to achieve a higher-ranking level as follows.

**Bronze:** Product meets all mandatory criteria

**Silver:** Product meets all mandatory criteria plus at least 16 optional criteria.

**Gold:** Product meets all mandatory criteria plus at least 25 optional criteria.

The three-tier system provides purchasers with the flexibility to select equipment that meets their minimum performance requirements or to give preference to models with more environmental attributes by specifying a higher EPEAT qualification level. For manufacturers, EPEAT provides flexibility to choose which optional criteria they would like to meet to achieve higher levels of EPEAT qualification.

Before listing their products on EPEAT, manufacturers will sign a formal Memorandum of Understanding (MOU) that commits them to provide accurate product and company information and provides for remedies should inaccuracies be discovered. The assessment tool will be structured to allow manufacturers to self-declare, via a web-based interface, that their specific products meet EPEAT requirements. For each criterion, producers must, on request of the EPEAT organization, provide a specified set of verification data in order to demonstrate EPEAT conformance.

Most criteria refer to environmental performance characteristics of the specific product, and the manufacturer declares to those product criteria for each product of their choice. Some criteria refer to general corporate programs, such as a Corporate Environmental Policy, and the manufacturer declares to those criteria in a report that is provided annually. To ensure that the self-declaration system functions in a transparent and verifiable manner, the EPEAT organization will randomly select a subset of qualified products each year to verify their qualification.

**EPEAT Performance Categories**

- » Reduction/Elimination of Environmentally Sensitive Materials
- » Material Selection
- » Design for End of Life
- » Product Longevity/ Life Extension
- » Energy Conservation
- » End of Life Management
- » Corporate Performance
- » Packaging

**How the Performance Criteria Were Developed**

The draft performance criteria and the procedures for validation represent the results of an 18 month-long multi-stakeholder process. The EPEAT Development Team was composed of stakeholders that represented manufacturers, trade associations, institutional purchasers, advocacy organizations, electronics recyclers, academics, and others. The process for developing the draft criteria included use of ANSI essential requirements , such as the need for openness, balance, consideration of all views, and consensus decision-making.

Each criterion was evaluated alongside the others to ensure that EPEAT is a balanced and comprehensive tool that covers multiple environmental attributes throughout the product's life cycle. The criteria are stringent enough to promote better environmental design, manufacture, and end-of-life management, while reflecting existing technologies and technical limitations so that a supply of EPEAT products will be available to purchasers. Specific criteria are drawn heavily from existing U.S. and international requirements and standards such as Energy Star®, the European Union's Restriction on Hazardous Substances Directive, and the IT-Eco Declaration, while creating some new elements that were agreed upon by the team. The EPEAT Development Team chose to build on existing legal and market requirements to reduce overlap and possibly conflicting requirements on product producers.

**Process for Finalizing the Criteria**

The Development Team has completed its work, and a smaller Implementation Team is now working to implement EPEAT. This work includes identifying an ANSI accredited standards development organization to manage a public comment period and finalize the performance criteria and selecting a host organization to house vendor self declarations and manage spot checking of these claims. In order to be notified regarding the public comment period, please send your contact information to: [epeat\\_comments@epeat.net](mailto:epeat_comments@epeat.net)

For further information on EPEAT see <http://www.epeat.net>



## Summary List of Criteria

**M = Mandatory Criterion; O = Optional Point Criterion**  
 Annual Report Criteria are designated as such in parentheses.

### 1. Reduction/Elimination of Environmentally Sensitive Materials

- 1.1 Reduction of Use of Hazardous Substances
  - M** 1.1.1 Compliance with provisions of European RoHS directive
- 1.2 Hexavalent Chromium
  - O** 1.2.1 Elimination of intentional use of Hexavalent Chromium
- 1.3 Cadmium
  - O** 1.3.1 Elimination of intentional use of Cadmium
- 1.4 Lead
  - O** 1.4.1 Elimination of intentional use of Lead in certain applications
- 1.5 Mercury
  - M** 1.5.1 Reporting on amount of Mercury used in light sources
  - O** 1.5.2 Low threshold for amount of Mercury used in light sources
- 1.6 Flame Retardants and Plasticizers
  - M** 1.6.1 Elimination of intentional use of SCCP flame retardants and plasticizers in certain applications
  - O** 1.6.2 Elimination of intentional use of Deca-BDE
  - O** 1.6.3 Larger plastic parts free of flame retardants
- 1.7 Batteries
  - O** 1.7.1 Batteries free of Lead, Cadmium and Mercury
- 1.8 PVC and Chlorinated Plastics
  - O** 1.8.1 Large plastic parts free of PVC

### 2. Materials Selection

- 2.1 Total Recycled Content
  - M** 2.1.1 Declaration of post-consumer recycled content
  - O** 2.1.2 Minimum content of postconsumer recycled material
  - O** 2.1.3 Higher content of postconsumer recycled material
- 2.2 Renewable/Bio-Based Materials
  - M** 2.2.1 Content declaration of renewable/bio-based materials
  - O** 2.2.2 Minimum content of renewable/bio-based material
- 2.3 Dematerialization
  - M** 2.3.1 Declaration of product weight

### 3. Design for End of Life

- 3.1 Design for Recovery through Recycling Systems that Utilize Shredding
  - M** 3.1.1 Identification of materials with special handling needs
  - M** 3.1.2 No incompatible paints or coatings
  - M** 3.1.3 Easy disassembly of housings
  - M** 3.1.4 Marking of plastics
  - M** 3.1.5 Identification and removal of batteries and circuit boards
  - O** 3.1.6 Reduced number of plastic resins
  - O** 3.1.7 Molded/glued in metal eliminated or removable
  - O** 3.1.8 Minimum 65 percent reusable/recyclable
  - O** 3.1.9 Minimum 90 percent reusable/recyclable
- 3.2 Design for Recovery through Disassembly
  - O** 3.2.1 Manual separation of plastics
  - O** 3.2.2 Marking of plastics

