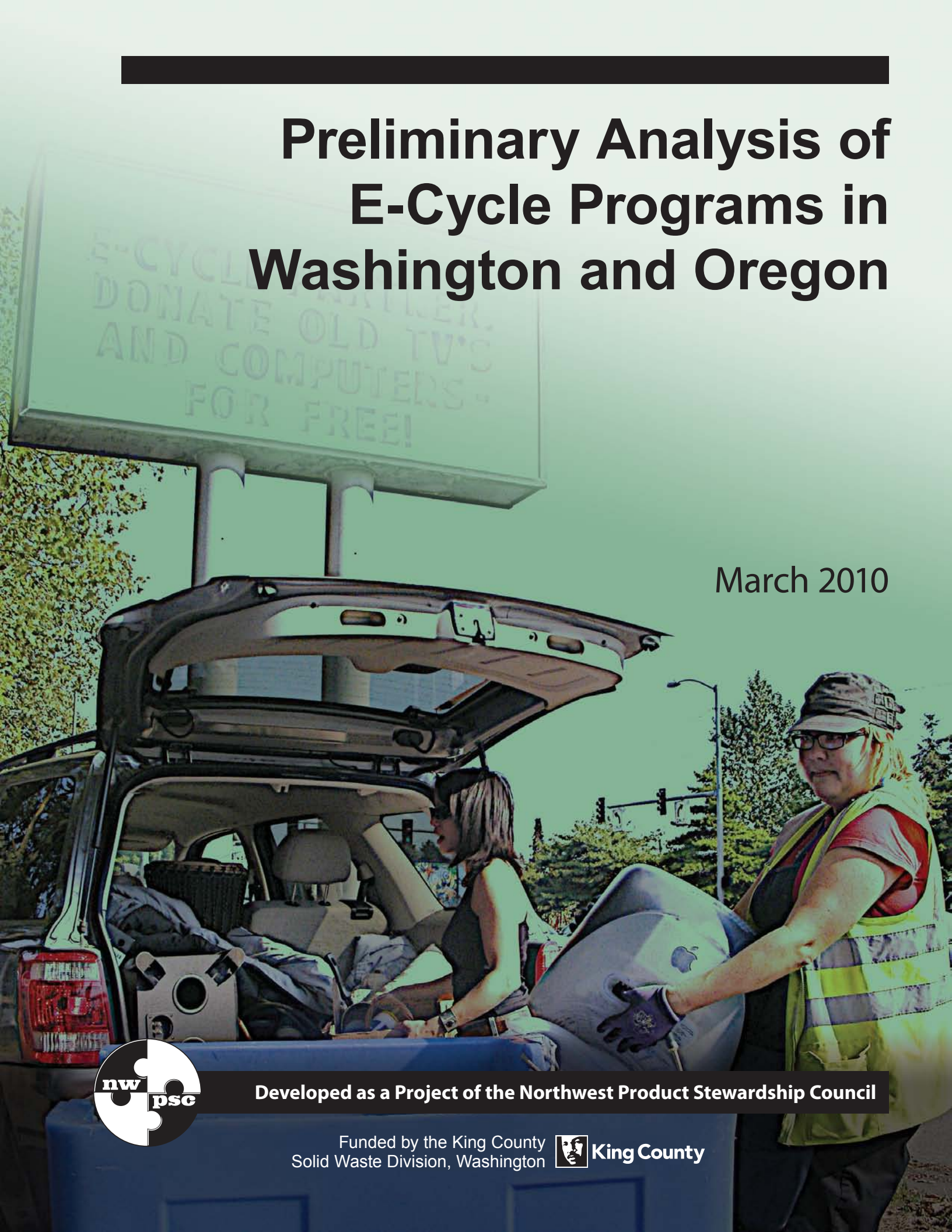
Preliminary Analysis of E-Cycle Programs in Washington and Oregon



March 2010

Developed as a Project of the Northwest Product Stewardship Council

Funded by the King County
Solid Waste Division, Washington

King County

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Executive Summary

The Northwest Product Stewardship Council (NWPSC) commissioned this report to assess the first ten months of two pioneering product stewardship programs which recover used electronic products in Washington and Oregon. The programs are called E-Cycle Washington and Oregon E-Cycles.

The specific goals of this report are:

- To provide an overview of the E-Cycle programs' requirements and provide a descriptive summary of how the programs have been implemented from January to October, 2009 in Washington and Oregon.
- To identify and analyze the statutory and policy differences between the Oregon and Washington programs that have resulted in unique program outcomes.
- To determine lessons learned from the respective experiences in Washington and Oregon drawing from analysis of quantified results (e.g., the number of tons collected and recycled, number of collection locations) and observations of key stakeholders involved in program implementation.

Thirty eight stakeholders involved in the implementation of the E-Cycle Washington and Oregon E-Cycle program were interviewed in November and early December, 2009. These stakeholders were asked to comment and provide insight on a range of issues relevant to the development and first ten months of implementation of the E-Cycle programs including program operations, environmental impacts, policy issues and economics. Interviewees included plan/program managers implementing the E-Cycle programs, electronics manufacturers, private solid waste companies, collectors, transporters, state and local government, processors/recyclers, environmental non-governmental organizations, and refurbishment/reuse organizations. Because of the small number of stakeholders interviewed in each category, these findings are not statistically significant. However, they do provide a useful temperature check after the first year of program operation and provide information to consider as the programs evolve.

E-Cycle Program Description

Many similarities exist between the legislation that provides the backdrop for the E-Cycle programs in Washington and Oregon. The Oregon law which was passed in 2007, just one year after Washington's law, included many of the same components as the Washington law in an attempt to make the program easier for the manufacturers and service providers to implement.

The laws in both states require manufacturers of TVs, computers and monitors to pay for and implement recycling programs for TVs, computers and monitors from specific consumers. All manufacturers must register with the state environmental agency and participate in a plan (in Oregon, once the plan is approved it is called a "program." In Washington, it continues to be called a "plan").

In both states, officials assign each manufacturer a percentage of the amount of collected electronics that have been returned for recycling called a "return share." Each manufacturer is responsible for this portion of the program. The laws in both states require mandatory sampling of returned electronics by brand name in order to provide the basis for the manufacturer-specific return shares. The return share represents the obligation of each manufacturer in terms of the amount that must be collected by the plans.

The manufacturers have the option to participate in a "default" plan. Alternatively, a manufacturer or group of manufacturers can petition the state to implement their own plan. Their plan must be submitted to their state environmental agencies and must include a description of how their collection, transportation and recycling programs will function. Once approved, the plans can be implemented.

In 2009, the initial program year, Oregon DEQ approved three recycling plans in addition to the "default" State Contractor Program (SCP) which was run by a contractor. Washington had a single approved recycling plan in 2009, the "default" program operated by the Washington Materials Management and Financing Authority (WMMFA). The programs in Oregon and Washington have many similarities and differences which are summarized below.

Similarities between Oregon and Washington Programs:

- **Manufacturers role:** The electronics manufacturers are required to finance and implement the recycling program including the collection, transportation, recycling/processing, system operations and some promotion.
- **Scope of products:** The scope of products covered by both states include computers, monitors and televisions. Peripherals such as mice and keyboards are not included.
- **Government role:** The state environmental protection agencies provide program oversight, enforcement, ensure environmentally sound recycling and help advertise the program. Local governments promote the program within their jurisdictions.
- **Collection services:** Collection services are required to be publically accessible in all cities with populations of 10,000 or more and in all counties.
- **Manufacturer registration:** Manufacturers are required to register with their respective state's environmental agency and pay an annual fee to support program administration, oversight and enforcement by these agencies.
- **Default programs:** "Default" programs that electronics manufacturers can participate in to comply with the requirements of the law have been established in both states. Both state laws allow the manufacturers or groups of manufacturers to run their own programs independently of the default programs.
- **Environmental management standards:** Both states have established environmental management standards for collectors, transporters and processors/recyclers.

Differences between the Oregon and Washington Programs:

- **Entities covered by the program:** Washington provides access to the recycling system to "consumers" defined as any household, charity, school district, small business (defined as less than 50 employees), or small government. Oregon covers any household, small business (defined as 10 or fewer employees), 501(c)3 non-profit charities employing 10 or fewer employees, or any person giving seven or fewer covered electronic devices to a collector at any one time.
- **Default programs:** Washington's default program is a state-created organization called the Washington Materials Management and Financing Authority (WMMFA) that has a board of directors made up of electronics manufacturers who oversee the program. Oregon's default program, the State Contractor Program (SCP), is run by a contractor selected by the Oregon Department of Environmental Quality (DEQ) and has no direct manufacturer oversight.
- **Service provider registration:** In Washington all collectors, recyclers and transporters must register with the state. No such service provider registration requirement exists in Oregon.
- **Manufacturer Plan requirements:** In Oregon all plans are free to choose any service provider to comply with various requirements (e.g., hiring collectors in every city of 10,000 or more). In Washington the default WMMFA must work with any collector registered with the state and must "fairly compensate" those service providers. In both states, service providers must meet environmental management standards which are established in each state.
- **Performance targets:** Oregon DEQ set a minimum 3.3 lbs. per capita collection target for the Oregon E-Cycle program for covered electronics. No such minimum target was established in Washington. Both states also have a convenience requirement to provide collection services in each county and at least one ongoing collection site in all cities with a population of 10,000 or more to ensure that the service is accessible and convenient.
- **Return share obligations:** In Oregon programs must collect and recycle, at a minimum, their share of electronics articulated by DEQ in pounds of covered electronics (not a percentage). In Oregon programs must operate throughout the

year (even if they have met their minimum), and would be penalized if they did not achieve their target except for the State Contractor Program (SCP). In Washington, when or if there are independent plans, the plans would compete with each other to collect and recycle their percentage return share of electronics established by the state. Plans that fail to meet their share must pay plans that have collected more than their share a set amount per pound for the material that was collected by the other plans.

- **Administrative rules:** Oregon has implemented the first year of its program without rules, relying on the statute and several guidance documents. Washington enacted regulations in 2007.
- **Disposal ban on computers, monitors, TVs:** Oregon has a disposal ban prohibiting computers, monitors and TVs from disposal in the trash which became effective on January 1, 2010 (one year after the collection programs began operating). Washington state has no ban although several counties have banned these materials from their local garbage systems.
- **Apportionment of default program costs:** In Washington the WMMFA Board establishes the financing policy for all the WMMFA members. In Oregon the law specifies that TV manufacturers participating in the SCP pay according to their respective market share of all TV manufacturers in the SCP, while manufacturers of desktops, laptops and monitors in the SCP pay according to their return share. Independent plan apportionment of costs is determined by participants in the independent plans.

Summary of Program Findings

The following findings are distilled from an analysis of quantified results (e.g., the number of tons of electronic products that were collected and recycled, number of collection locations) and observations of key stakeholders involved in program implementation.

Program Operations

- **Operational startup was smooth and collection amounts exceeded expectations.** Programs in both states are showing very high collection rates of covered electronics with Washington collecting 38.5 million pounds and Oregon collecting approximately 19 million pounds in 2009. Both states collected over 5 lbs per capita in their first year of operation.
- **Collection service is available in all cities with a population of 10,000 or more and in each county.** The convenience requirement in both states appears to be effective for ensuring that collection service is available in each county and all cities with a population of 10,000 or more. There are now 240 collection sites in Washington and 230 in Oregon – a significant increase from pre-program collection activities.
- **Processing capacity has increased in the Northwest.** Two of the eight WMMFA processors/recyclers were established in Washington because of the new law and one major processor/recycler established a facility in Portland, Oregon because of the E-Cycle programs.
- **The programmatic model of establishing a "default" stewardship program with an option for multiple manufacturer-run programs has proven to be viable to date.** In Oregon this model has resulted in three approved manufacturer-run programs in addition to the "default" state-managed contractor program. In Washington, all manufacturers opted in 2009 to participate in the "default" Standard Plan run by the manufacturer-managed WMMFA.
- **Interviewees supported flexibility with regard to the collection of electronics.** In both states there is

IMS Recycling located a new facility in Vancouver, Wa in part due to the E-Cycle programs in Washington and Oregon

widespread use of the existing infrastructure for collecting electronics. In both Oregon and Washington, some programs developed collection systems using existing networks of charitable organizations. Some Oregon programs made arrangements with transfer stations operated by public entities and private solid waste companies to collect electronics. Most programs used a combination of private businesses, charitable organizations, and public sector locations.

- **Some organizations that specialize in reuse and refurbishment of electronic equipment have thrived under the new system while others have struggled**. Those who have thrived have either continued to refurbish old electronics and have become qualified to provide service as a recycler/processor under the new system, or have discontinued their refurbishment activities. A more detailed analysis of the dynamics of reuse in electronics recycling programs beyond the Pacific Northwest would be helpful to confirm this conclusion as the analysis in this study is based on limited experiential data.
- **Charitable thrift organizations are satisfied with the program.** By serving as collectors for the E-Cycle programs, charitable thrift organizations are now getting paid to collect the equipment rather than often having to pay out of pocket to recycle donated broken equipment. In Washington there are 141 locations operated by charities, including 96 Goodwill sites and these locations have become some of the most popular drop off sites. In Oregon charities have maintained their prominence as a dominant collector of used electronics in that state with more than 100 locations.
- **Program education and promotion efforts need to be coordinated by a single entity.** Program promotion and outreach is typically a cooperative effort across approved plans/programs, the state (using administrative fee proceeds) and local governments. When only a single plan/program exists it is easier to place more responsibility on that entity (e.g., the WMMFA) for overall system promotion and outreach. However, when multiple programs are approved as in Oregon, several stakeholders opined that in the interest of developing a coherent message to the public and to ensure a level playing field the regulatory agency should take the lead on system promotion and education.

Economics

- **The E-Cycle programs generated new jobs in Washington and Oregon.** According to interviews of processors/recyclers, approximately 140 net new jobs were created across Washington and Oregon for program start-up: 79 in Washington and 61 in Oregon. Approximately 360 ongoing jobs at these facilities are reported attributable to the Washington and/or Oregon E-Cycle programs.
- **Most collectors interviewed felt that the level of financial compensation for providing collection service is adequate.** Most collectors interviewed that were participating in the program were satisfied with the compensation. The two entities interviewed that were not participating in the system said that the compensation was too low. Those participating in the program operate facilities that were well suited to providing collection services including adequate storage space and easy public access. Those that weren't participating stated they had logistical challenges. This may have contributed to higher operating costs and the perception that the compensation was too low to cover their costs.
- **The state-wide systems created program efficiencies and drove pricing for services lower.** The consolidation of electronics recycling activities into state-wide systems has created program efficiencies relative to the cost of collection, transportation and recycling before January 1, 2009. For example the WMMFA cited operating costs in 2009 as $0.24/lb and the Oregon SCP cited a similar rate – a cost well below prices charged to scattered local governments and private programs before E-Cycle implementation, according to several local government officials. Some of this pricing reduction is likely due to increased program efficiencies (e.g., a consolidated administrative structure) and some is likely due to the stronger pricing power that comes with larger, consolidated purchases of recycling and related services.
- **Cooperation and joint activities across states has created efficiencies.** Officials and stakeholders in Washington and Oregon developed a joint E-Cycle name, logo and educational materials which saved money and provided a consistent message to consumers across states. This example of cross-state cooperation was possible because the programs are so similar operationally. Additional opportunities to develop cross-state efficiencies and avoid confusion in border communities may also exist.
- **The long-term ability of service providers to thrive under a producer responsibility system is untested.** Overall the short-term results are mixed: while some processors and other stakeholders expressed concern that the new system has resulted in a negative financial impact on processors, other processors with newly established facilities in the region expressed satisfaction with current arrangements.

- **Managers of the "default" programs in both states expressed concern about the long-term sustainability of both programs under certain conditions.** Concerns included impacts upon their programs if the financing policy that uses a combination of market share and return share to allocate costs among manufacturers could inadvertently cause manufacturers to leave the "default" program, potentially putting its viability at risk. In both states, certain manufacturers with higher market shares than return shares would pay more than their return shares under the "default program", and if they leave the default programs the costs to all manufacturers remaining in the default program would increase.

Environmental Impacts

- **Most covered electronics are now being managed in audited recycling channels rather than disposed in landfills or managed in unaudited recycling channels.** The consensus among most interviewed stakeholders was that the system provided greater accountability for the final destination of the covered electronics due to annual audits of direct recyclers/processors, recordkeeping requirements and review by state regulators. Prior to the E-Cycle programs, there was no mechanism to determine if computers, monitors and TVs were being handled in a manner protective of the environment and human health. An environmental NGO said the audit process should go further – for example, leakage from collectors who are not audited is a concern.
- **Collection and recycling of covered electronics has increased.** Washington collected 38.5 million pounds of electronics for recycling and Oregon is collected approximately 19 million pounds in 2009 for a total of more than 5 pounds per capita. As a comparison in 2008, the Department of Ecology reported that 34.5 million pounds of electronics were recycled statewide - this figure includes all types of electronics (including printers, scanners, fax machines and other products not accepted by E-Cycle programs) from all sectors including large businesses.
- **Approximately 5 million pounds of lead have been recycled** as a result of the Washington and Oregon E-Cycles Program.
- **More than 25,000 units have been reused in Oregon** during the initial nine months of the Oregon E-Cycles program. The Washington program allows collectors to resell or donate equipment for reuse, but does not track reuse activities.

E-Cycle programs track the fate of all products so fewer computers, monitors, and TVs are dumped or sent to unaudited recyclers.

Policy

- **Most stakeholders expressed support for the producer responsibility concept.** This includes support from several manufacturers although some manufacturers and plan/program managers took exception to specific elements in the approach used in Washington and Oregon, specifically the prescriptive collection requirements. Some service providers questioned their own long-term sustainability in a system where global manufacturers finance and drive the system towards lower costs. Local governments in particular are very supportive of the E-Cycle programs.
- **Allowing collectors to work for multiple plans is very popular among manufacturers.** While manufacturers like this arrangement, questions about certain "shared collector" practices were raised by some government officials and plan/program managers. Manufacturers noted that the ability to share collectors was critical in meeting collection service requirements, particularly in more rural areas where the number of potential staffed collection sites is limited. Critics of

collector sharing arrangements point to concerns about data reporting integrity, a reduced ability of programs to spot leakage (e.g., a change in product mix could be due to the collector sending some collected electronics to another plan/program), and the public benefit of more collection opportunities if collector sharing were restricted.

- **Projecting a minimum number of pounds that each program must collect presents challenges and can create a disincentive to collect more than the target.** Oregon established a minimum number of pounds of covered electronics that each program must collect that year (3.3 lbs./capita) and underperforming programs must pay a penalty for not collecting their minimum pounds. Actual collections for 2009 were recorded at 5.13 lbs./capita. While DEQ required all programs to continue to provide collection service through all of 2009, it appears that some programs may have undertaken efforts to reduce flows of covered electronics from their collectors, including encouraging shared collectors to send electronics to other programs. The Washington program establishes plan-specific percentages where under-performing plans pay over-performing plans. The Washington approach has yet to be tested as there was only one plan operating in Washington in 2009.
- **Few stakeholders had comments about the overall financing mechanism in the respective programs.** However, specific issues were raised, including support for the financing structure where the Washington Department of Ecology establishes individual manufacturer return share obligations but the WMMFA board is allowed to set financing policy for all WMMFA members.
- **Stakeholders voiced little concern with manufacturer registration requirements.** Registration with a state agency is a common requirement across many states with producer responsibility programs. In Washington and Oregon an administrative fee is levied in conjunction with manufacturer registration and is based on a sliding scale based on the market share of all manufacturers of covered electronics. The only complaint raised about the manufacturer registration process had to do with the relatively high fees levied on manufacturers, particularly in Washington.

Approximately 140 net new recycling jobs were created across Washington and Oregon for program start-up.

- **Stakeholders had insightful comments about expanding the programs to include other products – and any new producer responsibility programs.** One manufacturer said any new electronic products should be added to the existing system, while another manufacturer serving on the WMMFA board noted that it was challenging to work on a system with two disparate product groups (TVs and computers) and if you added new products to the Authority [WMMFA] it could quickly become unwieldy.
- **A clear legal status and startup funding are both critical in any new program.** As for the creation of any other similar system with WMMFA-type operational responsibilities, another manufacturer active at the creation of the program strongly recommended that the legal issues need to be resolved before the program is created. Specifically the legal status of entity needs to be determined (is it a public or private entity or a combination) and the legal requirements that pertain to that entity need to be identified. Also there should be funding for start up operations included in any new such program for other products.

Table of Contents

1.0 Purpose and Scope

The Northwest Product Stewardship Council (NWPSC) commissioned this report to assess the first ten months of two pioneering product stewardship programs to recover used electronics in Washington and Oregon. Specific goals of this report are:

- To provide an overview of the E-Cycle programs' requirements and provide a descriptive summary of how the programs have been implemented from January to October, 2009 in Washington and Oregon.
- To identify and analyze the statutory and policy differences between the Oregon and Washington programs that have resulted in unique program outcomes.
- To determine lessons learned from the respective experiences in Washington and Oregon drawing from analysis of quantified results (e.g., the number of tons collected and recycled, number of collection locations) and observations of key stakeholders involved in program implementation.

2.0 Washington and Oregon E-Cycling Programs

In 2006 the State of Washington enacted landmark legislation to establish an extensive, statewide system for the collection of used televisions and computers for recycling. In 2007 Oregon enacted similar legislation.

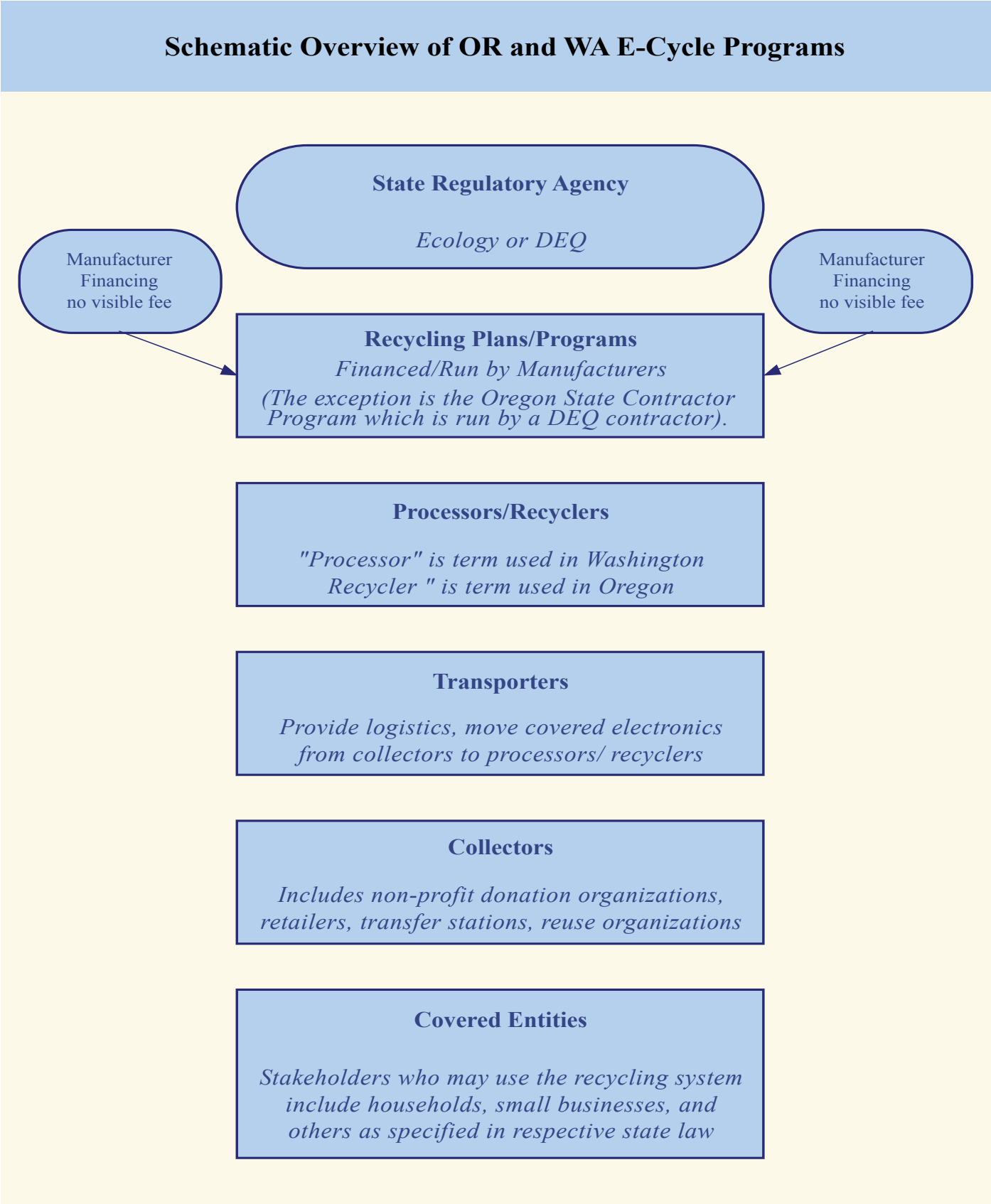
Figure 1 presents a high level overview of the relationship between state regulators, recycling plans/programs, recyclers, collectors and consumers.

In general, the legislation requires manufacturers of TVs, computers and monitors to pay for and implement recycling programs for TVs, computers and monitors from specific consumers. All manufacturers must register with the state environmental agency and participate in a plan – also called a "program" in Oregon. They must submit a plan to their state environmental agencies which describes how their collection, transportation and recycling programs will function. Once approved, the plans can be implemented. If manufacturers don't participate in a plan, they are not allowed to sell product into the state.

The manufacturers can participate in a "default" plan established by the state or a manufacturer or group of manufacturers can petition the state to implement their own plans. In both states, officials assign each manufacturer a percentage of the amount of collected electronics that have been returned for recycling called a "return share." Each manufacturer is responsible for this portion of the program. The laws in both states require mandatory sampling of returned electronics by brand name in order to provide the basis for the manufacturer-specific return shares. The return share represents the obligation of each manufacturer in terms of the amount that must be collected by the plans.

In 2009, Washington had only one plan, the "default" plan, so that plan is responsible for 100% of the return share. If in the future, manufacturers successfully petition the state to operate their own "independent" plans in Washington, they would be responsible for the return shares of all the manufacturers who are part of that plan. In Oregon, there are three programs run by the manufacturer called "manufacturer programs" in addition to the default program. Each manufacturer plan or program decides how they will apportion the costs of their program to the manufacturers that are participating in their plan.

Figure 1


Schematic Overview of OR and WA E-Cycle Programs
State Regulatory Agency
Ecology or DEQ
Manufacturer Financing no visible fee
Manufacturer Financing no visible fee
Recycling Plans/Programs
Financed/Run by Manufacturers
(The exception is the Oregon State Contractor Program which is run by a DEQ contractor).
Processors/Recyclers
"Processor" is term used in Washington
Recycler " is term used in Oregon
Transporters
Provide logistics, move covered electronics from collectors to processors/ recyclers
Collectors
Includes non-profit donation organizations, retailers, transfer stations, reuse organizations
Covered Entities
Stakeholders who may use the recycling system include households, small businesses, and others as specified in respective state law

The manufacturer plans contract with various organizations and businesses to provide collection sites where people can drop off their unwanted equipment. The plans are required to have collection locations in all cities and counties with more than 10,000 people. The plans also contract with transporters and recyclers/processors to haul the equipment from collectors to recyclers/processors and to recycle the equipment to prepare the materials for reclaiming or reuse in new products in accordance with processing standards established by each state.

The state agencies provide program oversight and enforcement. Local governments assist with publicizing the program and consumers required bring their unwanted equipment to the collection sites.

2.1 Common Elements Within Oregon and Washington

Common program elements include:

- **Manufacturer role:** Both state programs require manufacturers of computers, monitors and televisions to finance collection, transportation, recycling, system operations and some promotion.
- **Government role:** The state environmental protection agencies provide program oversight, enforcement, ensure environmentally sound recycling and help advertise the program and local governments promote the program within their jursidictions.
- **Scope of products**: Both states require the recycling of the following "covered products:" televisions, computer monitors, desktop computers and laptop computers. Peripherals such as mice and keyboards are not included.
- **Entities covered by the program**: Both states require the manufacturers to provide recycling services to household consumers and small business although there are differences in the definition of "covered entities" below.
- **Collection services:** Both states require publically accessible collection locations in all cities of 10,000 or more, and that collection service be provided in all rural counties without cities of this size as well.
- **Registration:** Both states require manufacturers to register with their respective state's environmental agency (the Oregon Department of Environmental Quality and the Washington Department of Ecology) and pay a fee to support program administration, oversight and enforcement by these agencies.
- **Independent plans/Manufacturer programs:** The laws in both states establish a "default" program that electronics manufacturers can participate in to comply with the requirements of the law. In addition, both state's laws allow the manufacturers or groups of manufacturers to run their own programs independently of the default programs. These programs are subject to specific requirements in the law and the approval of state officials. In Washington, these manufacturer-run programs are called "independent plans" and in Oregon they are called "manufacturer programs".
- **Financing.** In both states, the manufacturers are required to pay all program costs including administration, collection, transportation and recycling. Each manufacturer selling into the states is assessed a percentage of the overall E-Cycle program electronics that they are responsible for – this amount is called the "return share". The return share is based on the amount, in pounds, of their brand of products that is brought in to the program to be recycled. Return shares are calculated each year by conducting a sampling of products, by brand, that come in to the processing/recycling facilities. If a manufacturer or group of manufacturers elects to operate their own independent program, they are responsible for collecting, recycling and paying for their collective percentage of products as determined by the return share. These plans are required to be self-funding and each plan assesses their members for the costs of implementing the recycling program according to their own internal arrangements.
  - In Oregon the DEQ also establishes a minimum per capita collection target for the entire Oregon E-Cycle program for covered electronics. Using this per capita minimum, each approved program's return share is translated into a minimum pounds goal for the upcoming program (see "Performance targets" in the next section for more detail).
  - The financing obligation in the respective state default plans is different and is described in the next section under "Apportionment of default program costs."

- **Enforcement:** All manufacturers that sell their products into Washington and Oregon are required to register with the state and participate in a plan. Those that are not participating cannot sell their products in either state. Retailers are required to check the registration lists to determine if their product manufacturers are registered and complying with the law. If retailers sell products from manufacturers that are not participating in a program, they are in violation and can be fined.
- **Environmental management standards:** Both states have set environmental management standards for service providers such as collectors, transporters and processors/recyclers – although these standards are not identical. Overall these differences are technical in nature. Washington has implemented its recycling requirements as regulations while Oregon has published Environmental Management Practices which all approved E-Cycle programs must meet.
- **Sampling for return share:** Both states require a sampling program of covered electronics entering their respective recycling systems as the basis for establishing manufacturer-specific return shares. Sampling events are generally conducted at recycler/processor facilities and include recording and tallying of product brands. Washington implemented its sampling program in 2009, Oregon began in 2010.
- **Definitions:** In Washington a "processor" means an entity engaged in disassembling, dismantling, or shredding electronic products to recover materials contained in the electronic products and prepare those materials for reclaiming or reuse in new products in accordance with processing standards established by this chapter and by the department. A processor may also salvage parts to be used in new products. Oregon uses the term "recycler".

2.2 Notable Differences Between Oregon and Washington

- **"Default" programs:** Washington's default program is a state-created WMMFA which is governed by a board of directors comprised of a total of eleven computer and TV manufacturers appointed by the Department of Ecology. Oregon's default program, the State Contractor Program (SCP), is run by a contractor selected by the Oregon Department of Environmental Quality (DEQ) and has no direct manufacturer oversight.
- **Independent plans/manufacturer programs:** Both programs allow manufacturers to run their own plans/ programs. In Washington in 2009 there were no independent plans and all manufacturers participated in the default standard plan. In late 2009, two groups of manufacturers submitted independent plans to the Washington Department of Ecology to begin operation in 2010. The plans were not approved and the standard plan will continue to be the sole plan operating in 2010. In Oregon, there were three manufacturer-run programs in addition to the default program run by the contractor.

Oregon State Senators Jackie Dingfelder and Frank Morse at the Oregon E-Cycles' kick-off event in February 2009.

- **Return share obligations:** In Oregon plans must collect and recycle, at a minimum, their share articulated by DEQ in pounds of covered electronics (not a percentage). In Oregon plans must operate throughout the year (even if they have met their minimum), and would be penalized if they did not achieve their target except for the State Contractor Program (SCP). In Washington, when or if there are independent plans, the plans would compete with each other to collect and recycle their percentage return share of electronics established by the state. Plans that fail to meet their share must pay plans that have collected more than their share a set amount per pound for the material that was collected by the other plans.
- **Covered entities**: Washington defines "covered entities" slightly differently from Oregon. Specifically, Washington provides access to the recycling system to "consumers" defined as any household, charity, school district, small business (defined as less than 50 employees), or small government. Oregon covers any household, small business (defined as 10 or fewer employees), 501(c)3 non-profit charities employing 10 or fewer employees, or any person giving seven or fewer covered electronic devices to a collector at any one time.

- **Reuse and Refurbishment:** In Washington, reuse and refurbishment can be done at the processor/recycler facility or at the collector facility. The refurbishment activity by collectors is now allowed due to a 2009 amendment to the law. In Oregon reuse and refurbishment may only be done by collectors. The number of units diverted for reuse is reported by the programs to DEQ quarterly. There is no reporting requirement for reuse in Washington.
- **Registration:** In Washington all collectors, recyclers and transporters must register with the state. No such service provider registration requirement exists in Oregon.
- **Manufacturer Plan requirements:** In Oregon all plans are free to choose any service provider to comply with various requirements (e.g., hiring collectors in every city of 10,000 or more). In Washington the default WMMFA must work with any collector registered with the state and must "fairly compensate" those service providers. In both states, service providers must meet environmental management practices which are established in each state.
- **Administrative rules:** Oregon has implemented the first year of its program without rules, relying on the statute and several guidance documents which had been developed through a consensus process in an advisory committee of stakeholders. Documents include the following guides: Guide for Manufacturer Recycling Plans; Environmental Management Practices; and Collection System Standards (see www.oregonecycles.com). Washington enacted regulations in 2007 that can be found at http://www.ecy.wa.gov/pubs/0707042.pdf.
- **Disposal ban on computers, monitors, TVs:** Oregon has a disposal ban which became effective on January 1, 2010 (one year after the collection programs began operating).
- **Performance targets:** In late 2008 and after discussions and negotiations with manufacturers about a number of issues, Oregon DEQ set a minimum 3.3 lbs. per capita collection target for the entire Oregon E-Cycle program for covered electronics. This minimum per capita collection target translated to more than 12 million pounds to be collected statewide in 2009 across all programs. No such minimum target was established in Washington, but even without setting any such quantitative target per capita collection results during the first year of operation are very similar across both states: actual collections in Oregon in 2009 were at 5.13 lbs. per capita, and were 5.88 lbs. in Washington. Both states also have a convenience requirement to provide collection services in each county and at least one ongoing collection site in all cities with a population of 10,000 to ensure that the service is accessible and convenient.
- **Apportionment of default program costs:** In Washington the WMMFA Board establishes financing policy for all WMMFA members and has established a financing policy based on a combination of market share and return share. In 2009, there is a 50-50 split between market and return share which shifts to full market share over time. As there are no independent plans in Washington to date, this financing policy is effectively the statewide financing approach. In Oregon the law specifies that TV manufacturers participating in the State Contractor Program (SCP) pay according to their respective market share of all TV manufacturers in the SCP, while manufacturers of desktops, laptops and monitors in the SCP pay according to their return share. In Washington the WMMFA bills WMMFA members quarterly to cover its operating costs while Oregon DEQ bills manufacturers participating in the SCP with an initial estimated bill and then a true up bill after the year closes. Both organizations must account for non-paying manufacturers due to bankruptcy or non-compliance. Because it bills quarterly, WMMFA can adjust for non-paying manufacturers more quickly than Oregon DEQ.

2.3 Description of Entities Responsible for Implementing Recycling Plans

For the initial E-Cycling program year Oregon DEQ approved four recycling plans: the Electronic Manufacturers Recycling Management Company LLC (MRM) plan, the Independent Producer Responsibility (IPR) plan, Dell and the "default" State Contractor Program (SCP). DEQ hired a contractor – the National Center for Electronics Recycling (NCER) – to run the SCP, which is Oregon's default program. Washington had a single approved recycling plan in 2009, the default program operated by the WMMFA.

2.4 Processing (Recycling) Infrastructure

The default plans in both states use multiple processors/recyclers. Consistent with the legal requirements the WMMFA contracts with any qualifying processor meeting the voluntary Preferred Standards published by the Washington State Department of Ecology (see document #07-07-046) and referenced in Washington regulations published at WAC 173-900, see http://www.ecy.wa.gov/biblio/0707042.html. This requirement was a policy decision of the WMMFA Board of Directors. Currently the WMMFA has eight approved processors/recyclers with facilities in Washington, Oregon and California.

Total Reclaim recycles electronic equipment for both the Oregon and Washington programs.

In Oregon the SCP issued open Requests for Proposals in 2008 and in 2009 stipulating requirements, including conformance with Environmental Management Practices (EMPs) published by DEQ, see http://www.deq.state.or.us/lq/pubs/docs/ORECyclesEnvironmentalManagementPractices.pdf. As of this writing the SCP has contracts with four recyclers with facilities in Oregon, Washington and California.

Independent manufacturer programs in Oregon contract with recyclers privately; some programs contract exclusively with one recycler, others use two or three. In all cases, the recyclers are required to meet the Oregon EMPs or a different standard which is equivalent or better, as approved by the DEQ.

Graphics depicting the respective Washington and Oregon recycling plans/programs are shown in Figures 2 and 3.