### 4. Product Longevity / Life cycle Extension

- 4.1 Manufacturer Warranty/Service Agreement
  - M** 4.1.1 Availability of additional warranty or service agreement
- 4.2 Upgradeability
  - M** 4.2.1 Upgradeable with common tools
  - O** 4.2.2 Modular design
- 4.3 Product Life Extension
  - O** 4.3.1 Availability of replacement parts

### 5. Energy Conservation

- 5.1 Power Management System
  - M** 5.1.1 Energy Star® 3.0
  - O** 5.1.2 Lower power usage
  - O** 5.1.3 Tier 2 Energy Star® 4.0
  - O** 5.1.4 FEMP "Executive Order 13221"
- 5.2 Power Management
  - M** 5.2.1 Documented power management features
- 5.3 Use of Renewable Energy
  - O** 5.3.1 Renewable energy accessory available
  - O** 5.3.2 Renewable energy accessory standard
- 5.4 Efficiency of Power Supplies
  - O** 5.4.1 Efficiency threshold and disclosure of efficiency

#### 6. End of Life Management

- 6.1 Product take-back
- M** 6.1.1 Provision of product take-back service (Annual Report Criterion)
- 6.2 Rechargeable Battery Recycling
- O** 6.2.1 Provision of a rechargeable battery recycling program (Annual Report Criterion)

#### 7. Corporate Performance

- 7.1 Corporate Environmental Policy
- M** 7.1.1 Demonstration of corporate environmental policy consistent with ISO 14001 (Annual Report Criterion)
- 7.2 Environmental Management System
- M** 7.2.1 Self-certified environmental management system for manufacturing facilities (Annual Report Criterion)
- O** 7.2.2 Third-party certified environmental management system for manufacturing facilities (Annual Report Criterion)
- 7.3 Corporate Reporting
- M** 7.3.1 Corporate report consistent with Performance Track (Annual Report Criterion)
- O** 7.3.2 Corporate report based on Global Reporting Initiative (GRI) (Annual Report Criterion)

#### 8. Packaging

- 8.1 Toxics in Packaging
- M** 8.1.1 Reduction/elimination of toxics in packaging
- 8.2 Recyclable packaging materials
- M** 8.2.1 Separable packing materials
- O** 8.2.2 Packaging 90% recyclable and plastics labeled
- 8.3 Recycled Content
- M** 8.3.1 Declaration of recycled content
- O** 8.3.2 Minimum post-consumer content guidelines
- 8.4 Take-Back Option
- O** 8.4.1 Provision of take-back program for packaging
- 8.5 Reuse Option
- O** 8.5.1 Documentation of reusable packaging



## **Appendix D:**

# **Hewlett Packard Draft Model Legislation for Electronics Recycling**



# **Hewlett-Packard Company's Product Stewardship Solution for CRT Devices**

**June 2005**

Hewlett-Packard's Product Stewardship Solution is based on implementing a market driven system for recycling CRT-containing computer monitors and TVs ("CRT devices"). The approach requires manufacturers to take responsibility for the recycling of a specified amount of CRT devices. It places limited responsibilities on retailers and state government. It avoids creation of new taxes and government bureaucracies. And it provides funds to local governments for CRT device collection, consolidation, and recycling.

Manufacturers must take responsibility for their "equivalent share" of CRT devices -- including orphan waste CRT devices -- returned by households (individual consumers and home businesses) for recycling. They can do this by providing a recycling program or by paying the state reasonable collection, consolidation, and recycling costs for their equivalent share.

Manufacturer equivalent shares are determined annually by the state. A manufacturer's equivalent share is based on the amount of that manufacturer's contribution of CRT devices to the annual CRT device waste stream. The equivalent share concept allows manufacturers that choose to run a recycling program to satisfy their obligations with CRT devices of any brand. This avoids the need for brand sorting. It provides an efficient recycling system with multiple options for consumers.

Manufacturers will be held accountable to the state to meet their equivalent share obligations. This is a self-implementing performance standard keyed to a specific amount of CRT devices to be recycled. Thus, a manufacturer who chooses to provide a recycling program but fails to recycle its equivalent share has a predetermined payment obligation for the shortfall to the state.

## ***Benefits of the Product Stewardship Solution***

The Product Stewardship Solution has many benefits:

- Provides efficiencies through market-based solutions.
- Avoids new taxes on consumers.
- Places key responsibilities on manufacturers, not government, to achieve recycling goals.
- Provides for the recycling of orphan waste CRT devices.
- Places minimal responsibilities on retailers.
- Limits state government involvement to necessary functions, avoiding the creation of new taxes and new agencies.

- Relieves burdens on local governments by providing manufacturers with incentives to keep CRT devices out of the municipal waste stream and by providing a funding source for CRT device collection, consolidation, and recycling.
- Provides for recycling CRT devices discarded only by households, the unserved market, not by businesses, which already have waste management obligations and recycling opportunities.
- Provides a smoother transition to a national solution compared with a point-of-sale Advance Recovery Fee (“ARF”) system.

### *Roles and Responsibilities of Key Stakeholders*

**HP’s Model CRT Device Recycling Act** implements the Product Stewardship Solution and establishes the roles that manufacturers, state and local government, retailers, and households play in the recycling system.

**Manufacturers** take responsibility for their equivalent share of household CRT devices, including orphan waste CRT devices. Equivalent shares are calculated annually by the State Agency by a simple calculation: each manufacturer’s return share percentage of CRT devices collected in local government recycling programs is multiplied by the total weight of CRT devices collected in manufacturer and local government recycling programs. Manufacturers can take responsibility for their equivalent share of CRT devices by providing a recycling program or by paying the state reasonable collection, consolidation, and recycling costs, as predetermined by the State Agency, for their equivalent share. Manufacturers also label all their CRT devices with the name or brand of the manufacturer and file registrations (individually or in partnership with other manufacturers) and annual reports with the State Agency.

**The State Agency** administers and enforces the Act and maintains a website of manufacturer registrations. It distributes to local governments for CRT device collection, consolidation and recycling funds received from manufacturers. It calculates and notifies manufacturers of their equivalent shares. It determines and publishes to manufacturers the reasonable cost of collecting, consolidating, and recycling CRT devices.

**No state agency** may purchase or lease CRT devices that are not covered by a registration.

**Local governments** receive funds from the state for CRT device collection, consolidation, and recycling and submit annual reports to the State Agency.

**Retailers** cannot sell CRT devices from manufacturers that are not participating in the program.

**Households** may return CRT devices to recycling programs offered by manufacturers or by other entities (e.g., local governments, charities, retailers).

### *Implementation and Enforcement*

Manufacturers that choose to provide a recycling program have flexibility to select among many approaches to obtaining their equivalent share of CRT devices. These methods include: mail-back services; return to collection centers, retail locations, or other locations; deposit into a consolidation program run by a local government or private party with whom the manufacturer has negotiated an agreement; or other methods developed by the manufacturer. Whatever business models a manufacturer

chooses to finance its program -- whether marketing incentives, trade-in discounts, take-back charges, or other means -- each manufacturer *must* demonstrate that it recycled its equivalent share of CRT devices each year or pay the state for the reasonable cost of collecting, consolidating, and recycling the shortfall.

The flexibility of this approach allows each manufacturer to identify the most effective and efficient method for obtaining its equivalent share. Manufacturers provide information about how CRT devices may be returned via a website and/or toll-free telephone number. Local governments, charities, retailers, and other organizations are anticipated to offer other recycling opportunities including programs implemented in cooperation with manufacturers. This variety of programs lets consumers choose the programs that best suit their needs.

The Act establishes the manufacturer and retailer responsibilities and government functions necessary to create a level playing field for participants. The Act contains clear enforcement provisions to use against non-compliant manufacturers and retailers. Manufacturers are accountable to the state to meet their equivalent share obligations. In fact, the approach assures that each manufacturer that chooses to provide a recycling program but does not recycle its equivalent share has a pre-determined payment obligation to the state. As an additional safeguard, the Act requires that state agencies purchase CRT devices only from persons who are in compliance with the Act.

### ***Deficiencies of an ARF-Financed Recycling System***

*An alternative to the Product Stewardship Solution is an Advance Recovery Fee (“ARF”) system. The key elements of an ARF system are the imposition of a point-of-sale consumer fee on electronic products, coupled with creating a private not-for-profit third party organization (“TPO”), or requiring the government, to receive the fees and to manage the recycling system.*

*The ARF System fails to provide the benefits of the Product Stewardship Solution. In particular:*

- *The ARF “fee” is a new tax on consumers.*
- *The TPO duplicates the existing state tax agency and is of uncertain legality.*
- *The ARF is burdensome to retailers.*
- *The ARF creates a huge new government program.*
- *The ARF does not guarantee that any amount of electronic devices will be recycled.*

**Overall, Hewlett-Packard’s Product Stewardship Solution offers a more efficient way to achieve our recycling goals.**

## INTRODUCED BY

An act to add Chapter XX to the \_\_\_\_\_ Code, relating to solid waste.

## THE PEOPLE OF THE STATE OF \_\_\_\_\_ DO ENACT AS FOLLOWS:

### CRT DEVICE RECYCLING ACT

#### Section 1. Legislative Findings.

The Legislature finds and declares all of the following:

- (a) The State of \_\_\_\_\_ has an interest in resource conservation, waste minimization, and recycling.
- (b) It is the intent of the Legislature to encourage the recycling of cathode ray tube (CRT) containing computer monitors and televisions and, in particular, to require that manufacturers of CRT-containing computer monitors and televisions that have been discarded by households either have in place a recycling program for those devices or pay the State for the collection, consolidation, and recycling cost of those devices.
- (c) The challenge of providing recycling opportunities for CRT-containing computer monitors and televisions to households in this State can best be addressed through a product stewardship approach that includes manufacturers, retailers, consumers, and governments.