Figure 2

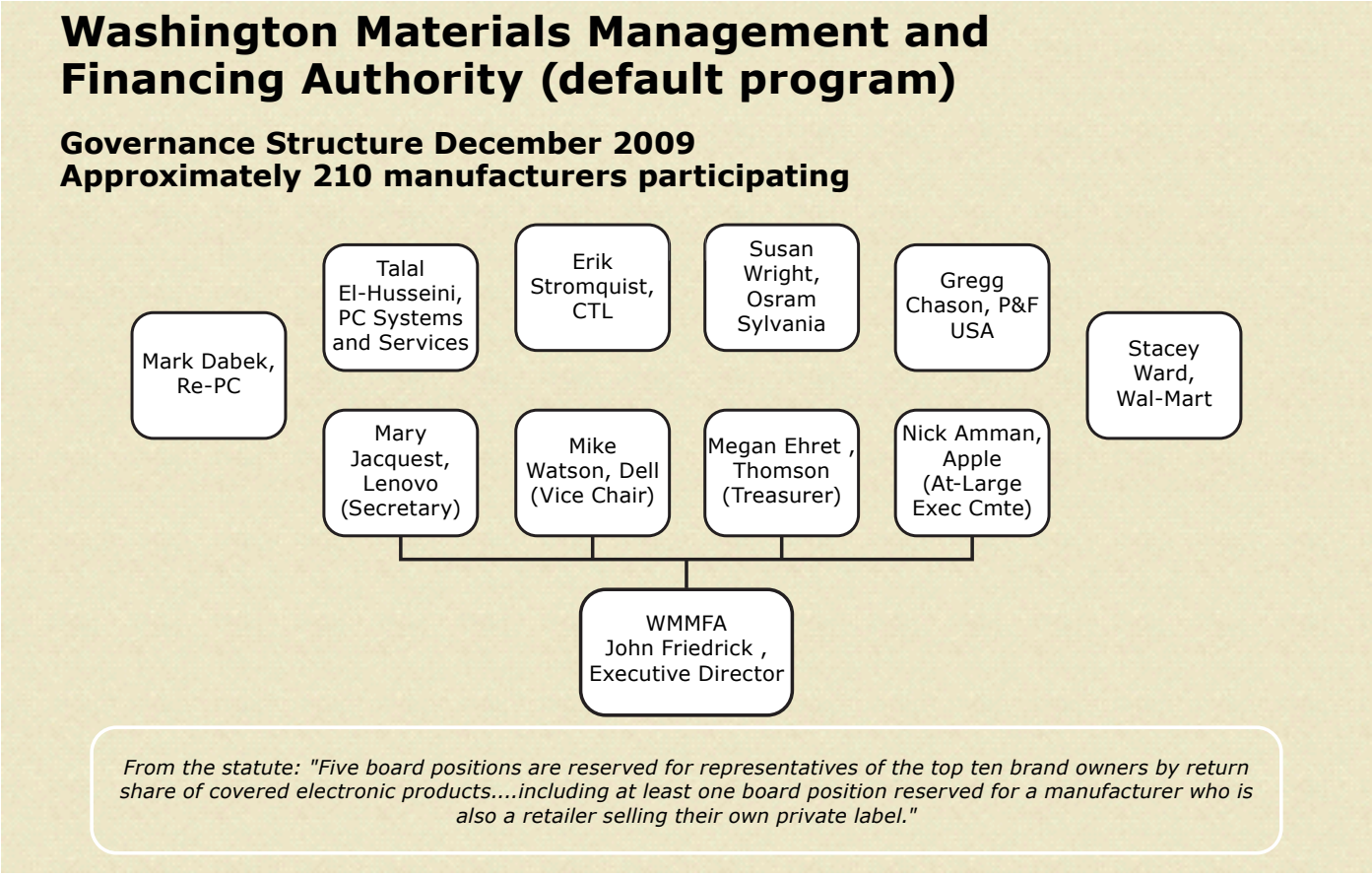
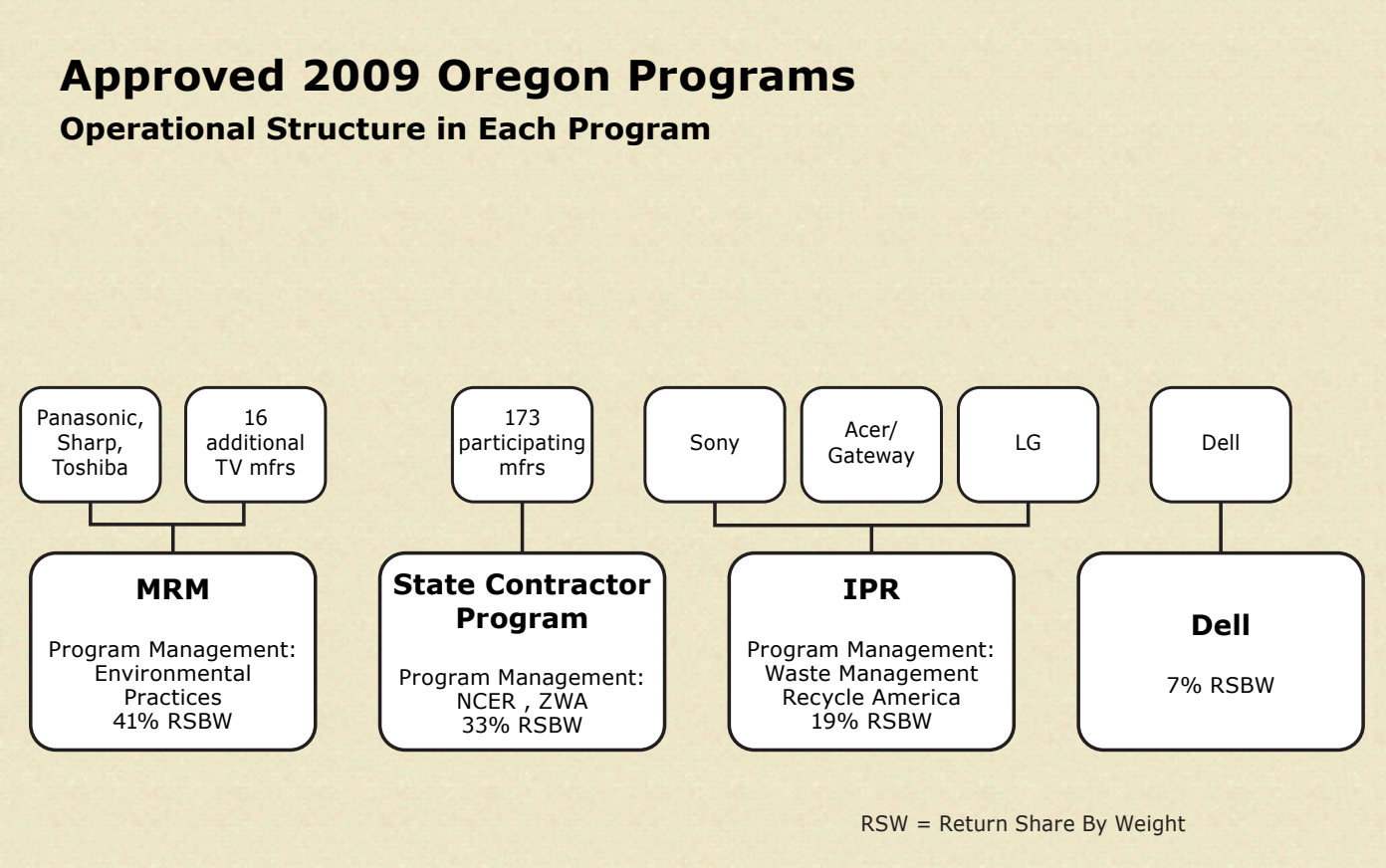


Figure 3



2.5 Collection Infrastructure

The plans in both states have contracted directly with collectors, or through their recyclers, who operate the staffed collection locations required by law. Collection sites must be located in cities over 10,000 in population and in all counties and operate according to environmental management standards.

In Washington, collectors must first register with the Department of Ecology and then develop arrangements with the WMMFA on a fair price and logistical arrangements. There are no restrictions on the number of collectors working for the WMMFA in any local jurisdiction and all registered collectors are entitled to provide service to the WMMFA, subject to agreement on fair compensation and operational arrangements. The logistics strategy employed by the WMMFA and contracted transporters is designed to take advantage of existing shipping activities operating below capacity (e.g., backhauling) to lower costs and, as a side benefit, avoid generation of new greenhouse gas emissions.[1]

Customers bring their computer equipment to Ace Metal Company in Snohomish County Washington.

1 A transporter interviewed for this study noted that nearly all shipments in both Washington and Oregon are "backhauls" so they are not moving empty trucks to collect covered electronics.

In Oregon there is no registration requirement. The SCP contracts directly with collectors but on a more selective basis – there is no obligation for the SCP to hire additional collectors in jurisdictions where the minimum collection requirement has been met. The Oregon SCP also negotiates compensation rates consistent with the market for collection services.

Some independent manufacturer programs in Oregon have made arrangements with collectors in a variety of ways, either contracting directly with collectors, requiring their contracted recyclers to hold agreements with collectors, and/or have agreements between manufacturer programs to share sites. Transportation services under the programs vary widely, from services provided by the program, by the recyclers or by the collector "self-ship" arrangements to use of common carriers.

In Oregon many collectors have contracted with more than one program and are free to choose which program receives covered electronics collected at their facility (note that several transporters and recyclers also work for multiple programs). Other collectors are shared via program-to-program agreements. In this case, a collector has an arrangement with only one program but that program's "pounds" are shared with another program via arrangements between programs. So from the collector's perspective it is sending covered electronics to only one program, but the collection/recycling cost and weight are shared with the another program.

These arrangements have developed for the convenience of the program in finding collection sites across all required jurisdictions, particularly when collecting sufficient amounts of covered electronics to meet the minimum target is not a concern to programs. As programs reached and exceeded their per capita collection target in 2009 shared collectors were encouraged to use other programs. The dynamics of a lower per capita collection target in 2009 as it relates to shared collectors is expected to change in 2010 when a higher per capita collection target goes into effect.

3.0 Summary of Program Data

Both programs started strong during the first three quarters of 2009, both in terms of collection amounts and the number of collection locations. Members of the public and other covered entities could access more than 450 collection locations across Washington and Oregon (see Appendix 1 and 2 for a list of collectors active during Q1 through Q3 2009 in Oregon and Washington, respectively). Collection amounts for the first month exceeded per capita results during start-up periods in other states such as California in 2005 and Maine in 2006, and were at a rate similar to amounts collected in Minnesota (2007/2008).

Tables 1 through 5 provide key program data from each state.

Table 1: Total Pounds of Covered Electronics Collected and Recycled in 2009

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	TOTAL 2009	
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds/Capita
Washington	9,118,843	9,655,152	10,856,640	8,918,039	38,548,674	5.89
Oregon	4,938,541	4,604,814	4,808,600	4,471,182	18,971,795	5.13

Table 2: Type of Covered Electronics Collected and Recycled

	2009 Total		
	Televisions	Monitors	Computers
Washington	58%	32%	10%
Oregon	57%	32%	11%

Table 3: Oregon-Specific, Program-Specific Recycling Results (lbs)							
	% Responsibility of 3.3 lbs/capita program minimum	Q1	Q2	Q3	Q4	Total 2009 (lbs. and % of total)	
Dell	7%	897,490	819,420	809,771	827,323	3,354,004	18%
IPR	19%	743,374	623,711	577,994	633,159	2,578,238	14%
MRM	41%	2,281,327	1,832,198	1,827,915	1,478,504	7,419,944	39%
SCP	33%	802,368	1,539,000	1,746,045	1,532,196	5,619,609	30%

Table 4: Oregon-Specific Reuse Amounts in 2009 (in units)					
	Q1	Q2	Q3	Q4*	TOTAL 2009*
Units Diverted for Reuse	8,983	7,811	8,449	668	25,866
***Totals from the last quarter are not complete.**					

Table 5: Washington-Specific Details (lbs) through 2009	
	2009 Totals
TELEVISIONS	
Household TV	22,157,784
School District TV	64,740
Small Business TV	128,088
Total TELEVISIONS	22,350,612
MONITORS	
Household Monitors	11,536,361
School District Monitors	619,220
Small Business Monitors	105,375
Small Government Monitors	22,778
Total MONITORS	12,287,734
COMPUTERS (includes laptops)	
Household Computers	3,593,279
School District Computers	296,463
Small Business Computers	15,899
Small Government Computers	4,687
Total COMPUTERS	3,190,328
Total pounds CEPs	**38,548,674**

Table 6: Washington CEP Pounds by County through 2009

WA State County	Population	Population % of State	Estimated quantity in pounds by WA State county	Percent of total pounds by county
Adams	17,285	0.3%	28,103	0.1%
Asotin	21,420	0.3%	105,662	0.3%
Benton	163,058	2.5%	531,031	1.4%
Chelan	71,540	1.1%	277,392	0.7%
Clallam	71,021	1.1%	417,463	1.1%
Clark	424,733	6.5%	1,631,456	4.2%
Columbia	3,990	0.1%	24,211	0.1%
Cowlitz	101,254	1.6%	460,493	1.2%
Douglas	36,653	0.6%	30,531	0.1%
Ferry	7,353	0.1%	19,002	0.0%
Franklin	72,783	1.1%	28,764	0.1%
Garfield	2,060	0.0%	15,478	0.0%
Grant	84,697	1.3%	224,432	0.6%
Grays Harbor	71,342	1.1%	253,974	0.7%
Island	81,424	1.2%	433,480	1.1%
Jefferson	29,542	0.5%	113,498	0.3%
King	1,875,519	28.6%	14,897,664	38.6%
Kitsap	239,769	3.7%	1,738,263	4.5%
Kittitas	38,951	0.6%	375,765	1.0%
Klickitat	20,377	0.3%	32,100	0.1%
Lewis	74,132	1.1%	288,108	0.7%
Lincoln	10,344	0.2%	30,824	0.1%
Mason	57,846	0.9%	279,990	0.7%
Okanogan	40,033	0.6%	78,313	0.2%
Pacific	21,271	0.3%	74,537	0.2%
Pend Oreille	12,859	0.2%	30,654	0.1%
Pierce	785,639	12.0%	4,405,285	11.4%
San Juan	15,294	0.2%	35,006	0.1%
Skagit	118,000	1.8%	501,009	1.3%
Skamania	10,794	0.2%	40,982	0.1%
Snohomish	683,655	10.4%	5,495,051	14.3%
Spokane	462,677	7.1%	1,702,177	4.4%
Stevens	42,050	0.6%	70,154	0.2%
Thurston	245,181	3.7%	1,507,710	3.9%
Wahkiakum	4,133	0.1%	12,635	0.0%
Walla Walla	57,788	0.6%	265,245	0.7%
Whatcom	196,529	3.0%	1,111,034	2.9%
Whitman	41,664	0.6%	179,360	0.5%
Yakima	234,564	3.6%	805,838	2.1%
Total	**6,549,224**		**38,548,674**	**100.0%**

Table 7. Oregon CED Pounds by County for 2009, as reported by recycling programs

Row Labels	Sum of Total Pounds
Baker	32,556
Benton	578,136
Clackamas	2,006,380
Clastop	4,631
Clatsop	70,827
Columbia	210,650
Coos	227,154
Crook	37,490
Curry	81,293
Deschutes	1,192,551
Douglas	304,656
Gilliam	1,542
Grant	23,574
Harney	82,254
Hood River	120,977
Jackson	830,283
Jefferson	26,875
Josephine	477,875
Klamath	109,148
Lake	22,615
Lane	2,022,959
Lincoln	175,375
Linn	375,064
Malheur	15,708
Marion	1,077,005
Marion	234,273
Marion/Polk	569,142
Morrow	18,938
Multnomah	3,889,880
Polk	353,328
Sherman	1,567
Tillamook	142,737
Umatilla	228,777
Union	97,385
Wallowa	17,137
Wasco	135,439
Washington	2,877,859
Wheeler	7,532
Yamhill	288,732
Grand Total	**18,970,304.00**

4.0 Summary of Stakeholder Interviews

The consulting team interviewed 38 stakeholders involved in the implementation of the Washington and Oregon E-Cycle program in November and early December, 2009. Stakeholders interviewed included:

- Regulators (public officials) of the respective state systems
- Plan/program managers implementing collection/recycling programs
- Manufacturers involved in financing and/or overseeing program implementation
- Private solid waste companies in and out of the program
- Local government solid waste officials
- Processors/recyclers in and out of the program
- Environmental Non-Governmental Organizations (NGOs)
- Refurbishment/reuse Organizations
- Transporters

These stakeholders were asked to comment and provide insight on a range of issues relevant to the development and first ten months of implementation of the E-Cycle programs. Because of the small number of stakeholders interviewed in each category, these findings are not statistically significant. However, they do provide a useful temperature check after the first year of program operation and provide information to consider as the programs evolve.

As expected, consensus across all respondents was rare on any issue. But there are also clear trends articulated by respondents on some specific issues – sometimes across a stakeholder category, sometimes geographic – and those trends are discussed below.

On many issues responses from stakeholders did not vary considerably across states. Where responses did vary it is noted in the text.

Noteworthy comments are summarized below under the following topic headings:

- Program Operations
- Environmental Program Impacts
- Policy Issues
- Economics

Although 38 stakeholders were interviewed for this study, not every stakeholder interviewed was asked every question (e.g., collectors were not asked about the manufacturer financing allocation process). Appendix 3 provides a list of the questions asked of the stakeholder groups. Observed trends within or across stakeholder groups, and summaries of findings are also provided in the following sections. Appendix 4 summarizes the number of stakeholders interviewed by stakeholder grouping.

4.1 Feedback on Program Operations

All stakeholders were asked to comment on what was working well and what was not under the programs. The vast majority of respondents indicated the overall initial operational success was a notable achievement of the E-Cycle programs. Many respondents cited the number of active collectors and the quantity of covered electronics recycled as evidence of overall program success.

Respondents were positive about both Washington and Oregon. Many Washington respondents were especially complementary of the operational achievements accomplished by the WMMFA and its Executive Director.

4.1.1 Perceived Satisfaction of the Program Amongst Key Stakeholders

The majority of respondents expressed satisfaction with the programs as implemented to date. When asked to articulate what is working well and what is not, and whether the programs have met or exceeded expectations, respondents in both states cited evidence of success including:

- The quantity of covered electronics collected has exceeded nearly all expectations.
- The number of "glitches" experienced is fewer than expected for a program as new and comprehensive as E-Cycle.
- Extensive use of local collection infrastructure, particularly the use of larger charitable organizations who stated their overall satisfaction with the program.
- The system is operated and managed by the private sector and not the government (also cited as a negative by a few stakeholders).
- All government officials at the state and local level interviewed lauded the new system.

"The biggest surprise for me was that we were right – we did have to lay out a lot of detail in the law and rules, because many players would have otherwise tried to short-cut, diminish or undo the system. We saw attempts even with the detail that was established. Hopefully this will change in the future as EPR systems are more commonplace." (local solid waste official)

Within stakeholder categories, some program satisfaction trends noted by interviewees were mixed, including:

- Collectors participating in both programs expressed satisfaction with the program. Some collectors in both states that are not participating cited concerns about program direction (see below).
- Processor/recycler sentiment varied. Some described the program as "a great thing" and gave it high marks, while a few others expressed concern about the harsh competitive climate brought about by the E-Cycle programs. Of the eight processors/recyclers interviewed, those working in Oregon gave a slightly more favorable assessment than in Washington.

"Nice people we would not have met without the program. Also this has helped reduce our provincialism. A very positive thing." (Oregon collector)

- Reuse and refurbishment organizations were particularly divided, ranging from "surprised at how well we are able to work with the system" to "the whole program stinks for refurbishment/reuse organizations." Note that this division did not fall along state lines, rather other factors seem to be involved (see section 4.1.5 below for details)
- Manufacturers noted the successful collection amounts but most complained about several program requirements in both states as overly prescriptive. A typical manufacturer opinion in Washington was "Most of the problems in Washington are inherent in the legislation and implementation therefore requires a lot of overhead and it's extremely complicated… management of the board and the overhead [at a state-specific level] are overkill." Collection service requirements in both states (i.e., staffed collection in every city of 10,000) were also a frequent target for criticism as overly prescriptive and burdensome.

4.1.2 Other Overall Operational Issues

When asked whether there were noteworthy challenges at start-up, or whether the E-Cycle programs had resulted in significant operational changes, several service providers in both states noted the increased importance of training collector staff, having adequate collection equipment (e.g., shrink wrap and/or gaylords) and adequate storage space.

Very few stakeholders interviewed reported significant operational changes in either state other than accommodation of larger amounts of electronics. Some service providers in both states noted increased tracking and scrutiny of covered electronics than before system start-up. However, as described in 4.1.5 below, some refurbishment/reuse organizations in both states did report significant operational challenges with the transition to E-Cycle program participation.

Historical Issues from Washington Program Startup in 2007

Specific to Washington, at a management level one stakeholder noted some key challenges at the very beginning of the program. In January, 2007 the Department of Ecology appointed the initial members of the WMMFA Board of Directors. The WMMFA Board organized itself and began execution of key tasks: hiring legal counsel, budgeting and scoping out possible operational strategies.