#### Section 2. Definitions.

For the purposes of this chapter, the following terms have the following meanings:

- (1) "Agency" means the [specify appropriate state agency for implementation; e.g., agency responsible for solid waste management].
- (2) "Base year" means the calendar year that begins on the effective date of this chapter.
- (3) "Computer monitor" means an electronic device that is a cathode ray tube primarily intended to display information from a central processing unit or the Internet.
- (4) "Covered computer monitor" means all computer monitors subject to this chapter, as specified in section 3.
- (5) "Covered CRT device" means all CRT devices subject to this chapter, as specified in section 3.
- (6) "Covered television" means all televisions subject to this chapter, as specified in section 3.
- (7) "CRT device" means a computer monitor or television with a screen size greater than 9 inches measured diagonally.
- (8) "Equivalent share" means the weight in pounds of covered computer monitors or of covered televisions from households in the State for which an individual manufacturer is responsible, as calculated by the Agency pursuant to section 8(e)(1).
- (9) "Household" means an occupant of a single detached dwelling unit or a single unit of a multiple dwelling unit who has used a covered CRT device at a dwelling unit primarily for personal use. For purposes of this chapter, the return of a single covered CRT device per day by any person in accordance with a registrant's recycling program, and the receipt of such covered CRT device pursuant to such recycling program, shall be deemed to be a return of a covered CRT device by and receipt from a household.
- (10) "Manufacturer" means a person who: (A) manufactures or has manufactured CRT devices to be sold under its own brand as identified by its own brand label, or (B) obtains or has obtained CRT devices manufactured by others to be sold under its own brand as identified by its own brand label.
- (11) "Manufacturer's brand" means a manufacturer's name(s), brand name(s), or brand label(s), and all manufacturer's names, brand names, and brand labels for which the manufacturer has legal responsibility.
- (12) "Orphan CRT device" means a covered CRT device that lacks a manufacturer's brand or for which the manufacturer is no longer in business and has no successor in interest.
- (13) "Person" means an individual, firm, limited liability company, association, partnership, political subdivision, government agency, municipality, industry, public or private corporation, or any other entity whatsoever.
- (14) "Program year" means each calendar year after the base year.

- (15) "Recycling" means the processing of waste CRT devices or their component materials for recovery of a usable product. "Recycling" does not include reuse, repair, refurbishment, or any other process through which CRT devices or CRTs are returned to use.
- (16) "Registrant" means a person who submits the registration required by section 6(a) either individually or collectively.
- (17) "Registration" means the document filed by a registrant with the Agency pursuant to section 6(a).
- (18) "Return share percentage" means the percentage of total covered computer monitors or covered televisions from households in the State identified for an individual manufacturer, as calculated by the Agency pursuant to section 8(e)(2).
- (19) "Sell" or "sale" means any transfer for consideration of title or of the right to use, by lease or sales contract, including, but not limited to, transactions conducted through sales outlets, catalogs, or the internet, or any other similar electronic means either inside or outside of the State, by a person who conducts the transaction and controls the delivery of a CRT device to a consumer in the State, but does not include a wholesale transaction with a distributor or retailer.
- (20) "Television" means an electronic device that is a cathode ray tube primarily intended to receive video programming via broadcast, cable, or satellite transmission or video from surveillance or other similar cameras.

### **Section 3. Applicability.**

#### *(a) Household CRT Devices.*

The requirements of this chapter shall apply only to CRT devices received from households in this State and shall not apply to CRT devices received from CRT device owners other than households.

#### *(b) Excluded CRT Devices.*

CRT devices for which the manufacturer has provided evidence to the Agency that the discarded CRT devices are not classified as hazardous waste pursuant to [cite applicable state authority] are not subject to this chapter.

### **Section 4. Labeling of CRT Devices.**

By January 1, [specify first program year], manufacturers shall label all covered CRT devices to be offered for sale in the State with the manufacturer's brand, which label is permanently affixed and readily visible.

### **Section 5. Sale of CRT Devices.**

#### *(a) Sales Prohibition.*

On and after January 1, [specify first program year], no person shall sell or offer for sale a covered CRT device to any person in this State unless: the covered CRT device is labeled with the manufacturer's brand, which label is permanently affixed and readily visible, and the covered CRT device is subject to a registration filed by a registrant with the Agency pursuant to section 6.

#### *(b) Certifications.*

(1) Any person who sells or offers for sale a covered CRT device must, before its initial offer for sale of such device on or after January 1, [specify first program year], submit to the Agency a certification that the person has reviewed the Agency's website specified in section 8(d) and has determined that all covered CRT devices that the person is then offering for sale are labeled with a manufacturer's brand that is subject to a registration filed with the Agency.

(2) After the initial submittal of the certification required by this subsection, the certification required by this subsection must be submitted to the Agency annually by January 1 of each program year.

## **Section 6. Manufacturer Registrations.**

### *(a) Registration Requirement.*

(1) By December 1 [specify year that Act takes effect], manufacturers whose covered CRT devices are offered for sale in the State shall file with the Agency a registration according to this section.

(2) Thereafter, if a manufacturer has not previously filed a registration with the Agency, the manufacturer shall file with the Agency a registration according to this section prior to any offer for sale of the manufacturer's covered CRT devices in the State.

(3) Any manufacturer for whom the Agency determines an equivalent share pursuant to section 8(e)(1) and who has not previously filed a registration with the Agency shall file with the Agency a registration according to this section by April 1 of the program year for which the equivalent share was determined.

### *(b) Effective Date.*

All registrations shall be effective upon receipt by the Agency. Any change to a registration requested by the Agency pursuant to subsection (d) of this section shall not change the effective date of the registration.

### *(c) Joint Registrations; Independent Party Designations.*

(1) A manufacturer may join with one or more manufacturers to prepare and submit to the Agency a joint registration.

(2) A manufacturer or a group of manufacturers may designate an independent party to file with the Agency a registration on behalf of the manufacturer or the group of manufacturers in order to fulfill the manufacturer's or the manufacturers' obligations under this chapter. A certification from the manufacturer or group of manufacturers designating the independent party must be submitted to the Agency together with the registration by the independent party. After the submission of such certification and registration, the independent party becomes a registrant.

(3) Each manufacturer that is included in a joint registration or an independent party registration retains responsibility and liability under this chapter in the event that its registrant fails to meet the manufacturer's obligations under this chapter.