Resources for executing these tasks were scarce and came primarily from in-kind staff support provided by the Department of Ecology, and the National Center for Electronics Recycling (NCER) as a follow-on to a study of a possible joint Washington/Oregon "third party organization" conducted for the Northwest Product Stewardship Council in 2005. The Department of Ecology's in-kind support was accounted for as a loan to the WMMFA and NCER support was provided using external grant funds obtained by the NCER from U.S. EPA and the Consumer Electronics Association.

At the time the legislative battle in Washington was still fresh and some opponents continued to question the viability and legality of the WMMFA. Questions about the WMMFA legal standing raised by one of these opponents during the spring of 2007 resulted in the WMMFA Board "re-doing" all of its actions from previous meetings, including the election of officers and hiring of legal counsel.

Drawing from these experiences one stakeholder had these concrete suggestions:

- "For a default plan like the WMMFA it's critical to know the legal status of the entity – what are you subject to as a private entity or a public agency? Does the open meeting law apply? That should all be clear at the beginning to avoid the legal costs and questions. During the first few months of the WMMFA certain industry lobbyists forced re-election of officers and for the WMMFA to completely start over, and these folks really wanted it to blow up at first but that didn't happen."

By August, 2007 most of these legal questions had been resolved and a $500,000 loan had been appropriated by the Washington legislature upon a special request of the WMMFA to cover pre-implementation expenses, including drafting of the initial Standard Plan and the WMMFA Operating Plan by the statutory deadlines. This stakeholder further noted that "any new system should learn from our experiences – startup was shaky and we went through a lot to sort out our legal status and scrape together funds to get started, and hopefully any new system can start on firm footing."

4.1.3 Specific Operations Issue: Management of Materials from Covered Entities vs. Non-Covered Entities

Responses to the question of how collectors were managing the distinction between covered and non-covered entities varied. As noted above, Washington provides recycling system access to the following covered entities: "consumers" defined as any household, charity, school district, small business (defined as less than 50 employees), or small government. Oregon covers any household, small business (defined as 10 or fewer employees), 501(c)3 non-profit charities employing 10 or fewer employees, or any person giving seven or fewer covered electronic devices to a collector at any one time.

- Several respondents across stakeholder types and states suggested that the program would be easier to administer if the program only covered household sources of equipment.
- Some respondents in both states cited this issue as a more complex challenge when there are multiple plans. With only a single plan it is easier to spot anomalies in collection amounts/splits from a single collector than when the collector can ship to multiple programs.
- Specific to Oregon, several respondents cited the use by collectors of the "seven or fewer" units screening criteria option for anyone dropping off covered electronics as an easy alternative to determining generator status. While this opinion about the "seven or fewer" approach was popular it was not unanimous. A single Oregon collector who operates both inside the program and outside of the program (and charges a fee to accept those electronics) described the situation as "terrible" and "almost impossible to do" citing the additional burden in communicating the rules to customers and the changes now required in handling incoming electronics to differentiate covered from non-covered.

There were no notable differences across stakeholder types queried on this topic.

4.1.4 Specific Operations Issue: Management of Covered Electronics vs. Non-Covered Electronics

The scope of electronic products covered by the programs is the same in both states: televisions, computer monitors, desktop computers and laptop computers. A large majority of respondents expressed a desire to include peripheral computer products of all sizes in the program. Although several service providers reported that they had developed systems to keep peripherals out of the program and that was working well, more common were responses expressing a desire to include keyboards, mouse devices, printers and other peripherals as covered electronics.

- An Environmental NGO respondent was strongly in favor of adding peripherals and "anything with a circuit board" to E-Cycle program because 1) manufacturers are pushing recyclers to take these for free and further squeezing recycler margins, 2) metal recyclers are collecting non-covered electronics and managing them without consideration to responsible management, 3) public brings in other items and collectors feel they must provide an option to handle it for their customers, and 4) other products have same or similar materials of concern, toxicity or resource value.
- Similarly several other respondents suggested that the program should be gradually expanded, and a local solid waste official suggested the ultimate product scope should be "similar to the Waste Electrical and Electronic Equipment (WEEE) Directive in Europe and emerging programs in Canada."

4.1.5 Specific Operations Issue: Reuse and Refurbishment

As noted above, in Washington reuse and refurbishment activities can be conducted by the collector or the processor/recycler, including refurbishment activity by collectors following an amendment to the law. The amended law allows collectors to repair computers using whole parts gleaned from collected computers or new parts for making repairs as long as there is a part-for-part exchange with nonfunctioning computers submitted to a plan (http://apps.leg.wa.gov/documents/billdocs/2009-10/Pdf/Bills/Session%20Law%202009/1522-S2.SL.pdf).

In Oregon reuse may only be done by collectors and the number of units diverted for reuse is reported by the programs to DEQ quarterly (see Table 4 in Section 3). There is no reporting requirement for reuse in Washington.

Refurbishment/reuse organizations across both states expressed widely diverging views on the E-Cycle programs and how they have been implemented in both states. One area of consensus across refurbishment/reuse organizations (and other stakeholders who volunteered similar suggestions) is that the E-Cycle programs should enhance public awareness of reuse opportunities by identifying reputable collectors.

There are 96 Goodwill sites in Washington and 62 in Oregon serving as E-Cycle collectors.

Reuse Experience in Oregon

A refurbishment/reuse organization in Oregon that is now qualified to do limited recycling (i.e., desktop dismantling for units donated to them by covered entities) for one of the programs provides a successful case study. In their experience, becoming qualified to recycle was difficult and expensive due to the relatively high recycling performance requirements such as on-site pollution liability insurance, auditing/due diligence of

downstream processors, and implementation of an active environmental management system (EMS).

Also, meeting program requirements beyond these environmental performance measures – including tracking all incoming electronics as covered or not throughout the facility – was and is time-consuming for all refurbishment/reuse organizations regardless of whether they are qualified by a program to recycle covered electronics or not. Income from the sale of dismantled desktop units was cited by this Oregon refurbishment/reuse organization as critical for continuation of mission activities associated with refurbishing used electronics. This recycler qualification step is a very high bar and was pursued and met by only one Oregon refurbishment/reuse organization in 2009.

In contrast to that experience, another Oregon refurbishment/reuse organization that is not qualified as a recycler noted that prior to program rollout their finances were stable enough that they routinely gifted refurbished electronics (e.g., they formerly charged Social Services only $50 for an Internet-ready machine, and now have had to increase the cost to $100). When they stopped recycling covered electronics at their facility they experienced significant reductions in revenue. Their recycling activity was also an element of their training program, and that has also suffered as a result.

Prior to the Oregon E-Cycles program this refurbishment/reuse organization said they "spent 10 years as a non-profit educating the community to take responsibility for what they consume" and opined that generally people were happy to drop off material and pay $15 per monitor and $1 per inch for TVs, but that when the program began "that sense of responsibility went away and now it's the government's job." But even through the disappointment this refurbishment/reuse organization noted that they preferred Oregon's more liberal reuse policy and that "DEQ is doing an adequate job promoting reuse, certainly better than some programs I've seen." One clear benefit of the Oregon reuse policy for this refurbishment/reuse organization is that "we are allowed to pull out whatever we think we can use and that's good."

Reuse Experience in Washington

Similar to the Oregon experience, a Washington refurbishment/reuse organization that still refurbishes some electronics without qualifying as a processor/recycler expressed disappointment with the Washington E-Cycle program. The biggest problem cited by this refurbishment/reuse organization is the lack of electronics flow – "I get no material and I'm sending volunteers away." Other collectors are more convenient to more consumers, and this refurbishment/reuse organization no longer has the competitive advantage of offering free recycling when most other collectors charged a fee.

This refurbishment/reuse organization cited the genesis of the problem as the regulation mandating that a non-functioning computer had to go to recycling – "that killed our business since everything coming in has something wrong with it. And the amended law did not fix the problem."

In contrast another Washington non-profit that collects for recycling and resells some covered electronics that still have reuse value – without refurbishing – did not cite those concerns. This charity said they would like to see non-profits that refurbish and reuse electronics promoted more. Furthermore, they "have a note on our website that if folks have computers for donation that are above a specific threshold they take them to a non-profit refurbishment organization."

A local solid waste official noted that more can be done to increase reuse even among the refurbishment/reuse organizations currently participating in the program and already receiving lots of units. This official said there needs to be training on triage, data security, and repair – this is an area ripe with job opportunities.

Finally, of note is an observation by a recycling plan manager in Washington that the amended law has resulted in more gutted computers arriving at his contracted recyclers (i.e., the more valuable components have already been removed).

4.1.6 Collector Participation and Compensation

As noted above there are now hundreds of collection locations participating in the E-Cycle programs across both states. Reasons for not participating included perceived lack of adequate compensation and other program operational requirements such as lack of room to palletize/shrink wrap collected electronics. One collector suggested that a more detailed handbook

for different types of collectors would be helpful. Most, but not all, participating collectors interviewed said compensation was adequate. Of the two entities interviewed that were not participating in the program, one said the compensation was too low. Both non-participants interviewed cited that they either had no storage space or public accessibility to the site was limited and/or that their facility had physical limitations that would make being a collector too difficult.

Note that in Washington the law requires that Ecology annually solicit feedback from local governments and communities on how the E-Cycle program is working in their communities, and this feedback process is expected to take place during the next few months. Once such feedback is published it will likely provide additional insight into the performance of the Washington program not available in this study.

Collector Differences in Washington versus Oregon

There is a notable difference between Washington and Oregon concerning the participation of transfer stations and associated private solid waste companies. In both states these transfer stations typically collect solid waste and recyclables from local haulers. In many cases, particularly less populated areas, the transfer station owner or operator also provides the hauling service.

Transfer stations typically have transport capabilities integrated into their operations and/or are closely aligned via ownership or legal agreements with private solid waste collection or hauling companies that operate within that locality via franchise agreements. Most transfer stations also manage recyclables at their facilities.

In Washington very few transfer stations with transport capability are registered collectors. In Oregon, most counties have at least one transfer station working as a collector for at least one of the approved plans.

In Washington one non-participating transfer station operator focused on the role, or lack thereof, of curbside collections[2] and compensation amounts:

- "Haulers like us who are collecting these materials curbside are not able to get compensated enough to cover our costs. This should be the first option for management of most of these covered electronics as it takes advantage of existing infrastructure (trucks are already on the road) and avoids the environmental impact of unnecessary vehicle trips to drop-off facilities."
- "We are not a drop-off-for-free site because the reimbursement rates are not high enough to cover our costs. We have storage costs, handling, and are not set up to manage a lot of people coming in the front door. It's unlike some larger non-profits where they are used to having folks drive up and drop off material and have space to palletize, but for an operation like ours where we have a shop and an office it's not the same kind of mass production facility like they can do."

According to several respondents many transfer station operators were interested in participating but either could not agree upon a rate near what other collectors in that locality had agreed to, and/or the transfer station did not have the transportation infrastructure, or, correct equipment to participate (e.g., some transfer stations offered to collect and transport covered electronics in their roll-off or open top 40 yard containers that do not meet program requirements). Similarly, public transfer stations and King County and Snohomish County, Washington decided not to participate because they are not a good fit for collection activities and private sector collectors are expected to operate more effectively and efficiently. Local officials in the Seattle area also noted that most consumers would much rather visit a non-profit donation organization than go to a transfer station.

In Oregon, transfer station operators are participating as collection sites responded differently as illustrated in the following response:

- "I'd like to have more covered electronics be collected here but I find [compensation amounts] to be adequate. As a stand-alone activity it would not work, and it breaks even barely."

2 Note that the Washington law allows the haulers or cities who provide the curbside services to cover their collection and transportation costs in any number of ways. They can raise trash collection rates overall, or they can charge a specific pickup fee for each customer that wants to use the service – rather than increasing the entire garbage rate for a few people that want to use the curbside service. Some jurisdictions such as the city of Seattle are doing this even though they are not participating directly in the E-Cycle program – they offer their curbside customers the opportunity for pickup and they bill them individually for each pickup.

Beyond these differences there were also differing opinions on the Washington collector registration system (where anyone can be a collector subject to negotiation of fair compensation with the WMMFA) and the Oregon collector contracting system. By and large most stakeholders in their respective state expressed a preference for the structure of collection services in their state.

The notable exception was concern from two collectors in Washington about the lack of adequate free market elements in this system – basically there is only one "buyer" of collection services in Washington (the WMMFA) and collectors who wanted to stay in the program have no other choice. And in Oregon one service provider interviewed complained about not being able to participate in the Oregon E-Cycles program (programs in Oregon may, but are not required to hire any service provider meeting E-Cycles requirements).

Manufacturer Comments on Collection Requirements

Most manufacturers complained that the requirement in both states that there must be at least one staffed collection site in every city of 10,000 population and service in every county as overly burdensome. This requirement is unique to Washington and Oregon's programs and some manufacturers stated preference for the service requirements in other states' producer responsibility programs.

For example, in Minnesota and in other states, collection responsibility rests with individual manufacturers, not with a statewide manufacturer plan/program. Each manufacturer is responsible for arranging collection and recycling of an amount of electronics specified by the state – usually through contracted processors/recyclers – and all urban areas and many, but not all rural counties have at least one manufacturer-financed collection opportunity. Consistent with this "individual producer responsibility" approach each manufacturer selling into Minnesota is given a "pounds recycled" target with a bonus for collecting electronics outside urban areas. Manufacturers of all sizes typically negotiate arrangements with a processor/recycler to receive credit for recycling the number of pounds the manufacturer is required to recycle without regard to the specific collection location or means of collection (e.g., an event).

In their first program year Minnesota had approximately 150 different collection locations – a significant number but not as many as in Washington and Oregon. As for per capita collections Minnesota recorded 5.88 pounds in the most recent program year which is very similar to collection rates in Washington and Oregon. Wisconsin recently enacted a Minnesota-style electronics recycling law, as did Indiana earlier in 2009.

Sharing of Collectors

About half of the stakeholders with an opinion on this topic (mostly Oregon stakeholders as there has been only one approved plan in Washington) expressed clear support for collectors to work with multiple programs. Note that there are two distinct ways that collectors are shared across programs. First, a collector could have individual contracts with multiple programs. Another variation is that one program may contract with a collector, and then share those material pounds and collection costs with other programs via a program-to-program agreement. Those who supported this "shared collector" approach cited arguments such as the following:

- There is a limited number of potential collectors in more rural areas and sharing may be a necessity there.
- It is good for individual collectors to have choices about who receives their collected electronics.
- Entities who want to work with each other should be allowed to do so.

Others expressed concern about the shared collector approach:

- Concerns about data reporting integrity, particularly when collectors were only obligated to one plan but that plan "shared" the collector with other plans. One stakeholder noted that some collectors were not aware of this arrangement in the first year, which hypothetically prevented the collector from negotiating a separate collection payment rate or varied services with the program(s) that "piggybacked" on the one direct arrangement with the collector.
- A transporter noted that in Oregon there were numerous instances of confusion over the responsibility of shipment authorizations. The transporter cite two reasons for this: 1) there is no consistency of Bills of Lading (BOLs) across manufacturer programs in Oregon, and 2) collectors are not appropriately trained on how to ship within the system. This

has led to invalid BOLs and shipments billed to the wrong program.

- Shared collectors could play one plan/program off another (e.g., a price war for collected product).
- If collectors were not allowed to work for multiple programs there would be more collection locations for the public.
- The legitimacy of plans claiming to have collectors in a geographic locale (a "signed-on, shared collector) when in fact that collector might not actually send any units to the plan or not on an ongoing basis.

Overall, manufacturers and manufacturer plan/program managers supported sharing of collectors while government officials and default (state-created) plan/program managers expressed more questions about this practice. There was no consistent trend across other stakeholder types on this issue.

4.1.7 Economic Impacts on Processors/Recyclers

Most of the comments on the economic impacts of the programs related to processors/recyclers, and many of those comments noted a negative impact. Some recyclers expressed concern about the increased financial pressures resulting from the E-Cycle systems.

The long-term ability of service providers to thrive under a producer responsibility system is untested. Given the current economics of recycling electronics where recycling these products does not pay for itself and a subsidy is required, recycling systems like these are a manufacturer's cost to be minimized. Theoretically the less equipment that is collected and recycled, the less costs to be incurred by manufacturers. This dynamic works to drive down prices that recyclers can charge for their services, and lower prices often bring lower profit margins. Thus one recycler noted there is not a very strong incentive to invest in the industry and contrasted these economics with the garbage industry "where everyone gets their own turf via the G-certificates" and service providers can make a reasonable profit under utility-like regulation to provide an incentive to invest in their physical plant, new technologies, etc.

IMS Electronics Recycling sited a new facility in Vancouver Washington to participate in the E-Cycle programs.

Overall the short-term results are mixed: while some processors/recyclers and other stakeholders expressed concern that the new system has resulted in a negative financial impact on processors/recyclers, others with newly established facilities in the region expressed satisfaction with current arrangements.

As a follow-up to the stakeholder interviews all processors/recyclers were contacted for additional information concerning the economic impact of the E-Cycle program. Of the nine processors/recyclers that provided additional information, three indicated that they established their facility as a result of one or both of these programs and another acquired an existing recycling facility in large measure because of the new laws.

The following summarizes the number of net new jobs reported as a result of the Washington and Oregon E-Cycle programs:

- Number of net new employees hired by processors hired attributable to the Washington and/or Oregon E-Cycle programs at program startup (around January 2009): **140, 79 in Washington, 61 in Oregon.**
- Number of net current, ongoing employees of processors attributable to the Washington and/or Oregon E-Cycle programs: **360**

4.1.8 System Promotion and Advertising

In Oregon the DEQ has developed template materials and conducts the Oregon E-Cycles promotion using administrative funding from manufacturer registration fees. Retailers are required to provide the Oregon E-Cycles information to customers at the point-of-sale. Approved programs in Oregon also conduct outreach by providing information to collectors who may promote their site and conduct localized advertising for events and special collection promotions. Local governments and haulers use the template materials to promote the program in their areas. DEQ hosts a website (http://www.deq.state.or.us/lq/ecycle/index.htm) as well as a toll-free number (1-888-5-ECYCLE) to provide information and assist consumers in finding the collection location nearest to them.

In Washington, promotion and advertising have been a cooperative effort of the Department of Ecology and the WMMFA, retailers, local governments and other stakeholders. Through the 1-800 Recycle Hotline and the E-Cycle Washington website (www.ecyclewashington.org) hosted by the Department of Ecology, consumers can find drop-off locations in their county. The WMMFA has published various public outreach materials such as information cards, a brochure and flyer. They are available on the E-Cycle Washington website and hard copies can be obtained from the WMMFA or Ecology. The WMMFA has also conducted various promotional and advertising activities including event promotion and program advertising on local radio and other media. In addition numerous local governments promoted the program in a variety of ways, such as via existing websites, and some undertook extensive promotion, such as handouts to all transfer station customers and direct mail to some covered entities.

Finally, officials in Washington and Oregon developed a joint E-Cycle name, logo and educational materials which saved money and provided a consistent message to consumers across states. This example of cross-state cooperation was possible because the programs are so similar operationally. Officials were, and are, able to share a many good ideas and work products to increase the efficiency and effectiveness of E-Cycle promotional efforts.

Several stakeholders commented on this topic. Several stakeholders in both states noted that there are many consumers still unaware of the state electronics program and that more signage, more promotion or "something" needs to be done. Also noted was the need to have someone responsible for overall education and outreach, particularly if there are multiple programs.

4.2 Environmental Impacts

In addition to the topics discussed below, service providers were also queried about changes relating to their environmental practices. Nearly all cited operational changes, but did not specifically reference changes to their environmental practices.

The E-Cycle programs discourage illegal dumping of electronic equipment by providing free recycling opportunities.

4.2.1 Changes in Covered Electronics Flows

Nearly all stakeholders interviewed noted the increase in the flow of covered electronics into recycling channels. Most stakeholders commenting on this pointed to a reduction in disposal of covered electronics in landfills. One solid waste official noted that the quantity of electronics flowing into their three public transfer stations participating as collection sites was twice the volume of the previous year – in just the first six months, and with seventeen other participating collection sites available in the county. Beyond that, many respondents were unwilling to speculate on changes given the lack of consistent data on flows prior to program implementation, although a handful of respondents opined that the amount of electronics flowing into unaudited recycling channels (including export to developing countries) had declined since manufacturers were given system responsibility. For example, one manufacturer noted:

- "Some of these exporters have been filtered out of the system. I know we're paying a premium for recycling services that we would not have to pay if we were exporting to developing countries but that's a good thing."

A few other stakeholders noted that flows were substantial prior to program implementation, albeit mostly paid for directly by consumers through drop-off fees.

There were no notable differences across stakeholder types queried on this topic.

4.2.2 Design for Environmental Improvements

One explicit objective in both the Washington and Oregon laws is to effect environmental improvements in the design of new electronics products. The first "finding" in the Oregon law reads as follows:

> *(1) It is necessary to encourage the design of electronic devices that are more resource-efficient, more recyclable and less environmentally toxic;*

Similarly the Washington statute includes a similar finding in the first section of that law:

> *The legislature further finds that the system must encourage the design of electronic products that are less toxic and more recyclable.*

With one notable exception, all manufacturers, recyclers and plan/program managers interviewed stated that they were unaware of any changes in the design of new products resulting from the Washington and Oregon E-Cycle programs. Some manufacturers were very strong in making this point, and one said that "redesign of

Dual Recycling Standards in Washington *"Ecology's publication of mandatory and preferred recycling standards was a brilliant approach that resulted in manufacturers choosing the higher standard." (Environmental NGO)*

products due to producer responsibility mandates is a 100% failure." Manufacturers noted that the E-Cycle laws discourage manufacturers from taking back only their own products – and that even if the law did encourage same-brand take-back, the decade or more between product design and product recycling is too long a time horizon to plan in an industry as technically fluid as consumer electronics.

One manufacturer did note that there are laws in other jurisdictions that do strongly influence design decisions, including the European ROHS directive, the U.S. Consumer Product Safety Commission, California's Prop 65. Another manufacturer noted there is no design change that can reduce the cost of collection. This manufacturer also distinguished between "independent producer responsibility" (IPR) in which each manufacturer is individually responsible for their branded products and the version of "extended producer responsibility" (EPR) in the E-Cycle programs where the manufacturer responsibility covers all brands – and opined that the findings and design outcomes suggested by both legislatures can only be achieved through IPR.

The one exception is a manufacturer (Dell) who read the provision in the Washington law and has since asked their designers to rethink how the products are designed. Washington law requires that all plans include "a description of how manufacturers participating in the plan will communicate and work with processors utilized by that plan to promote and encourage design of electronic products and their components for recycling." During the spring of 2009 Dell published a white paper at an IEEE conference[3] containing results of a recent downstream recycling partner survey and the attributes which are considered most relevant by recyclers in improving product design for environment. Through this program Dell has initiated their product designers to the fact that these products are not done when their customers are finished with them. The Washington law was cited in the article as one factor in Dell's decision to pursue this initiative.

4.2.3 Backhauling Benefits

One critical operational area that does not receive much attention is logistics. If implemented without due environmental consideration, the environmental impact of transporting covered electronics from collectors to recyclers could significantly diminish the overall lifecycle environmental benefit provided by the recycling system.

Two stakeholders noted the benefit to the environment and employment picture for Washington and Oregon residents provided by backhauling. In both states almost all of the pounds collected to date have had to be transported by truck to a processor. Most often these trucks originate empty at the point of collection and are then hauled back to a processor in a metro area. This means that a truck did not have to travel "empty" (a waste of fuel and needless emissions) from Seattle, for example, to a collector location in Wenatchee, for example, in order to pick up a truckload of covered electronics.

According to a regional transporter nearly all shipments in both Washington and Oregon are "backhauls" so they are not moving empty trucks to collect covered electronics.

4.3 Policy

Although the focus of these interviews was on implementation experience and observations, several policy questions were asked of various stakeholders.

4.3.1 Overall Producer Responsibility Approach

Although stakeholders were not asked specifically about their opinions on producer responsibility as a policy approach, several respondents volunteered such comments when asked how they thought the E-Cycle programs were working. Most stakeholders who commented on this topic expressed support for the policy of producer responsibility – including most manufacturers. In fact, nearly all critical comments focused on issues relating to producer responsibility implementation in Washington and Oregon, not on the producer responsibility approach itself.

3 Dell Survey of Electronic Recyclers – Results and Analysis. Puneet Shrivastava, Scott O'Connell, Mike Watson, Dell Inc. Presented at the 2009 IEEE International Symposium on Sustainable Systems & Technology, May 19, 2009, Tempe, Arizona.

Local officials were the most enthusiastic supporters of producer responsibility in both states. Several of these local officials noted the importance in shifting burden from local taxpayers to the producers of these products, and how E-Cycle was a major step in that direction. One local official in Washington also noted that the convenience collection requirement has assured that the manufacturer provide their rural customers with service as well. Local and state officials in both states cautioned, however, against a "cookie cutter" approach to producer responsibility across different product types – especially since collection systems will vary significantly across product types due to product size, unique handling issues and existing distribution systems. One local official asked rhetorically: "Should CFLs [compact fluorescent lights] be collected at Goodwill's or at transfer stations? Maybe, but what about Home Depot and Wal-Mart – these are probably a better choice."

Manufacturers generally supported the producer responsibility concept but some expressed concerns about specific elements of the E-Cycle programs, including:

- Concerns about the scalability and efficiency of state-specific programs (e.g., insufficient manufacturers and manufacturer representatives to populate authority boards in all 50 states as in Washington, increased program overhead to coordinate multiple manufacturers into plans in both states). This concern contrasts with positive comments from another manufacturer about the producer responsibility experience in the Washington E-Cycle program:
  - *Get an operational person in place at the top, task them based on very competitive deliverables and let them go. The system works. Manufacturers know how to run these things and when you put a bunch of us on a board, it will be run like a business and it's good for the residents of the state. Hires need to be operational not political.*

> *"Federal export restrictions should be put in place as states can only go so far." (Environmental NGO)*

- Support for a collection requirement that parallels the product supply chain for new products instead of collection requirements per local political jurisdictions. This manufacturer noted that "my company has a supply chain to get products to customers, and the supply chain is the existing system of partners and service providers that most manufacturers have in place now." If collection is required by political jurisdiction (as in both Oregon and Washington) this manufacturer suggested "the government should just tax manufacturers instead of making them set up independent waste collection systems."
- Another manufacturer provided this pro-producer responsibility critique of the state-created plans/programs in Washington and Oregon: "The WMMFA and the SCP have both worked to retard the development of a national producer responsibility program. These institutions have allowed manufacturers to avoid the public relations and other risks inherent in producer responsibility." According to this manufacturer, true producer responsibility only occurs when the producers themselves are directly operating a recycling program.

More critical comments were heard from a handful of service providers who noted that producers who operate at a national level are more likely to work with national, not local, players. One collector and refurbishment/reuse organization likened producer responsibility as "the fox guarding the henhouse – including squashing reuse for competitive reasons. And now the OEMs set the prices as they can send the material to whoever they want so that everyone is working for the manufacturers now and we have lost some autonomy." And another suggested the following: "Once this initial tidal wave of e-waste passes, will the program be sustainable over time? Is there enough money and material available to make this sustainable? There is probably not enough experience to get a sense of this yet. We should give this model enough time to evaluate before we move to develop systems for other products."

4.3.2 Connection Between Producer Responsibility and Curbside Collection

There were no substantive comments on curbside collection from collectors and plan/program managers currently working in the program. Although this question was not asked directly, no stakeholders interviewed cited any evidence of active curbside collection of covered electronics in either state program. But one Washington collector who collects many used electronics and other recyclables curbside as a part of a larger government-franchised curbside program – and outside the E-Cycle program – raised several concerns about the lack of curbside collection of covered electronics including the philosophical underpinning of producer responsibility and its effect on other curbside collection activities.

4.3.3 Impact of Allocation of Responsibility Across Producers

In both states a manufacturer implementing an independent manufacturer plan outside the state-created programs is assigned responsibility for collecting and recycling a specified amount (in Oregon) or percentage (in Washington) of covered electronics.

Independent manufacturer plans are financially responsible for funding their own program, and the law does not address how they would set up the funding structure.

Manufacturers participating in the WMMFA in Washington are subject to the WMMFA financing policy which was based in 2009 on 50% market share and 50% return share.

In Oregon, several stakeholders noted a "glitch" in the law where television manufacturers participating in the SCP pay according to their market share of all television manufacturers participating in the SCP[4] as opposed to return share like other TV manufacturers in the other manufacturer programs. One stakeholder noted that this glitch caused nearly all the active television manufacturers to abandon the SCP while several large computer manufacturers chose to comply with Oregon requirements through this option. Another stakeholder disagreed that this is a "glitch" at all and expressed support for maintaining this process in the law.

There was surprisingly little noteworthy commentary on how E-Cycle programs costs are allocated across manufacturers. Manufacturers, program managers and state regulatory officials were asked about this for both states. Although several stakeholders did voice opinions on whether one financing model was preferable over another, in the Washington program nearly all interviewed stated they were comfortable with allowing the WMMFA to establish a financing policy independently of the return-share percentage-based material obligation established by the Department of Ecology calculated from sampling returned covered electronics. The one exception was from a processor/recycler:

- "The sustainability of the WMMFA is a real issue. There should be a consistent policy between the WMMFA financing policy and the legally-mandated material obligation policy."

There were no notable differences across stakeholder types queried on this topic.

4.3.4 Cost vs. Benefit of a Statistically Viable Sampling Program

Both states include mandatory sampling in their respective laws in order to provide the basis for manufacturer-specific return shares. Although the technical sampling approach used by both programs is not identical it is very similar. In both programs a carefully managed process is used to sample randomly more than 10,000 units of covered electronics returned for recycling. The brand and weight of each unit is recorded and state officials then correlate the brand with a manufacturer.

Several stakeholders with experience in implementing sampling requirements expressed concern about the extent and expense of existing sampling requirements. About as many noted that sampling was a fair process for allocating manufacturer responsibility. Stakeholders active in Oregon manufacturer programs were particularly concerned about the expense and redundancy created by parallel sampling programs in both respective states when only a single program is probably necessary.

Manufacturers were particularly critical of DEQ's recent decisions on sampling, including the decision to require an Oregon-specific sampling program starting in 2010 instead of using the Washington data or sampling jointly with Washington as required by law. Otherwise there were no notable differences across stakeholder types queried on this topic.

4.3.5 Single Plan vs. Multiple Plans

A majority of stakeholders in Washington expressed preference for a single program (where there is only a single plan operating) while a majority of Oregon stakeholders expressed a preference for multiple programs (where there are multiple approved programs). However, nearly all manufacturers expressed a desire to have the option for manufacturers to pursue

4 For example, if half of the Return Share by Weight in the SCP is attributable to TV manufacturers, and there are three TV manufacturers in the SCP with respective market shares of 0%, 20% and 80%, then the TV manufacturer with 80% of the market share among SCP TV manufacturers must pay for 80% of the TV Return Share by Weight in the SCP – or in this example 40% of the total SCP Return Share by Weight – regardless of the TV manufacturer's return share.

and operate independent programs. Several stakeholders noted that whether a single plan or multiple plan system works better depends mostly on the management of the plan – and if the single plan is well-managed then independent plans may not be desirable.

Most stakeholders cited the role of these default programs as beneficial during the start-up period. Some expressed a desire for an ongoing role for a default program and even suggested they should be the only program (more commonly cited in Washington) while others suggested that over time these default programs may no longer be necessary.

Within stakeholder groups there were diverse opinions on this question, except for one stakeholder group: manufacturers. All manufacturers interviewed expressed support for satisfying their compliance requirements through independent plans/ manufacturer programs, or at least for the option of pursuing these plans/programs. One manufacturer cited the default, state-created programs as significant impediments to the creation of national manufacturer recycling programs. Several manufacturers noted the importance of at least having the ability to operate independently to ensure that even a single plan operates in a competitive environment and works to minimize system costs.

4.3.6 Performance Targets

In Oregon, DEQ established an overall Oregon E-Cycle program target, expressed as 3.3 lbs./capita of covered electronics, in late 2008 prior to initiation of the 2009 program year. This statewide target was allocated across manufacturers and then aggregated into each program's total Return Share by Weight. Manufacturer programs that do not collect and recycle at least their minimum target by the end of the year must pay DEQ a penalty. The SCP has no penalties. For 2010 the Oregon performance target is set at 5.8 lbs./capita.

There are no set performance targets in the Washington program. If Ecology ultimately approves one or more independent plans then each plan will be responsible for its cumulative return share – a percentage target, not a pounds target. In the Washington system therefore there would be a floating performance target when there are independent plans – a target that would be converted to actual pounds only after the end of a program year.

Opinions on the value of performance targets were mixed, albeit with some thoughtful and insightful comments relating to the Oregon target setting process. Several stakeholders in the Oregon program noted that targets cause manufacturers to take their recycling responsibility seriously. Several others in the Oregon program noted the difficulty in establishing a target amount before there is any knowledge of how much can reasonably be collected.

Several stakeholders in both Oregon and Washington noted the "double edge sword" nature of performance targets – that once a target is reached before the end of the program year, the tendency is for manufacturers to slow down collection activity. As one Oregon program manager noted, "It's nice to have a set target so you can plan for what you need to do….but there is also no incentive to collect more than your minimum. So the minimum becomes your maximum, although you are not allowed to shut down your network. Programs can do subtle things to discourage receiving new pounds once targets are reached or are in sight."

4.3.7 Manufacturer Registration Process

One stakeholder volunteered that in other industry sectors it may be possible for the industry organization implementing the recycling program to register For example, nearly all manufacturers of rechargeable batteries fulfill their recycling requirements in the handful of mandatory states by entering into licensing agreements with the Rechargeable Battery Recycling Corporation (RBRC) and there are no manufacturer registration requirements with the state. Such an arrangement becomes more complicated when there are multiple compliance options available to manufacturers.

4.4 Economics

Beyond the economic impact on processors/recyclers and collectors discussed above, several stakeholders provided observations about the economics of the first year of the E-Cycle programs.

First, several stakeholders noted that the state-wide systems both created program efficiencies and drove pricing for services lower. For example the WMMFA cited operating costs in 2009 as $0.24/lb. covering the cost of collection, transportation, recycling and program administration. This cost per pound is well below prices charged to scattered local governments and private programs before E-Cycle implementation, according to several local government officials. Some of this pricing reduction is likely due to increased program efficiencies (e.g., a consolidated administrative structure) and some due to the stronger pricing power that comes with larger, consolidated purchases of recycling and related services. Similarly, the Oregon State Contractor Program reported operating at approximately the same cost per pound as the WMMFA. Cost data for manufacturer programs in Oregon is not available.

Total Reclaim is one of 10 processors participating in the Oregon and Washington E-Cycle Programs.

Note that the cost per pound incurred by the WMMFA and the SCP are substantially less than the $0.39/lb. reimbursement rate practiced in the California electronics recycling system in which consumers are charged a visible recycling fee when purchasing a new television, monitor or laptop (note that desktops are not covered in the California program, a fact which would drive the price up slightly because of the positive recycling value of collected desktops). According to data submitted by the Consumer Electronics Association (CEA) to the Maine Department of Environmental Protection in November 2009 (see http://www.maine.gov/dep/rwm/publications/legislativereports/pdf/2010ewastereportfinal.pdf), average operational costs for recycling programs managed by electronics manufacturers in other states range from $0.18 - $0.30 per pound.

One stakeholder noted that this cost efficiency does come with a price – less local control over who managed covered electronics and where:

> "These state programs don't have a lot of flexibility for different situations in different communities. For example, if a community has invested in equipment that allows them to manage a material stream they should be allowed to continue doing that. For example, at the recycle center in Yakima all of their mixed paper goes across town to a pulper located only miles away. The local source is a viable option; it kept local jobs and made recycling mixed paper cheaper. Right now the state E-Cycle program does not have that flexibility."

Finally, one manufacturer focused on the "internalized manufacturer fee" that finances these recycling programs. This manufacturer noted that because these are internalized fees the higher price of new products is invisible to the consumer, but that in effect this fee is subject to local and state sales taxes and retailers enjoy profit taking on the markup as well. Also, the absence of a visible fee for recycling is a missed opportunity for consumers to learn about the recycling program beyond program advertising and promotional efforts. This manufacturer concluded that "the end result of extended producer responsibility in Washington and Oregon is just a new revenue source for state and local governments to fund the collection of a new waste stream."

The economics of producer managed systems and internalized recycling fees was not a major focus of this broader study and an analysis of the administrative and operating costs of these programs – and the economic effect of internalized manufacturer fees – should be studied further.

5.0 Summary of Findings

The following preliminary findings concern the development and startup of the "E-Cycle" electronics recycling programs in Washington and Oregon. As noted in Section 1 this entire report and these findings were gathered from interviews of more than 30 stakeholders including electronics manufacturers, processors/recyclers, plan/program managers, garbage haulers, collectors, NGO representatives, refurbishment/reuse organizations, transporters, local and state governments. Note that members of the public that use the E-Cycle programs were not targeted in this study and were not interviewed.

5.1 Program Operations

- **Operational startup was smooth and collection amounts exceeded expectations.** The operational start-up of the E-Cycle programs was perceived as being remarkably smooth. Programs in both states are showing very high collection rates of covered electronics with Washington collecting 38.5 million pounds and Oregon collecting approximately 19 million pounds in 2009 or over 5 pounds per capita.
- **Collection service is available in all cities with a population of 10,000 or more and in each county**. The convenience requirement in both states appears to be effective for ensuring that collection service is available in each county and all cities with a population of 10,000 or more. There are now 240 collection sites in Washington and 30 in Oregon – a significant increase from pre-program collection activities. While these results clearly accomplish the 230 statutory objectives some manufacturers argued for more flexibility as practiced in other producer responsibility states such as Minnesota and Wisconsin.
- **Processing capacity has increased in the Northwest.** Two of the eight WMMFA processors/recyclers were established in Washington because of the new law, and one major processor/recycler established a facility in Portland because of the E-Cycle programs.
- **The programmatic model of establishing a "default" stewardship program with an option for multiple manufacturer-run plans has proven to be viable to date.** In Oregon this model has resulted in the "default" state-managed contractor program and three approved manufacturer-run programs. In Washington, all manufacturers opted in 2009 to participate in the "default" Standard Plan run by the manufacturer-managed WMMFA. For the 2010 program year, plans to operate two independent plans in Washington were submitted, but they were not approved by the Department of Ecology. Several stakeholders stated that the ability to create competition for the WMMFA was key – the assumption being that independent plans operating alongside the WMMFA's Standard Plan would help keep costs competitive and the program efficient over the long term.

> *"Despite the efforts of the legislature, it comes down to doing the right thing and having people involved in the program be reasonable with each other." (Anonymous stakeholder)*

- **Interviewees supported flexibility with regard to the collection of electronics.** This was demonstrated by the variation in collection strategies implemented across programs. In both Oregon and Washington, some plans developed collection systems using existing networks of charitable organizations. Some Oregon plans employed widespread use of transfer stations operated by public entities and private solid waste companies. The Washington plan used a combination of private businesses, charitable organizations, and public sector locations. In both states there is widespread use of existing infrastructure.
- **Some organizations that specialize in reusing and refurbishing electronic equipment for reuse have thrived under the new system while others have struggled.** Those who have thrived have either continued, in one case, to refurbish old electronics and became qualified to provide service as a recycler/processor under the new system, or discontinued their refurbishment activities. Some stakeholders suggested making adjustments to the programs to allow some form of targeted or collective assistance to help refurbishers to qualify as limited recyclers (e.g., they only dismantle desktop computers) which could lead to more economically vibrant refurbishers – and could increase the repair and reuse of covered electronics. A more detailed analysis of the dynamics of reuse in electronics recycling programs beyond the Pacific Northwest would be helpful to confirm this conclusion as the analysis in this study is based on limited experiential data.