### *(d) Registration Fee and Review.*

(1) The Agency may require registrants to submit to the Agency with each registration submitted to the Agency pursuant to this section a registration fee of up to \$500.00 for each manufacturer covered by such registration.

(2) The Agency shall review registrations and notify the registrant if the registration does not meet the requirements of this section. Within 30 days of receipt of a notification from the Agency, the registrant must file with the Agency a revised registration addressing the requirements noted by the Agency.

### *(e) Recycling Programs; Payments for Recycling.*

Registrants shall fulfill the requirements of either subsection (f) or subsection (g) of this section.

### *(f) Recycling Program Option.*

(1) Registration. The registration shall include the information specified in subparagraphs (A) through (E) of this paragraph.

(A) The registration shall list the manufacturer's brands for each manufacturer covered by the registration.

(B) The registration shall state that the registrant will be responsible for recycling the manufacturer's, or manufacturers', equivalent share of covered CRT devices.

(C) The registration shall describe a method or methods for the receipt of covered CRT devices from households in the State. These methods may include: direct shipment of covered CRT devices by households by common carrier, U.S. Mail, or other shipment service to one or more locations described by the registrant; deposit of covered CRT devices by households at one or more collection centers or one or more retail locations or other locations described by the registrant; deposit of covered CRT devices by

households with governmental bodies and/or private parties (either for profit or non-profit) described by the registrant; or other methods described by the registrant.

(D) The registration shall describe the processes and methods that will be used to recycle covered CRT devices including a description of the disassembly, physical recovery operation (e.g., crushing, shredding, grinding, glass to glass recycling), and/or other operation that will be used and describe where it will take place. All recycling processes and methods described in a registration must comply with applicable federal, state, and local laws and regulations.

(E) The registration shall specify a website and/or a toll-free telephone number that provide information about the recycling program described in the registration in sufficient detail to allow households in the State to learn how to return their covered CRT devices for recycling. The program described on the registrant's website and/or at the toll-free telephone number shall, at a minimum, contain the registrant's method or methods for receipt of covered CRT devices from households in the State described in the registration but may contain additional information.

(2) Implementation of Recycling Program. The registrant shall ensure that any person who receives a covered CRT device for recycling pursuant to the registrant's registration recycles the covered CRT device consistent with the recycling program described in the registrant's registration.

(3) Liability for Data. Except to the extent otherwise required by law, manufacturers, registrants, and any person who receives a covered CRT device for recycling pursuant to a registration shall have no liability for any data that may be on the covered CRT device if an information storage device is included with the covered CRT device.

(4) Changes to Recycling Program. If the registrant changes the recycling program that has been submitted to the Agency, the registrant shall submit a description of the change to the Agency and, upon the effective date of such change, revise its website and/or toll-free telephone information to be consistent with the changed program.

(g) *Payment Certification Option.*

(1) Registration.

The registration shall include the information specified in subparagraphs (A) and (B) of this paragraph.

(A) The registration shall list the manufacturer's brands for each manufacturer covered by the registration.

(B) The registration shall provide a certification that the registrant shall submit to the Agency the payments required by paragraph (2) of this subsection.

(2) Payment. By April 1 of each program year, a registrant who submitted a registration pursuant to paragraph (1) of this subsection shall submit to the Agency a payment for each manufacturer covered by the registration equal to: the manufacturer's equivalent share for that program year of covered computer monitors and of covered televisions multiplied by the reasonable collection, consolidation, and recycling cost for covered computer monitors and for covered televisions, as applicable, as determined by the Agency pursuant to section 8(f).

(h) *Changes to Registration.*

(1) When the list of manufacturer's brands covered by a registration changes, the registrant shall submit a revised list to the Agency within fourteen days of such change.

(2) A registrant providing a recycling program pursuant to section 6(f) may change its registration to provide payment pursuant to section 6(g) by filing with the Agency a revised registration pursuant to section 6(g)(1). A registrant providing payment pursuant to section 6(g) may change its registration to provide a recycling program pursuant to section 6(f) by filing with the Agency a revised registration pursuant to section 6(f)(1). Such revised registration must be filed with the Agency by December 1 of the program year that precedes the program year in which the change takes effect and a registrant may not change its selected option during a program year.

## Section 7. Reports to the Agency.

### (a) *Registrant Annual Reports.*

By February 1 of the second program year and each program year thereafter, each registrant shall file with the Agency an annual report for the preceding program year pursuant to paragraph (1) or (2) of this subsection, as applicable.

(1) *Registrants Providing Recycling Program.* Registrants that provided a recycling program for covered CRTs pursuant to section 6(f) shall file a report with the Agency that includes the information specified in subparagraphs (A) through (C) of this paragraph.

(A) *Total Weight.* For each manufacturer covered by the registration, the report shall identify the total weight in pounds of covered computer monitors and of covered televisions received from households in the State and recycled during the preceding program year. Such total weight in pounds shall include orphan CRT devices. If the registrant's recycling program involves an agreement(s) with a governmental body(ies), the registrant and governmental body(ies) shall ensure that the total weight in pounds of covered CRT devices received from households in the State and recycled pursuant to that agreement is included in the report filed with the Agency pursuant to this paragraph and is not included in any report filed with the Agency pursuant to subsection (b) of this section.

(B) *Difference Between Total Weight Recycled and Equivalent Share.* For each manufacturer covered by the registration, the report shall state the difference, if any, between the total weight in pounds of covered computer monitors and of covered televisions received from households in the State and recycled during the preceding program year and the manufacturer's equivalent share of covered computer monitors and of covered televisions for that preceding program year.