- **Charitable thrift organizations are satisfied with the program.** By serving as collectors for the E-Cycle programs, charitable thrift organizations are now getting paid to collect the equipment rather than often having to pay out of pocket to recycle donated broken equipment. In Washington there are 141 locations operated by charities, including 96 Goodwill sites and have become some of the most popular drop off sites. In Oregon charities have maintained their prominence as a dominant collector of used electronics in that state with more than 100 locations.
- **Program education and promotion efforts need to be coordinated by a single entity.** Program promotion and outreach is typically a cooperative effort across approved plans/programs, the state (using administrative fee proceeds) and local governments. When only a single plan/program exists it is easier to place more responsibility on that entity (e.g., the WMMFA) for overall system promotion and outreach. However, when multiple programs are approved as in Oregon, several stakeholders opined that in the interest of developing a coherent message to the public and to ensure a level playing field the regulatory agency should take the lead on system promotion and education.

5.2 Economics

- **The E-Cycle programs generated new jobs in Washington and Oregon.** Based on interviews with processors/recyclers there were approximately 140 net new jobs created across Washington and Oregon for program start-up: 79 in Washington and 61 in Oregon. Approximately 360 ongoing jobs at these facilities were reported attributable to the Washington and/or Oregon E-Cycle programs.
- **The state-wide systems both created program efficiencies and drove pricing for services lower.** The consolidation of electronics recycling activities into state-wide systems has created program efficiencies relative to the cost of collection, transportation and recycling before January 1, 2009. For example the WMMFA cited operating costs in 2009 as $0.24/lb and the Oregon SCP a similar rate – a cost well below prices charged to scattered local governments and private programs before E-Cycle implementation, according to several local government officials. Some of this pricing reduction is likely due to increased program efficiencies (e.g., a consolidated administrative structure) and some due to the stronger pricing power that comes with larger, consolidated purchases of recycling and related services.
- **Cooperation and joint activities across states has created efficiencies.** Officials in Washington and Oregon developed a joint E-Cycle name, logo and educational materials which saved money and provided a consistent message to consumers across states. This example of cross-state cooperation was possible because the programs are so similar operationally. Additional opportunities to develop cross-state efficiencies and avoid confusion in border communities may also exist.
- **The long-term ability of service providers to thrive under a producer responsibility system is untested.** Given the current economics of recycling electronics, recycling systems are a cost to be minimized – and theoretically the less collected and recycled the less costs to be incurred by manufacturers. Overall the short-term results are mixed: while some processors and other stakeholders expressed concern that the new system has resulted in a negative financial impact on processors, other processors with newly established facilities in the region expressed satisfaction with current arrangements.
- **Managers of the "default" programs in both states expressed concern about the long-term sustainability of both programs under certain conditions.** Concerns included impacts upon their programs if the following situations occurred:

  1. state regulators allowed independent manufacturer programs to ignore requirements placed on them – especially if they were not required to have the same level of collection coverage;
  2. the financing policy that uses both market share and return share could inadvertently cause manufacturers to leave the "default" program, potentially putting its viability at risk (e.g., in both states certain manufacturers with higher market shares than return shares would pay more than their return shares, and if they leave the default programs the costs to all manufacturers remaining in the default program would increase) and;

5.3 Environmental Impacts

- **Most covered electronics are now being managed in audited recycling channels rather than disposed in landfills or managed in unaudited recycling channels.** The consensus among most interviewed stakeholders was that the system provided greater accountability for the final destination of the covered electronics due to annual audits of direct recyclers/processors, recordkeeping requirements and review by state regulators. Prior to the E-Cycle programs, there was no mechanism to determine if computers, monitors and TVs were being handled in a manner protective of the environment and human health.
- **Collection and recycling of covered electronics has increased.** Washington collected 38.5 million pounds of electronics for recycling and Oregon collected approximately 19 million pounds in 2009.
- **Approximately 5 million pounds of lead have been recycled** as a result of the Washington and Oregon E-Cycles Program.
- **More than 25,000 units have been reused in Oregon** during the initial three quarters of the Oregon E-Cycles program. The Washington program allows collectors to resell or donate equipment for reuse, but does not track reuse activities.

5.4 Policy

- **Most stakeholders expressed support for the producer responsibility concept.** This includes support from several manufacturers although some manufacturers and plan/program managers took exception to specific elements in the approach used in Washington and Oregon specifically the prescriptive collection requirements. Some service providers questioned their own long-term sustainability in a system where global manufacturers finance and drive the system towards lower costs. Local governments in particular are very supportive of the E-Cycle programs.
- **Allowing collectors to work for multiple plans is very popular among manufacturers.** While manufacturers like this arrangement, questions about certain "shared collector" practices were raised by some government officials and plan/program managers. Manufacturers noted that the ability to share collectors was critical in meeting collection service requirements, particularly in more rural areas where the number of potential staffed collection sites is limited. Critics of collector sharing arrangements point to concerns about data reporting integrity, a reduced ability of programs to spot leakage (e.g., a change in product mix could be due to the collector sending some collected electronics to another plan/program), and the public benefit of more collection opportunities if collector sharing were restricted.
- **Projecting a minimum number of pounds that each program must collect presents challenges and can create a disincentive to collect more than the target.** In Oregon, after discussions and negotiations with manufacturers about a number of issues, DEQ established a minimum number of pounds of covered electronics that each program must collect that year of 3.3 lbs./capita. Actual collections for 2009 were recorded at 5.13 lbs./capita. Although establishing a lower, more achievable target does make it easier for all to meet the targets, it also creates a disincentive to collect more than the target. Further, it encourages a reduction in collections once the target is in sight. While DEQ required all programs to continue to provide collection service through all of 2009, it appears some programs may have undertaken efforts to reduce flows of covered electronics from their collectors, including encouraging shared collectors to send electronics to other programs. In Oregon, underperforming programs must pay a penalty for not collecting their minimum pounds. The Washington program establishes plan-specific percentages where under-performing plans pay over-performing plans. The Washington approach has yet to be tested as there was only one plan operating in Washington in 2009.
- **Few stakeholders had comments about the overall financing mechanism in the respective programs.** However, specific issues were raised, including support for the financing structure where the Washington Department of Ecology establishes individual manufacturer return share obligations but the WMMFA board is allowed to set financing policy for all WMMFA members.
- **Stakeholders voiced little concern with manufacturer registration requirements.** Registration with a state agency is a common requirement across many states with producer responsibility programs. In Washington and Oregon there is an administrative fee levied in conjunction with manufacturer registration and is based on a sliding scale based on the market share of all manufacturers of covered electronics. The only complaint raised about the manufacturer registration process related to the relatively high fees levied on manufacturers, particularly in Washington.

- **Stakeholders had insightful comments about expanding the programs to include other products – and any new producer responsibility programs**. One manufacturer said any new electronic products should be added to the existing system, while another manufacturer serving on the WMMFA board noted that "it is challenging to work on a system with two disparate product groups (TVs and computers) and if you added new products to the Authority [WMMFA] it could quickly become unwieldy…inherently having a manufacturer-run program is unsustainable across multiple states as the amount of management time, labor etc. required would be overwhelming."
- **A clear legal status and startup funding are both critical in any new program.** As for the creation of any other similar system with WMMFA-type operational responsibilities, another WMMFA board member active at the programs creation strongly recommended that "the legal issues need to be resolved before the program is created – how the program is overseen and by whom, what is the legal status of entity. For example, what are you subject to as a private entity and/or as a public entity such as the state open meeting law?" Also there should be funding for start up operations included in any new such program for other products.

Appendix 1 - Active Oregon Collection Locations

Approximately 230 total

Note: an “X” means the program has a direct arrangement with the collector while an “O” means the collector provides service to that program via program-to-program arrangements

DELL	IPR	MRM	SCP	COUNTY	Facility Name
		X		HARNEY	4R RECYCLING – HINES
		X		GRANT	4R RECYCLING - PRAIRIE CITY
			X	CLACKAMAS	ACE COMPUTER REPAIR
			X	LINN	ALBANY-LEBANON RECYCLING & TRANSFER STATION
	X	X		JACKSON	ALLIED ENVIRONMENTAL SVCS. LLC
			X	BENTON	ALLIED WASTE - COFFIN BUTTE LANDFILL
			X	BENTON	ALLIED WASTE – CORVALLIS
			X	JOSEPHINE	ALLIED WASTE - MERLIN TRANSFER STATION
			X	MARION	ALLIED WASTE – WOODBURN
O	O	X	X	WALLOWA	ANT FLAT LANDFILL
O	X	X	X	BAKER	BAKER SANITARY SERVICE
		X		KLAMATH	BEATTY TRANSFER STATION
O	O	X		COOS	BEAVER HILL DISPOSAL SITE
			X	MARION	BITS & PCS COMPUTERS INC.
			X	YAMHILL	BITS & PCS COMPUTERS INC.
		X		KLAMATH	BLY TRANSFER STATION
		X		KLAMATH	BONANZA TRANSFER STATION
		X	X	CURRY	BROOKINGS TRANSFER STATION
			X	HARNEY	C&B TRANSFER STATION
			X	WASHINGTON	C&M RECYCLERS
	X	X	X	CLACKAMAS	CANBY DISPOSAL & TRANSFER STATION
O		X	X	TILLAMOOK	CART’M RECYCLING
		X		KLAMATH	CHEMULT LANDFILL
		X		KLAMATH	CHILOQUIN TRANSFER STATION
			X	UNION	CITY GARBAGE SERVICE
		X		MULTNOMAH	CITY RECYCLE
	X	X	X	COLUMBIA	COLUMBIA COUNTY TRANSFER STATION
			X	GILLIAM	COLUMBIA RIDGE LANDFILL
O	X	X	X	WASHINGTON	COMPUTER DRIVE CONNECTION
		X		JACKSON	COMPUTER DROP OFF
O		X		CURRY	COMPUTER FUSION
	X			BENTON	COMPUTER TUNE UP & REPAIR

DELL	IPR	MRM	SCP	COUNTY	Facility Name
O		X		GILLIAM	CONDON TRANSFER STATION
		X		LANE	COTTAGE GROVE TRANSFER STATION
		X		KLAMATH	CRESCENT TRANSFER STATION
	X			CROOK	CROOK COUNTY LANDFILL
		X		CLACKAMAS	CRT PROCESSING
		X	X	CURRY	CURRY TRANSFER & RECYCLING PORT ORFORD TRANSFER STATION
	O	X	X	DESCHUTES	DESCHUTES RECYCLING AT KNOTT LANDFILL
	X			TILLAMOOK	DON G. AVERILL RECYCLING
	X		X	WASHINGTON	EARTH PROTECTION SERVICES, INC.
	X		X	JACKSON	ECS REGENESYS
	X		X	WASHINGTON	FAR WEST FIBERS - BEAVERTON
	X		X	CLACKAMAS	FAR WEST FIBERS - FOOTHILLS RD
	X		X	MULTNOMAH	FAR WEST FIBERS - NE MARX ST
	X		X	MULTNOMAH	FAR WEST FIBERS - NW QUIMBY
	X		X	MULTNOMAH	FAR WEST FIBERS - ROSA PARKS WAY
	X		X	MULTNOMAH	FAR WEST FIBERS - SE 17TH
	X		X	WASHINGTON	FAR WEST FIBERS - SE ALEXANDER
		X		LANE	FLORENCE TRANSFER STATION
	X		X	WASHINGTON	FOREST GROVE TRANSFER STATION
	X	O		WHEELER	FOSSIL SOLID WASTE TRANSFER & RECYCLING
			X	MULTNOMAH	FREE GEEK
		X		KLAMATH	FT. KLAMATH TRANSFER STATION
	X	X	X	MARION/POLK	GARTEN NORTH
	O	X	X	POLK	GARTEN SERVICES - DALLAS
	X		X	LANE	GARTEN SERVICES - EUGENE
	X		X	MARION/POLK	GARTEN SERVICES, INC.
		X	X	MARION	GARTEN SOUTH
	X	X		LANE	GLENWOOD CENTRAL RECEIVING STATION
			X	UMATILLA	GOOD SHEPHERD HEALTHCARE HERMISTON
X				LANE	GOODWILL - 29TH & PORTLAND DONATION CENTER
X		X		MULTNOMAH	GOODWILL - 57TH & NE FREMONT
X		X		WASHINGTON	GOODWILL - AIRPORT MARKETPLACE
X	O	X		LINN	GOODWILL - ALBANY
X		O		JACKSON	GOODWILL - ASHLAND RETAIL CENTER
X		X		MULTNOMAH	GOODWILL - BARBUR BLVD DONATION EXPRESS
X		X		WASHINGTON	GOODWILL - BASELINE STORE
X		X		WASHINGTON	GOODWILL - BEAVERTON
X		X		WASHINGTON	GOODWILL - BEAVERTON MILL END STORE
X		X		DESCHUTES	GOODWILL - BEND
X		X		MULTNOMAH	GOODWILL - BROADWAY EAST STORE
X		X		WASHINGTON	GOODWILL - BRONSON CREEK DONATION EXPRESS

DELL	IPR	MRM	SCP	COUNTY	Facility Name
X		X		CLACKAMAS	GOODWILL - CANBY SQUARE DONATION EXPRESS
X		X		MULTNOMAH	GOODWILL - CANYON RD DONATION EXPRESS
X		X		POLK	GOODWILL - CENTRAL PLAZA SHOPPING CENTER
X		O		JACKSON	GOODWILL - CENTRAL POINT RETAIL
X		X		CLACKAMAS	GOODWILL - CLACKAMAS STORE
X		O		LANE	GOODWILL - COBURG DONATION CENTER
X		X		WASHINGTON	GOODWILL - CORNELL RD
X		X		BENTON	GOODWILL - CORVALLIS STORE
X		O		LANE	GOODWILL - COTTAGE GROVE
X		X		POLK	GOODWILL - DALLAS
X		X		CLACKAMAS	GOODWILL - DAMASCUS SQUARE DONATION EXPRESS
X		X		MULTNOMAH	GOODWILL - DIVISION & 143RD DONATION EXPRESS
X		O		JACKSON	GOODWILL - DOWNTOWN MEDFORD DONATION CENTER
X		X		CLACKAMAS	GOODWILL - ESTACADA
X		X		WASHINGTON	GOODWILL - FARMINGTON CENTER DONATION EXPRESS
X		X		WASHINGTON	GOODWILL - FOREST GROVE
X		X		MULTNOMAH	GOODWILL - GLISAN DONATION EXPRESS
X		O		JOSEPHINE	GOODWILL - GRANTS PASS
X				LANE	GOODWILL - GREEN ACRES STORE
		X		MULTNOMAH	GOODWILL - GRESHAM GROCERY OUTLET
X		X		MULTNOMAH	GOODWILL - GRESHAM STORE
X		X		WASHINGTON	GOODWILL - HALL BLVD DONATION EXPRESS
X		X		WASHINGTON	GOODWILL - HART RD DONATION EXPRESS
X		X		WASHINGTON	GOODWILL - HILLSBORO
X		X		MULTNOMAH	GOODWILL - HOLGATE & 82ND
X		X		HOOD RIVER	GOODWILL - HOOD RIVER
X				LANE	GOODWILL - JUNCTION CITY
X		X		MARION	GOODWILL - KEIZER
X				KLAMATH	GOODWILL - KLAMATH FALLS
X		X		WASHINGTON	GOODWILL - KMART SHOPPING CENTER
X		X		CLACKAMAS	GOODWILL - LAKE OSWEGO DONATION EXPRESS
X	O	X		MULTNOMAH	GOODWILL - LAMB'S THRIFTWAY/TROUTDALE PLAZA
X		X		MARION	GOODWILL - LANCASTER & DURBIN
X	O	X		LINN	GOODWILL - LEBANON SHOP'N'KART DRIVE AWAY
X		X		LINCOLN	GOODWILL - LINCOLN CITY
X		X		MULTNOMAH	GOODWILL - LOMBARD STORE
X		X		WASHINGTON	GOODWILL - MARKET CENTRE ALOHA
X		X		YAMHILL	GOODWILL - MCMINNVILLE STORE

DELL	IPR	MRM	SCP	COUNTY	Facility Name
X		X		MULTNOMAH	GOODWILL - MEADOWLANDS DONATION EXPRESS
X		X		CLACKAMAS	GOODWILL - MOLALLA BI-MART
X		X		MULTNOMAH	GOODWILL - NE SANDY DONATION EXPRESS
X	O	X		YAMHILL	GOODWILL - NEWBERG EXTREME CYCLE
X		X		DESCHUTES	GOODWILL - NEWPORT AVENUE MARKET DRIVE AWAY
X	O	X		LINCOLN	GOODWILL - NEWPORT BIG GUYS DRIVE AWAY
X		O		COOS	GOODWILL - NORTH BEND
X	O	X		CLACKAMAS	GOODWILL - OAK GROVE
X		X		CLACKAMAS	GOODWILL - OREGON CITY STORE
X				LANE	GOODWILL - PIONEER PARKWAY
X		X		CLACKAMAS	GOODWILL - PORTLAND OUTLET
X		X		MULTNOMAH	GOODWILL - PORTLAND STORE
X		X		MULTNOMAH	GOODWILL - POWELL STORE
X		X		DESCHUTES	GOODWILL - REDMOND
X		X		DESCHUTES	GOODWILL - REDMOND GROCERY OUTLET
X		O		LANE	GOODWILL - RIVER RD
X		O		DOUGLAS	GOODWILL - ROSEBURG SERVICE OFFICE
X		X		POLK	GOODWILL - SALEM OUTLET
X		X		MARION	GOODWILL - SALEM STORE
X		X		MULTNOMAH	GOODWILL - SAN RAFAEL STORE
X		X		CLACKAMAS	GOODWILL - SANDY STORE
X		X		COLUMBIA	GOODWILL - SCAPPOOSE HIGH SCHOOL PHARMACY
X		X		MULTNOMAH	GOODWILL - SELLWOOD DONATION EXPRESS
X		O		LANE	GOODWILL - SENECA
X		X		DESCHUTES	GOODWILL - SENTRY MARKET DRIVE
X		X		MULTNOMAH	GOODWILL - SHATTUCK RD RITE AID
X		X		WASHINGTON	GOODWILL - SHERWOOD PLAZA
X		X		MARION	GOODWILL - SILVERTON
X		X		MARION	GOODWILL - SOUTH SALEM STORE
X		X		POLK	GOODWILL - SOUTH SALEM WAL-MART DRIVE AWAY
X		O		LANE	GOODWILL - SPRINGFIELD
X		X		MULTNOMAH	GOODWILL - ST. GABRIELS BETHANY/NW PORTLAND
		X		MULTNOMAH	GOODWILL - ST. JOHN'S
X		X		MARION	GOODWILL - STAYTON BIMART
X		X		CLACKAMAS	GOODWILL - SUNNYSIDE DONATION EXPRESS
X		X		BENTON	GOODWILL - SUNSET SHOPPING CENTER BI-MART
X		X		DESCHUTES	GOODWILL - TARGET STORE DRIVE AWAY
X				LANE	GOODWILL - THURSTON
X		X		WASHINGTON	GOODWILL - TIGARD