(i) *Credit for Excess.* For each manufacturer covered by a registration, if the total weight in pounds of covered computer monitors or of covered televisions received from households in the State and recycled during the preceding program year exceeds the manufacturer's equivalent share of covered computer monitors or of covered televisions, as applicable, for that preceding program year, then the difference in weight shall be available as a credit against the manufacturer's equivalent share of covered computer monitors or of covered televisions, as applicable, for the next program year.

(ii) *Payment for Deficit.* For each manufacturer covered by a registration, if the total weight in pounds of covered computer monitors or of covered televisions received from households in the State and recycled during the preceding program year is less than the manufacturer's equivalent share of covered computer monitors or of covered televisions, as applicable, for that preceding program year, then the registrant responsible for that manufacturer shall submit to the Agency, together with the registrant's annual report, a payment equal to: the weight in pounds of such deficit multiplied by the reasonable collection, consolidation, and recycling cost for covered computer monitors or for covered televisions, as applicable, as determined by the Agency pursuant to section 8(f).

(C) *Recycling Processes and Methods Used.* The report shall describe the processes and methods used to recycle the covered CRT devices including a description of the disassembly, physical recovery operation (e.g., crushing, shredding, grinding, glass to glass recycling), and/or other operation that was used and describe where it took place.

(2) *Registrants Providing Payment Certification.* Registrants that provided certification of payment pursuant to section 6(g) shall file a report with the Agency that states, for each manufacturer covered by a registration, the manufacturer's equivalent share of covered computer monitors and of covered televisions for the preceding program year, the amount of payment submitted to the Agency pursuant to section 6(g)(2), and the date of submittal of such payment.

### (b) *Local Government Annual Reports.*

By February 1 of the second program year and each program year thereafter, each city, county, or other local governmental subdivision of the State that received covered CRT devices from households in the State and recycled them during the preceding program year shall file with the Agency an annual report that contains the information specified in paragraphs (1) through (3) of this subsection.

(1) *Total Weight.* The report shall identify the total weight in pounds of covered computer monitors and of covered televisions received from households in the State and recycled during the preceding program year by such city, county, or other local governmental subdivision of the State. Such total weight in pounds shall include orphan CRT devices.

(2) *Identification by Manufacturer.* The report shall include a list of the number of covered computer monitors and the number of covered televisions received from households in the State that are identified for each manufacturer of covered CRT devices or that lack a manufacturer's brand, which list may be determined by periodic sampling.

(3) *Recycling Processes and Methods Used.* The report shall describe the processes and methods used to recycle the covered CRT devices including a description of the disassembly, physical recovery operation (e.g., crushing, shredding, grinding, glass to glass recycling), and/or other operation that was used and describe where it took place.

(c) *Base Year Reports.*

By August 1, [specify year that Act takes effect], each manufacturer and each city, county, or other local governmental subdivision of the State that received covered CRT devices from households in the State and recycled them between January 1 and June 30 of that year shall file with the Agency a report. The report shall identify the total weight of covered computer monitors and of covered televisions received from households in the State and recycled between January 1 and June 30 of that year. Such total weight in pounds shall include orphan CRT devices.

## **Section 8. Duties of the Agency.**

(a) *Generally.*

The Agency shall administer and enforce this chapter.

(b) *Rules and Regulations.*

The Agency may adopt rules and regulations as necessary for the purpose of administering and enforcing this chapter in accordance with its provisions.

(c) *Certifications and Registrations.*

The Agency shall establish procedures for the receipt and maintenance of the certifications and registrations filed with the Agency pursuant to sections 5 and 6, respectively, and for making such certifications and registrations easily available to manufacturers, distributors, retailers, and members of the public.

(d) *Agency Website.*

The Agency shall maintain on its website the names of the registrants and the manufacturer's brands that are listed in registrations filed with the Agency pursuant to section 6. The Agency shall update this website information promptly upon receipt of a registration.

(e) *Calculation and Notification of Equivalent Share.*

(1) The Agency shall calculate an equivalent share for each manufacturer of covered CRT devices that is in business or that is no longer in business but that has a successor in interest. Equivalent shares shall be calculated by dividing the return share percentage for each such manufacturer, as calculated by the Agency pursuant to paragraph (2) of this subsection, by 100, then multiplying the quotient by the total weight (in pounds) of covered CRT devices from households in the State, as specified in subparagraph (A) or (B) of this paragraph. The calculations shall be made separately for covered computer monitors and for covered televisions.

(A) For the first program year, the total weight in pounds of covered computer monitors or covered televisions from households in the State shall be the total weight in pounds of covered computer monitors or covered televisions reported in reports received by the Agency pursuant to section 7(c) (multiplied by two).

(B) For each program year thereafter, the total weight in pounds of covered computer monitors or covered televisions from households in the State shall be the total weight in pounds of covered computer monitors or covered televisions reported in reports received by the Agency pursuant to sections 7(a)(1)(A) and 7(b)(1) for the preceding program year.

(2) The Agency shall calculate a return share percentage for each manufacturer of covered CRT devices that is in business or that is no longer in business but that has a successor in interest, as determined pursuant to subparagraph (A) of this paragraph. Return share percentages shall be calculated by dividing the number of covered CRT devices identified for each such manufacturer, as specified in subparagraphs (B) and (C) of this paragraph, by the total number of covered CRT devices identified for all such manufacturers, then multiplying the quotient by 100. The calculations shall be made separately for covered computer monitors and for covered televisions.