DELL	IPR	MRM	SCP	COUNTY	Facility Name
X		X		WASHINGTON	GOODWILL - TIGARD PACIFIC HWY DONATION EXPRESS
X		X		MULTNOMAH	GOODWILL - W BURNSIDE STORE
X		X		POLK	GOODWILL - WALLACE ROAD
X		X		CLATSOP	GOODWILL - WARRENTON FRED MEYER
X		X		CLACKAMAS	GOODWILL - WEBSTER RD DONATION EXPRESS
X				LANE	GOODWILL - WEST EUGENE
X		X		MARION	GOODWILL - WEST SALEM DONATION EXPRESS
X		X		WASHINGTON	GOODWILL - WESTSIDE OUTLET HILLSBORO
X		X		CLACKAMAS	GOODWILL - WILSONVILLE TOWN CENTER
	O	X		MULTNOMAH	GOODWILL - WOOD VILLAGE/CHERRY PARK MARKET
X		X		MARION	GOODWILL - WOODBURN
X		X		MULTNOMAH	GOODWILL - WOODSTOCK
	X		X	MULTNOMAH	GRESHAM SANITARY SERVICE BIRDSDALE COLLECTION SITE
O	O	X		UNION	HABITAT FOR HUMANITY RESTORE
	X		X	WASHINGTON	HILLSBORO LANDFILL
			X	CLACKAMAS	HOMETOWN COMPUTERS
O		X	X	HOOD RIVER	HOOD RIVER RECYCLING AND TRANSFER STN
			X	CLACKAMAS	ICI COMPUTERS
	X	X	X	CLACKAMAS	KB RECYCLING - CLACKAMAS MRF
	X			MARION	KEIZER COMPUTER ANNEX
		X		KLAMATH	KENO TRANSFER STATION
	X	X		KLAMATH	KLAMATH COUNTY SOLID WASTE LANDFILL
			X	KLAMATH	KLAMATH REGIONAL DISPOSAL TRANSFER STATION
O		X		LAKE	LAKE COUNTY DISPOSAL
		X		KLAMATH	LANGELL VALLEY TRANSFER STATION
			X	YAMHILL	LEWIS AUDIO VIDEO
	O	X	X	LINCOLN	LINCOLN COUNTY RECYCLING CENTER
O		X	X	JEFFERSON	MADRAS SANITARY SERVICE
		X		KLAMATH	MALIN TRANSFER STATION
		X		KLAMATH	MERRILL TRANSFER STATION
		X		MULTNOMAH	METRO CENTRAL TRANSFER STATION
		X		CLACKAMAS	METRO SOUTH TRANSFER STATION
		X		JACKSON	MULTINET INFORMATION SYSTEMS
	O	X	X	DESCHUTES	NEGUS TRANSFER STATION
		X	X	CURRY	NESIKA BEACH TRANSFER STATION
	O	X		DOUGLAS	NEXT GENERATION RECYCLE
	X	X	X	LANE	NEXTSTEP RECYCLING - EUGENE
	X	X	X	LANE	NEXTSTEP RECYCLING - SPRINGFIELD
	X	X	X	LINCOLN	NORTH LINCOLN SANITARY
	X	X		MARION	NORTH MARION COUNTY TRANSFER STATION

DELL	IPR	MRM	SCP	COUNTY	Facility Name
O		X		MORROW	NORTH MORROW COUNTY TRANSFER STATION
		X		KLAMATH	ODESSA TRANSFER STATION
O	O	X	X	MALHEUR	ONTARIO TRANSFER STATION
	X			MULTNOMAH	PACIFIC LAND & CLEARING
	X			CLACKAMAS	PACIFIC LAND CLEARING & RECYCLING
			X	CLACKAMAS	PC PIECES
O	O	X	X	UMATILLA	PENDLETON SANITARY SERVICE TRANSFER STATION
	X		X	JACKSON	PERSONAL COMPUTER TECHNOLOGIES
	X		X	WASHINGTON	PRIDE RECYCLING
		X		JACKSON	RESTORE HABITAT FOR HUMANITY
	X			YAMHILL	RIVERBEND LANDFILL CO.
	X			CLACKAMAS	RS DAVIS RECYCLING
	X			UMATILLA	RS DAVIS RECYCLING INC.
	X	X		MARION	SALEM KEIZER TRANSFER STATION
			X	CLACKAMAS	SANDY TRANSFER STATION
O		X		UMATILLA	SANITARY DISPOSAL TRANSFER STATION
		X	X	SHERMAN	SHERMAN COUNTY TRANSFER STATION
			X	DOUGLAS	SHOP & SAVE
O		X		MORROW	SOUTH TRANSFER STATON
	X	O	X	JOSEPHINE	SOUTHERN OREGON SANITATION
		X		KLAMATH	SPRAGUE RIVER TRANSFER STATION
O		X		CROOK	ST. VINCENT DE PAUL RESALE STORE
		X		MULTNOMAH	STANDARD TV & APPLIANCE
		X		MULTNOMAH	STANDARD TV & APPLIANCE
		X		WASHINGTON	STANDARD TV & APPLIANCE
			X	DOUGLAS	SUNRISE ENTERPRISE - GREEN DISTRICT COLLECTION CENTER
			X	DOUGLAS	SUNRISE ENTERPRISES - MULHOLLAND DRIVE
			X	DOUGLAS	SUNRISE ENTERPRISES - SHOP & SAVE
		X		LINN	SWEET HOME TRANSFER STATION
	X			JACKSON	TAUL CORPORATION
O	O	X	X	WASCO	THE DALLES TRANSFER STATION
	X		X	MULTNOMAH	TOTAL RECLAIM, INC.
		X		UMATILLA	TRIBAL ENVIRONMENTAL RECOVERY FACILITY (TERF)
		X	X	JACKSON	VALLEY VIEW TRANSFER STATION

DELL	IPR	MRM	SCP	COUNTY	Facility Name
		X		WASHINGTON	VALUE VILLAGE
		X		LANE	VENETA TRANSFER STATION
		X		LANE	VIDA TRANSFER STATION
			X	COOS	WEST COAST RECYCLING & TRANSFER
	O	X		CLACKAMAS	WILLAMETTE RESOURCES INC.
		X	X	CURRY	WRIDGE CREEK TRANSFER STATION

Appendix 2 - Active Washington Collection Locations

(As of July, 2009 - Approx 240 total)

Collector Site Name	Organization	EPR Number	County	Effective Date
Experience Merchandise Thrift Store	Adams County Developmental Disabilities	EPR00547	Adams	1/27/2009
CEP Recycle Asotin Co.	HHH	EPR00471	Asotin	11/17/2008
Clayton-Ward Company Kennewick	Clayton-Ward Company	EPR00526	Benton	12/12/2008
Clayton-Ward Company Richland	Clayton-Ward Company	EPR00526	Benton	12/12/2008
Horn Rapids Sanitary Landfill	City of Richland - Landfill	EPR00490	Benton	11/14/2008
Packs Auction Service	Packs Auction Service	EPR00545	Benton	12/31/2008
Stay Tan West	Stay Tan West	EPR00542	Benton	12/30/2008
City of Chelan Recycle Center	City of Chelan	EPR00514	Chelan	12/9/2008
Salvation Army Wenatchee	The Salvation Army Seattle DHQ	EPR00470	Chelan	9/18/2008
EcycleNW	EcycleNW	EPR00262	Clallam	8/22/2008
Goodwill Port Angeles Store	Tacoma Goodwill	EPR00290	Clallam	10/24/2008
AER Vancouver/Portland	AER Corp	EPR00376	Clark	8/22/2008
Goodwill - 205 and Mill Plain Donation Center	Columbia Willamette Goodwill	EPR00343	Clark	9/18/2008
Goodwill - Fourth Plain at 140th Donation Center	Columbia Willamette Goodwill	EPR00343	Clark	2/2/2009
Goodwill - Main and Fourth Plain Donation Center	Columbia Willamette Goodwill	EPR00343	Clark	9/18/2008
Goodwill Battleground Store	Columbia Willamette Goodwill	EPR00343	Clark	9/18/2008
Goodwill Cascade Park Donation Center	Columbia Willamette Goodwill	EPR00343	Clark	9/18/2008
Goodwill Fishers Landing Store	Columbia Willamette Goodwill	EPR00343	Clark	9/18/2008
Goodwill Hazel Dell Store	Columbia Willamette Goodwill	EPR00343	Clark	9/18/2008
Goodwill Orchards Donation Center	Columbia Willamette Goodwill	EPR00343	Clark	9/18/2008
Goodwill Salmon Creek Donation Center	Columbia Willamette Goodwill	EPR00343	Clark	9/18/2008
Goodwill Salmon Creek Store	Columbia Willamette Goodwill	EPR00343	Clark	1/16/2009
Goodwill SE Vancouver Donation Center	Columbia Willamette Goodwill	EPR00343	Clark	9/18/2008
Goodwill Vancouver Outlet	Columbia Willamette Goodwill	EPR00343	Clark	9/18/2008
Goodwill Vancouver Store	Columbia Willamette Goodwill	EPR00343	Clark	9/18/2008

Collector Site Name	Organization	EPR Number	County	Effective Date
Goodwill Washougal Donation Center	Columbia Willamette Goodwill	EPR00343	Clark	9/18/2008
IMS Electronics Recycling	IMS Electronics Recycling	EPR00311	Clark	9/2/2008
Washougal Facility	PSC Environmental Services	EPR00312	Clark	11/21/2008
CEP Recycle Columbia Co.	HHH	EPR00471	Columbia	11/18/2008
Cowlitz County Habitat for Humanity ReStore	Cowlitz County Habitat for Humanity	EPR00592	Cowlitz	7/10/2009
Goodwill Longview Store	Tacoma Goodwill	EPR00290	Cowlitz	10/24/2008
Waste Control Recycling	Waste Control Recycling	EPR00443	Cowlitz	9/18/2008
Goodwill East Wenatchee Store	Inland Northwest Goodwill	EPR00334	Douglas	8/22/2008
Inchelium Community Center	Colville Confederated Tribes	EPR00578	Ferry	4/9/2009
Keller Community Center	Colville Confederated Tribes	EPR00578	Ferry	4/9/2009
Torboy Transfer Station	Ferry County Waste Management	EPR00487	Ferry	12/29/2008
Tommy's Steel & Salvage	Tommy's Steel & Salvage	EPR00519	Franklin	12/8/2009
CEP Recycle Garfield Co.	HHH	EPR00471	Garfield	12/16/2008
CDSI Transfer & Recycle	Consolidated Disposal Service, Inc.	EPR00279	Grant	8/22/2008
Consolidated Disposal Service	Consolidated Disposal Service, Inc.	EPR00279	Grant	8/22/2008
GCD Seniors	Grand Coulee Dam Area Seniors, Inc	EPR00330	Grant	7/7/2008
Goodwill Moses Lake Store	Inland Northwest Goodwill	EPR00334	Grant	8/22/2008
Salvation Army Aberdeen	The Salvation Army Seattle DHQ	EPR00470	Grays Harbor	9/18/2008
Waste Connections Inc dba Aberdeen Sanitation	Waste Connections Inc dba Aberdeen Sanit	EPR00522	Grays Harbor	12/11/2008
Camano Island Transfer Station & Recycle Park	Island County Public Works SW Division	EPR00530	Island	12/15/2008
Island Recycling	Island Recycling	EPR00517	Island	12/3/2008
Oak Harbor Drop Box Station	Island County Public Works SW Division	EPR00530	Island	12/15/2008
Goodwill Port Townsend Store	Tacoma Goodwill	EPR00290	Jefferson	10/24/2008
Public Recycling Center - Pacific	Commercial Metal Recycling	EPR00583	King	4/28/2009
3R Technology	3R Technology	EPR00370	King	8/8/2008
A Plus Removal and Recycle	A Plus Removal & Recycle	EPR00491	King	11/13/2008
American Electronics Recycling - Kent	AER Corp	EPR00376	King	8/22/2008
American Electronics Recycling Corp - Tukwila	AER Corp	EPR00376	King	1/7/2009
AtWork! Issaquah Recycling Center	AtWork!	EPR00540	King	12/29/2008
Busby Junk Removal	Busby Junk Removal, LLC	EPR00466	King	9/18/2008
Computer Recycling Service	Computer Recycling Service, Inc.	EPR00377	King	8/22/2008
Deseret Industries - Federal Way	Deseret Industries	EPR00546	King	2/11/2009
Deseret Industries - Shoreline	Deseret Industries	EPR00546	King	2/11/2009

Collector Site Name	Organization	EPR Number	County	Effective Date
EC Computer	EC Computer	EPR00531	King	12/16/2008
EcoLights Northwest	Total Reclaim, Inc.	EPR00544	King	12/30/2008
EWC Group, Inc	EWC Group, Inc	EPR00472	King	1/20/2009
George Electronix	George Electronix	EPR00549	King	1/13/2009
Goods for the Planet	Goods for the Planet, Inc.	EPR00386	King	12/12/2008
Goodwill Auburn Store	Tacoma Goodwill	EPR00290	King	10/24/2008
Goodwill Ballard Store	Seattle Goodwill	EPR00310	King	9/18/2008
Goodwill Bellevue P&R Donation Center	Seattle Goodwill	EPR00310	King	9/18/2008
Goodwill Burien Store	Seattle Goodwill	EPR00310	King	9/18/2008
Goodwill Federal Way Store	Tacoma Goodwill	EPR00290	King	10/24/2008
Goodwill Kent Store	Tacoma Goodwill	EPR00290	King	10/24/2008
Goodwill Kingsgate Donation Center	Seattle Goodwill	EPR00310	King	12/18/2008
Goodwill Maple Valley Store	Tacoma Goodwill	EPR00290	King	10/24/2008
Goodwill Newport Hills Donation Center	Seattle Goodwill	EPR00310	King	9/18/2008
Goodwill Renton Store	Seattle Goodwill	EPR00310	King	9/18/2008
Goodwill Sammamish Donation Center	Seattle Goodwill	EPR00310	King	12/18/2008
Goodwill Seattle Store	Seattle Goodwill	EPR00310	King	9/18/2008
Goodwill Shoreline Store	Seattle Goodwill	EPR00310	King	9/18/2008
Goodwill Southcenter Store	Seattle Goodwill	EPR00310	King	9/18/2008
Goodwill Totem Lake Donation Center	Seattle Goodwill	EPR00310	King	9/18/2008
Goodwill Woodinville P&R Donation Center	Seattle Goodwill	EPR00310	King	9/18/2008
Happy Hauler LLC	Happy Hauler LLC	EPR00479	King	1/7/2009
InterConnection Computer Reuse and Learning Center	InterConnection Computer Reuse	EPR00369	King	9/8/2008
Mitronics	Mitronics	EPR00559	King	1/28/2009
PC Recycle - Bellevue	PC Recycle	EPR00365	King	9/11/2008
PC Recycle - Federal Way	PC Recycle	EPR00365	King	9/11/2008
PSC - Georgetown	PSC Environmental Services	EPR00312	King	11/5/2008
RE-PC Seattle	RE-PC	EPR00426	King	9/12/2008
RE-PC Tukwila	RE-PC	EPR00426	King	9/12/2008
Salvation Army Burien Store	The Salvation Army Seattle ARC	EPR00543	King	12/30/2008
Salvation Army Covington Donation Site	The Salvation Army Seattle ARC	EPR00543	King	12/30/2008
Salvation Army Midway Thrift Store	The Salvation Army Seattle ARC	EPR00543	King	12/30/2008
Salvation Army Redmond Donation Site	The Salvation Army Seattle ARC	EPR00543	King	4/24/2009
Salvation Army Renton Thrift Store	The Salvation Army Seattle ARC	EPR00543	King	12/30/2008

Collector Site Name	Organization	EPR Number	County	Effective Date
Salvation Army Seattle ARC	The Salvation Army Seattle ARC	EPR00543	King	12/30/2008
Santamaria and Sons Ravensdale	Santamaria and Sons, Inc	EPR00314	King	9/18/2008
SB Foundation	SB Foundation	EPR00573	King	4/2/2009
St Vincent de Paul 1st Ave S	St Vincent de Paul Seattle/ King County	EPR00525	King	12/31/2008
St Vincent de Paul 4th Ave S	St Vincent de Paul Seattle/ King County	EPR00525	King	1/10/2009
St Vincent de Paul Aurora Ave N	St Vincent de Paul Seattle/ King County	EPR00525	King	12/31/2008
St Vincent de Paul Bothell Way NE	St Vincent de Paul Seattle/ King County	EPR00525	King	12/31/2008
St Vincent de Paul Sunset Blvd NE	St Vincent de Paul Seattle/ King County	EPR00525	King	12/31/2008
State Surplus Auburn Site	Dept of General Administration / Surplus	EPR00480	King	12/11/2008
Total Reclaim 6th Ave Site	Total Reclaim, Inc.	EPR00544	King	12/30/2008
Waste Management South King County	Waste Management of Washington	EPR00264	King	2/12/2009
BI TRANSFER STATION	Bainbridge Disposal	EPR00374	Kitsap	12/31/2008
Bremerton St. Vincent dePaul	St Vincent de Paul Bremerton	EPR00494	Kitsap	11/19/2008
Goodwill Bainbridge Island Don. Center	Seattle Goodwill	EPR00310	Kitsap	12/12/2008
Goodwill Bremerton Store	Seattle Goodwill	EPR00310	Kitsap	9/18/2008
Goodwill Port Orchard Store	Seattle Goodwill	EPR00310	Kitsap	9/18/2008
Olympic View Transfer Station	Waste Management of Washington	EPR00264	Kitsap	1/12/2009
Peninsula All Shred	All Shred	EPR00502	Kitsap	11/24/2008
Recycle Earth Inc	Recycle Earth	EPR00550	Kitsap	2/1/2009
Cle Elem Trading Post	Cle Elem Trading Post	EPR00527	Kittitas	12/30/2008
Goodwill Ellensburg Store	Tacoma Goodwill	EPR00290	Kittitas	10/24/2008
Kittitas Valley Recycling	Kittitas Valley Recycling	EPR00515	Kittitas	12/3/2008
Regional Disposal Company - Goldendale Transfer	Regional Disposal Company	EPR00482	Klickitat	10/29/2008
Goodwill Centralia Store	Tacoma Goodwill	EPR00290	Lewis	10/24/2008
Lincoln County Transfer Station	Lincoln County Transfer Station	EPR00367	Lincoln	9/8/2008
Goodwill Roosters Family Restuarant Donation Stati	Tacoma Goodwill	EPR00290	Mason	10/27/2008
Wilson Recycling LLC	Wilson Recycling LLC	EPR00513	Mason	12/9/2008
Green Okanagon Recycle	Green Okanagon Recycle	EPR00572	Okanogan	4/13/2009
Methow Recycle	Methow Recycles	EPR00298	Okanogan	11/17/2008
Nespelem Community Center	Colville Confederated Tribes	EPR00578	Okanogan	4/9/2009
Omak Community Center	Colville Confederated Tribes	EPR00578	Okanogan	
Pacific Solid Waste Disposal	Pacific Solid Waste Disposal Inc	EPR00371	Pacific	9/11/2008