(A) The Agency shall determine, using all reasonable means, manufacturers that are in business or that are no longer in business but that have a successor in interest in best available return share data [*specify sources desired, such as, for example, the Hennepin County Consumer Electronics Brand Tally or the Florida Electronic Product Brand Distribution Project*] for the first program year and in the lists included in reports filed by city, county, or other local governmental subdivisions of the State pursuant to section 7(b)(2) for the preceding program year for each program year thereafter.

(B) For the first program year, the number of covered CRT devices identified for an individual manufacturer shall be based on best available return share data [*specify sources desired, such as, for example, the Hennepin County Consumer Electronics Brand Tally or the Florida Electronic Product Brand Distribution Project*].

(C) For each program year thereafter, the number of covered CRT devices identified for an individual manufacturer shall be based on the lists included in reports filed by city, county, or other local governmental subdivisions of the State pursuant to section 7(b)(2) for the preceding program year.

(3) The Agency shall provide notification of its calculations of equivalent shares and return share percentages as specified in subparagraphs (A) and (B) of this paragraph.

(A) By October 1, [*specify year that Act takes effect*], the Agency shall notify each manufacturer of its equivalent share and return share percentage of covered computer monitors and of covered televisions from households in the State for the first program year.

(B) By March 1 of each program year thereafter beginning with the second program year, the Agency shall notify each registrant of the equivalent share(s) and the return share percentage(s) of covered computer monitors and of covered televisions from households in the State for that program year for each of the manufacturer(s) subject to its registration.

(f) *Determination and Notification of Reasonable Collection, Consolidation, and Recycling Cost.*

(1) The Agency shall determine reasonable collection, consolidation, and recycling costs based on the cost per pound incurred for such services by city, county, or other local governmental subdivisions of the State that received and arranged for the recycling of covered CRT devices from households in the State during the first six months after the effective date of this chapter for the first program year and during the preceding program year for each program year thereafter. The determinations shall be made separately for covered computer monitors and for covered televisions.

(2) The Agency shall provide notification of its determination of reasonable collection, consolidation, and recycling cost as specified in subparagraphs (A) and (B) of this paragraph.

(A) By October 1, [*specify year that Act takes effect*], the Agency shall notify each manufacturer of the reasonable cost per pound of collecting, consolidating, and recycling covered computer monitors and covered televisions from households in the State, as determined by the Agency pursuant to paragraph (1) of this subsection.

(B) By March 1 of each program year thereafter beginning with the second program year, the Agency shall notify each registrant of the reasonable cost per pound of collecting, consolidating, and recycling covered computer monitors and covered televisions from households in the State, as determined by the Agency pursuant to paragraph (1) of this subsection.

(g) *Use of Funds.*

Funds collected by the Agency pursuant to section 6(g)(2) and section 7(a)(1)(B)(ii) shall be used for funding collection, consolidation, and recycling of covered CRT devices subject to this Act by city, county, or other local governmental subdivisions of the State.

## **Section 9. Agency Report to Governor and Legislature.**

On or before July 1, [*specify year five years after Act takes effect*], the Agency shall provide a report to the Governor and the Legislature that includes the information specified in subsections (a) through (d) of this section.

- (a) For each of the preceding three program years, the total weight of covered computer monitors and of covered televisions received from households in the State and recycled; the total weight of covered computer monitors and of covered televisions received from households in the State and recycled pursuant to each registration; the payments received from each registrant pursuant to section 6(g)(2) and section 7(a)(1)(B)(ii); the credits recorded by each registrant pursuant to section 7(a)(1)(B)(i); and a summary of information in the reports submitted pursuant to section 7;
- (b) A discussion of the various collection programs used to collect and receive covered CRT devices from households in the State;
- (c) A description of enforcement actions relating to the chapter, both administrative and judicial;
- (d) Information about covered CRT devices, if any, being disposed of in landfills in the State; and
- (e) Any other information regarding the implementation of this chapter that the Agency wishes to include.

## **Section 10. Evaluation by Legislature.**

On or before December 31, [*specify year five years after Act takes effect*], the Legislature shall evaluate the implementation and effectiveness of this chapter.

## **Section 11. Other Programs.**

### *(a) Local Programs.*

This section does not prohibit the adoption, implementation, or enforcement of any local ordinance, resolution, regulation, or rule governing curbside or drop-off recycling programs operated by, or pursuant to a contract with, a city, county, or other governmental subdivision or public agency of the State, or programs operated under agreements with registrants, including, but not limited to, actions relating to fees for funding these specific local programs, but these fees may not include any fee applied to the covered CRT device at the time of purchase or any fee assessed by a city, county, or other governmental subdivision or public agency of the State on manufacturers for collection, consolidation, or recycling of covered CRT devices.

### *(b) Availability of Recycling Programs to Households.*

No city, county, or other governmental subdivision or public agency of the State may require households to use any specific recycling program or programs to recycle their covered CRT devices to the exclusion of any other programs legally available.

### *(c) No Restriction*

Except as provided in this section, nothing in this chapter shall be deemed to prohibit or restrict any such recycling program or to prohibit or restrict any person from receiving, storing, transporting, recycling, refurbishing, or reusing covered CRT devices.

## **Section 12. Requirements For Purchases By State Agencies.**

### *(a) Compliance with Chapter.*

Any person who submits a bid for a contract with a state agency for the purchase or lease of covered CRT devices must be in compliance with this chapter.

### *(b) Certification.*

A state agency that purchases or leases covered CRT devices shall require each prospective bidder to certify compliance with this chapter.

(c) *Sanctions.*

Any person awarded a contract by a state agency for purchase or lease of covered CRT devices who is found to be in violation of this chapter is subject to the following sanctions:

- (1) The contract shall be voided by the state agency to which the covered CRT devices were provided.
- (2) The contractor is ineligible to bid on any state contract for a period of three years.
- (3) If the Attorney General establishes in the name of the people of the State that any money, property, or benefit was obtained by a contractor as a result of violating this chapter, the court may, in addition to any other remedy, order the disgorgement of the unlawfully obtained money, property, or benefit in the interest of justice.

**Section 13. Landfill Disposal of CRT Devices; Regulation of CRT Devices.**

(a) *Landfill Disposal Ban.*

It is unlawful for any person to dispose of a covered CRT device by placing the covered CRT device in any solid waste disposal system or facility in the State except for the purpose of recycling. Any person operating a solid waste disposal system or facility in the State may accept covered CRT devices only for recycling and may not accept covered CRT devices for landfill disposal.

(b) *Federal Preemption.*

Regulations promulgated by the [provide name of appropriate state agency; may be different from the "Agency"] regarding the handling, storage, and treatment of CRT devices being recycled shall not be more restrictive than regulations promulgated by the U.S. Environmental Protection Agency regarding the handling, storage, and treatment of CRT devices being recycled. If the U.S. Environmental Protection Agency promulgates regulations under the Resource Conservation and Recovery Act or under any other federal law regarding the handling, storage, or treatment of CRT devices being recycled, those regulations shall automatically be effective in the State upon the same date and, as of such date, shall supersede any regulations previously adopted by the [provide name of agency] regarding the handling, storage, or treatment of CRT devices being recycled.

**Section 14. Enforcement.**

(a) *Labeling of CRT Devices.*

Civil liability may be administratively imposed by the Agency against a manufacturer in an amount up to [specify amount] for failure to label all covered CRT devices to be offered for sale in the State with the manufacturer's brand pursuant to section 4. A civil penalty in an amount up to [specify amount] per offense may be imposed by a [specify appropriate state court] for failure to label all covered CRT devices to be offered for sale in the State with the manufacturer's brand pursuant to section 4.

(b) *Sale of CRT Devices.*

- (1) Civil liability may be administratively imposed by the Agency against a person for each sale by that person of a covered CRT device not subject to a registration as required by section 6 in an amount up to [specify amount] per offense. A civil penalty in an amount up to [specify amount] per offense may be imposed by a [specify appropriate state court] against a person for each sale by that person of a covered CRT device not subject to a registration as required by section 6.
- (2) Civil liability may be administratively imposed by the Agency against a person who sells a covered CRT device and has not filed with the Agency the certification required by section 5(b) in an amount up to [specify amount] per offense. A civil penalty in an amount up to [specify amount] per offense may be imposed by a [specify appropriate state court] against a person who sells a covered CRT device and has not filed with the Agency a certification as required by section 5(b).
- (3) A fine or penalty shall not be imposed pursuant to this subsection on any person who sells or offers for sale a covered CRT device that is not subject to a registration as required by section 6 if that person reviewed the Agency's website prior to its initial offer for sale of such device and by January 1 of each program year thereafter, as required by section 5(b), and determined that, as of the date such review occurred, the covered CRT device was labeled with a manufacturer's brand that is subject to a registration filed with the Agency.

(c) *Registrations.*

(1) Civil liability may be administratively imposed by the Agency against a manufacturer in an amount up to [specify amount] for failure to file with the Agency a registration pursuant to section 6. A civil penalty in an amount up to [specify amount] per offense may be imposed by a [specify appropriate state court] for failure to file with the Agency a registration pursuant to section 6.

(2) Civil liability may be administratively imposed by the Agency against a registrant in an amount up to [specify amount] for failure to provide the recycling program described in the registrant's registration, for failure to submit payment pursuant to section 6(g)(2), or for failure to submit payment pursuant to section 7(a)(1)(B)(ii). A civil penalty in an amount up to [specify amount] per offense may be imposed by a [specify appropriate state court] for failure to provide the recycling program described in the registrant's registration, for failure to submit payment pursuant to section 6(g)(2), or for failure to submit payment pursuant to section 7(a)(1)(B)(ii).

(d) *Reports.*

(1) Civil liability may be administratively imposed by the Agency against a manufacturer in an amount up to [specify amount] for failure to file with the Agency a base year report pursuant to section 7(c). A civil penalty in an amount up to [specify amount] per offense may be imposed by a [specify appropriate state court] for failure to file with the Agency a base year report pursuant to section 7(c).

(2) Civil liability may be administratively imposed by the Agency against a registrant in an amount up to [specify amount] for failure to file with the Agency an annual report pursuant to section 7(a). A civil penalty in an amount up to [specify amount] per offense may be imposed by a [specify appropriate state court] for failure to file with the Agency an annual report pursuant to section 7(a).

**Section 15. Effective Date.**

This chapter shall take effect on January 1, *[specify year that Act takes effect]*.

**Section 16. Limitations.**

This chapter shall become inoperative when the earlier of the following occurs:

(a) *Federal Program.*

A federal law, or combination of federal laws, takes effect that establishes a program for the collection and recycling of covered CRT devices that is applicable to all covered CRT devices discarded by households, which law, or laws, are applicable to all covered CRT devices sold in the United States.

(b) *Court Judgment.*

A court issues a final judgment not subject to appeal that an out-of-state manufacturer is not subject to one or more of the requirements of this chapter. All registrants and out-of-state manufacturers shall continue to comply with the requirements of this chapter during any legal challenge to any requirement of this chapter.