Collector Site Name	Organization	EPR Number	County	Effective Date
Royal Heights Transfer Station	Royal Heights Transfer Station	EPR00488	Pacific	11/5/2008
Deer Valley Transfer Station	Pend Oreille Co Public Works	EPR00404	Pend Oreille	10/3/2008
Better PC Recycle LLC	Better PC Recycle LLC	EPR00509	Pierce	5/15/2009
Ft Lewis Recycle Center	LeMay Inc	EPR00529	Pierce	12/26/2008
Goodwill 38 Street Donation Station	Tacoma Goodwill	EPR00290	Pierce	10/24/2008
Goodwill 6th Ave Plaza Store	Tacoma Goodwill	EPR00290	Pierce	12/5/2008
Goodwill 72 Street Store	Tacoma Goodwill	EPR00290	Pierce	10/24/2008
Goodwill Bonney Lake Wal-Mart Donation Station	Tacoma Goodwill	EPR00290	Pierce	12/5/2008
Goodwill Chevron Mini Mart Donation Station	Tacoma Goodwill	EPR00290	Pierce	10/24/2008
Goodwill Dollar Tree Donation Station	Tacoma Goodwill	EPR00290	Pierce	12/5/2008
Goodwill Gig Harbor Store	Tacoma Goodwill	EPR00290	Pierce	10/24/2008
Goodwill Key Peninsula Mkt Donation Station	Tacoma Goodwill	EPR00290	Pierce	10/24/2008
Goodwill Lakewood Store	Tacoma Goodwill	EPR00290	Pierce	10/24/2008
Goodwill Meridian WalMart	Tacoma Goodwill	EPR00290	Pierce	1/13/2009
Goodwill Orting Eagles Lodge Donation Station	Tacoma Goodwill	EPR00290	Pierce	10/27/2008
Goodwill Puyallup K Mart Store	Tacoma Goodwill	EPR00290	Pierce	10/24/2008
Goodwill Qwik Mart Donation Station	Tacoma Goodwill	EPR00290	Pierce	10/27/2008
Goodwill Rite Aid 176th Donation Station	Tacoma Goodwill	EPR00290	Pierce	12/5/2008
Goodwill Roses IGA Donation Station	Tacoma Goodwill	EPR00290	Pierce	10/27/2008
Goodwill South Hill Store	Tacoma Goodwill	EPR00290	Pierce	10/27/2008
Goodwill Spanaway Store	Tacoma Goodwill	EPR00290	Pierce	10/27/2008
Goodwill TACID Donation Station	Tacoma Goodwill	EPR00290	Pierce	10/27/2008
Goodwill Tacoma Landfill & Recycle Donation Statio	Tacoma Goodwill	EPR00290	Pierce	10/27/2008
Goodwill Tacoma Outlet Store	Tacoma Goodwill	EPR00290	Pierce	12/5/2008
Goodwill Top Foods Donation Station	Tacoma Goodwill	EPR00290	Pierce	12/5/2008
Green PC	Green PC	EPR00520	Pierce	7/8/2009
McChord Recycling Center	McChord Air Force Base	EPR00421	Pierce	12/9/2008
MONARCH ASSOCIATION	Monarch Association	EPR00535	Pierce	12/26/2008
Oakland Radio and Tv	Oakland Radio and TV Inc	EPR00418	Pierce	9/11/2008
PC Computers	PC Computers	EPR00581	Pierce	5/4/2009
Public Recycling Center - Canyon Rd	Commercial Metal Recycling	EPR00583	Pierce	4/28/2009

Collector Site Name	Organization	EPR Number	County	Effective Date
Salvation Army Bonney Lake Donation Site	The Salvation Army Seattle ARC	EPR00543	Pierce	12/30/2008
Salvation Army Puyallup Donation Site	The Salvation Army Seattle ARC	EPR00543	Pierce	12/30/2008
Salvation Army Puyallup Thrift Store	The Salvation Army Seattle ARC	EPR00543	Pierce	12/30/2008
SBK Storage Recycling	SBK Storage	EPR00564	Pierce	3/20/2009
St. Vincent de Paul S. 56th St.	St Vincent de Paul Tacoma	EPR00561	Pierce	2/13/2009
St. Vincent de Paul South Hill Meridian Ave E.	St Vincent de Paul Tacoma	EPR00561	Pierce	2/13/2009
Tacoma Recycling Co	Tacoma Recycling Co., Inc.	EPR00477	Pierce	12/4/2008
Consignment Treasures LLC	Consignment Treasures LLC	EPR00489	San Juan	11/7/2008
The Exchange	Orcas Recycling Services	EPR00512	San Juan	3/18/2009
Aktion Club of Anacortes	Aktion Club of Anacortes	EPR00523	Skagit	12/19/2008
Appliance Connection	Jaco Environmental	EPR00486	Skagit	3/20/2009
Goodwill Mount Vernon Store	Seattle Goodwill	EPR00310	Skagit	9/18/2008
Salvation Army Mt Vernon Thrift Store	The Salvation Army Seattle ARC	EPR00543	Skagit	12/30/2008
Sedro-Woolley City Recycling Facility	City of Sedro-Woolley	EPR00324	Skagit	8/22/2008
Underwood Transfer Facility	Skamania County Solid Waste Division	EPR00358	Skamania	9/8/2008
Ace Metal Company and Mukilteo Recycling Center	Ace Metal Company	EPR00557	Snohomish	2/20/2009
Appliance Recycling Outlet	Jaco Environmental	EPR00486	Snohomish	11/14/2008
E-Waste, LLC	E-Waste LLC	EPR00446	Snohomish	
Goodwill Lynnwood Store	Seattle Goodwill	EPR00310	Snohomish	9/18/2008
Goodwill Marysville	Seattle Goodwill	EPR00310	Snohomish	9/18/2008
Goodwill Mill Creek Donation Center	Seattle Goodwill	EPR00310	Snohomish	9/18/2008
Goodwill Monroe Donation Center	Seattle Goodwill	EPR00310	Snohomish	9/18/2008
Goodwill South Everett Store	Seattle Goodwill	EPR00310	Snohomish	9/18/2008
Kolb Enterprize	Kolb Enterprize	EPR00590	Snohomish	6/19/2009
PC Recycle - Lynnwood	PC Recycle	EPR00365	Snohomish	9/11/2008
PC Recycle - Marysville	PC Recycle	EPR00365	Snohomish	9/11/2008
PC Recycle - Woodinville	PC Recycle	EPR00365	Snohomish	9/11/2008
Rubatino Refuse Removal	RUBATINO REFUSE REMOVAL INC	EPR00368	Snohomish	1/10/2009
Salvation Army Lynnwood Donation Center	The Salvation Army Seattle ARC	EPR00543	Snohomish	12/30/2008
Salvation Army Snohomish Donation Center	The Salvation Army Seattle ARC	EPR00543	Snohomish	12/30/2008
Smokey Point Recycling	Smokey Point Recycling	EPR00591	Snohomish	6/15/2009
St Vincent dePaul Lynnwood	St Vincent de Paul Northsound	EPR00560	Snohomish	1/28/2009

Collector Site Name	Organization	EPR Number	County	Effective Date
St. Vincent dePaul Everett	St Vincent de Paul Northsound	EPR00560	Snohomish	1/28/2009
St. Vincent dePaul Monroe	St Vincent de Paul Northsound	EPR00560	Snohomish	1/28/2009
TK Enterprise	TK Enterprise	EPR00516	Snohomish	12/3/2008
Truck On Call	Truck On Call	EPR00528	Snohomish	12/19/2008
Earthworks Recycling, Inc.	Earthworks Recycling, Inc.	EPR00305	Spokane	1/13/2009
Goodwill Cheney Donation Center	Inland Northwest Goodwill	EPR00334	Spokane	8/22/2008
Goodwill Downtown Spokane Plant/Dock Donation Cent	Inland Northwest Goodwill	EPR00334	Spokane	8/22/2008
Goodwill North Division Y Donation Center	Inland Northwest Goodwill	EPR00334	Spokane	8/22/2008
Goodwill North Nevada Store	Inland Northwest Goodwill	EPR00334	Spokane	8/22/2008
Goodwill NW Spokane Donation Center	Inland Northwest Goodwill	EPR00334	Spokane	8/22/2008
Goodwill Palouse Hwy Donation Center	Inland Northwest Goodwill	EPR00334	Spokane	8/22/2008
Goodwill South Spokane Donation Center	Inland Northwest Goodwill	EPR00334	Spokane	8/22/2008
Goodwill Spokane Valley Store	Inland Northwest Goodwill	EPR00334	Spokane	8/22/2008
Goodwill Spokane Vlly Argonne Donation Center	Inland Northwest Goodwill	EPR00334	Spokane	8/22/2008
Goodwill Spokane Vlly Dishman-Mica Donation Center	Inland Northwest Goodwill	EPR00334	Spokane	8/22/2008
Goodwill Spokane Warehouse	Inland Northwest Goodwill	EPR00334	Spokane	12/10/2008
Goodwill Wandermere Donation Center	Inland Northwest Goodwill	EPR00334	Spokane	8/22/2008
Inland ReTech	Electronic Recycling, LLC dba Inland ReT	EPR00335	Spokane	12/12/2008
Jaco Environmental	Jaco Environmental	EPR00486	Spokane	3/26/2009
Recycle Techs	Recycle Techs	EPR00478	Spokane	10/8/2008
Salvation Army Spokane	The Salvation Army Seattle DHQ	EPR00470	Spokane	9/18/2008
Salvation Army Spokane Valley	The Salvation Army Seattle DHQ	EPR00470	Spokane	9/18/2008
Goodwill Colville Store	Inland Northwest Goodwill	EPR00334	Stevens	8/22/2008
Goodwill Lacey Store	Tacoma Goodwill	EPR00290	Thurston	10/24/2008
Goodwill Mega Foods Donation Station	Tacoma Goodwill	EPR00290	Thurston	10/24/2008
Goodwill Olympia Store	Tacoma Goodwill	EPR00290	Thurston	10/24/2008
Goodwill South Lacey Donation Station	Tacoma Goodwill	EPR00290	Thurston	12/5/2008
Goodwill Thurston County Waste And Recovery Donati	Tacoma Goodwill	EPR00290	Thurston	10/24/2008
Goodwill Yelm WalMart Donation Station	Tacoma Goodwill	EPR00290	Thurston	4/14/2009

Collector Site Name	Organization	EPR Number	County	Effective Date
MIDWAY RECOVERY INC.	MIDWAY RECOVERY INC.	EPR00554	Thurston	1/26/2009
State Surplus Tumwater Site	Dept of General Administration / Surplus	EPR00480	Thurston	11/5/2008
Stanley's Sanitary Service	Stanley's Sanitary Service LLC	EPR00493	Wahkiakum	11/18/2009
CEP Recycle Walla Walla	HHH	EPR00471	Walla Walla	9/25/2008
Walla Walla Recycling	Walla Walla Recycling Inc	EPR00496	Walla Walla	11/21/2008
Goodwill Bellingham Store	Seattle Goodwill	EPR00310	Whatcom	9/18/2008
Recycling & Disposal Services, Inc.	Recycling & Disposal Services, Inc.	EPR00510	Whatcom	12/3/2008
Safe And Easy Recycling	Safe And Easy Recycling	EPR00397	Whatcom	9/12/2008
Safe And Easy Recycling (North County)	Safe And Easy Recycling	EPR00397	Whatcom	1/13/2009
Salvation Army Bellingham	The Salvation Army Seattle DHQ	EPR00470	Whatcom	9/18/2018
Salvation Army Lynden	The Salvation Army Seattle DHQ	EPR00470	Whatcom	9/18/2008
Goodwill Pullman Donation Center	Inland Northwest Goodwill	EPR00334	Whitman	8/22/2008
Pullman Disposal Shop	Pullman Disposal Service, Inc.	EPR00299	Whitman	10/1/2008
Goodwill Chalet Plaza Donation Station	Tacoma Goodwill	EPR00290	Yakima	10/24/2008
Goodwill Selah Store	Tacoma Goodwill	EPR00290	Yakima	10/27/2008
Goodwill Yakima K Mart Donation Station	Tacoma Goodwill	EPR00290	Yakima	10/24/2008
Goodwill Yakima Red Robin Donation Station	Tacoma Goodwill	EPR00290	Yakima	10/27/2008
Goodwill Yakima Store	Tacoma Goodwill	EPR00290	Yakima	10/27/2008
Goodwill Zillah Food Center Donation Station	Tacoma Goodwill	EPR00290	Yakima	12/5/2008
Salvation Army Union Gap	The Salvation Army Seattle DHQ	EPR00470	Yakima	9/18/2008
Salvation Army Yakima	The Salvation Army Seattle DHQ	EPR00470	Yakima	9/18/2008
Sunnyside Christian Thrift Shop	Sunnyside Christian Thrift Shop	EPR00566	Yakima	3/6/2009
Union Gospel Mission Yakima	Union Gospel Mission Yakima	EPR00568	Yakima	2/27/2009
Yakima Waste Systems Granger	Yakima Waste Systems, Inc.	EPR00463	Yakima	11/5/2008
Yakima Waste Systems Yakima	Yakima Waste Systems, Inc.	EPR00463	Yakima	11/5/2008

Appendix 3 – Questions Asked of Stakeholders

Maximum of 10 - 15 Asked per Stakeholder

Question	Stakeholder Categories for Question
1. Operations Questions a. Are there aspects of the system are working particularly well and what, if anything, is not working well?	All
b. How has the program performed compared to your expectations prior to the program implementation?	All
Do you think the establishment of an Authority (Washington) and a default state contractor program (Oregon) helped start up? Are these default programs important to the operation of the overall system?	Regulators, Program Managers, Manufacturers, Local Officials, Processors/ Recyclers, NGOs, Reuse Organizations
c. Why do you think Washington had only a single program in Year 1 while Oregon had 4 – and now only 1 in WA and 3 in OR? What drove the decisions made by manufacturers to pursue, or not to pursue, independent manufacturer plans?	Program Managers, Manufacturers
d. How have plans/programs managed the distinctions between covered entities that are eligible to receive free recycling, and non-covered entities? How is this working? And covered electronics vs. not?	Regulators, Program Managers, Participating Collectors, Local Officials
e. What were the noteworthy operational challenges that you faced during startup and implementation?	Regulators, Program Managers, Participating Collectors, Processors/Recyclers, Reuse Organizations, Transporters
f. How are the independent programs structured and who manages it?	Program Managers, Manufacturers
g. What do you like best about the independent program versus the state default program? Why did you choose which plan for 2009 and 2010?	Manufacturers
h. How is the system working regarding peripherals?	Regulators, Program Managers, Participating Collectors, Local Officials, Processors/ Recyclers
2. Economic questions a. How has the qualified collector/fair compensation system under the Authority worked for collectors (Washington)? Do most collectors consider the compensation arrangement fair with respect to the level of services they provide? And for the Authority? How has it worked for the Authority that they have to use all qualified registered collectors?	(Washington only) Regulators, Program Managers, Participating Collectors, Non-Participating Collectors, Local Officials
b. How has the competitive collector services system worked in Oregon? Are most entities wanting to collect hired by an approved plan? Are their compensation amounts adequate? How has this worked from the Plans' perspective?	(Oregon only) Regulators, Program Managers, Participating Collectors, Non-Participating Collectors, Local Officials
c. Is the compensation level you are receiving enough to cover your costs?	Participating Collectors, Non-Participating Collectors, Transporters

Question	Stakeholder Categories for Question
d. What notable economic impact has been observed during initial program implementation on non-collector stakeholders – covered entities, processors/recyclers, retailers and manufacturers. Key principals will be asked to provide observations about how changes brought about by the E-Cycle system have affected them economically, and any observations about their perception of the economic impact on other stakeholder classes and on service providers operating outside the program.	Regulators, Program Managers, Manufacturers, Local Officials, Processors/ Recyclers, NGOs, Reuse Organizations
3. Environmental questions a. What changes in flows have been observed? Specifically, changes in the frequency of covered electronics going into audited recycling channels that were formerly going into landfills and/or unaudited recycling channels. Are there winners and losers – and who are they? As there is little or no data on the amount of covered electronics currently and formerly landfilled and/or entering unaudited recycling channels these questions will seek anecdotal information in the form of observations from stakeholders that will be compiled and analyzed and reported on a qualified, not quantified basis.	Regulators, Program Managers, Participating Collectors, Non-Participating Collectors, Local Officials, Processors/Recyclers, NGOs, Reuse Organizations
b. What changes in product design are underway resulting from these programs? For recyclers - do you ever talk to the OEMs about design/recycling issues?	Manufacturers, Processors/Recyclers
c. For those participating in the program, how have they changed their practices? (could be both environmental and operational)	Participating Collectors, Processors/ Recyclers, Reuse Organizations
d. For those not participating in the program, have they changed their practices? (could be both environmental and operational)	Participating Collectors, Processors/ Recyclers, Reuse Organizations
e. Have the standards implemented by plans (preferred standards) impacted practices?	Program Managers, Manufacturers, Processors/Recyclers
f. Do you think that the E-Cycle program assures responsible management of the covered electronics? Do you have confidence that responsible management is happening?	All
g. In Washington, has the new reuse law made a difference in how they do business and how much is reused?	(Washington only) Participating Collectors, Non-Participating Collectors, Reuse Organizations
h. Has the approach to reuse in the Oregon program made a difference in how they do business and how much is reused? Ask both collectors and processors.	(Oregon only) Participating Collectors, Processors/Recyclers, Reuse Organizations
i. Do you think the vast majority of CEPs/CEDs with no reuse value are being handled in the system? How much leakage?	Program Managers, Manufacturers, Participating Collectors, Non-Participating Collectors, Local Officials, Processors/ Recyclers, NGOs
4. Policy questions a. Is the financing mechanism working? Are there possible improvements to that part of the system? Does the law specify too much or too little about how plans should be financed? What improvements could be made to the legislation to enable sustainable financing for Authority/Stewardship org?	Regulators, Program Managers, Manufacturers, NGOs

Question	Stakeholder Categories for Question
b. Are there lessons learned from the process for allocating responsibility across producers? i. Washington – how is the separation of who allocates responsibility concerning overall manufacturer obligations in Washington (return share only) and the Authority financing policy (market share or return share, or any other equitable method) playing out through system implementation? How do stakeholders view this separation of responsibilities through the first 9 months of program implementation? i. Oregon – how has the policy for television manufacturers in the State Contractor Program (i.e., financing responsibility based on market share of TV manufacturers participating in the SCP) worked through the first 9 months of program implementation?	Regulators, Program Managers, Manufacturers
b. Do you think the administrative costs of a statistically viable sampling program outweigh its utility in a producer responsibility system?	Regulators, Program Managers, Manufacturers, Processors/Recyclers
c. What challenges have been observed when obtaining and managing share data (both return share and market share data) that affect overall system fairness and/or performance?	Regulators, Program Managers
d. Does a single plan or multiple plans are preferable – (work better for some or all stakeholders)?	All
e. What are the challenges and benefits created where there are shared collectors across programs? What are the dynamics that are generated from this? Are the rules or guidelines specific enough to provide a robust collection system re: shared collectors and a level playing field? What data reporting system should be implemented to manage these situations? Are some types of collector sharing working in Oregon? Are some not?	Regulators, Program Managers, Manufacturers, Participating Collectors, Local Officials
f. How has the lack of a set performance target affected Washington? How has a set performance targets in Oregon played out?	Regulators, Program Managers, Manufacturers, Processors/Recyclers
g. What are the effects of other service requirements on the program such as a) providing at least one collection location in all cities with a population > 10,000 and b) in Washington requiring the WMMFA to accept all qualified collectors into the program?	Regulators, Program Managers, Manufacturers, Participating Collectors, Non-Participating Collectors, Local Officials, Processors/Recyclers
h. Do you view specific elements in the system as particularly fair or unfair? What are those elements, and why or why not?	All
i. Are there requirements that you would like changed because they are particularly challenging and/or not working? Around the approve Plans/Programs?	All
j. How about curbside collection – should and/or is this happening within the system currently?	Collectors
5. Overall lessons learned questions a. What do you believe are the lessons learned to date?	All
b. Are there lessons learned during the implementation that shed light on the feasibility/economic implications of adding new covered products and/or creating new producer responsibility systems?	All

Appendix 4 – Distribution of Stakeholders Interviewed

Government officials	9 (6 from Washington, 3 from Oregon)
Plan/program managers running recycling systems	5
Manufacturers	5
Collectors participating in the program	6
Potential collectors not participating in the program	2
Processors/recyclers	6 *(6 of the 10 processors/recyclers participated in the full interview. 9 of the 10 processors answered questions specifically related to employment issues)*
Refurbishment/reuse organizations	3
Environmental NGOs	1
Transporter	1
Total Number of Stakeholders Interviewed	**38**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