



Washington State Department of Ecology

Electronic Product Recycling Program

Revised Small Business Economic Impact Statement for Amendments to Chapter 173-900 WAC and Chapter 173-303 WAC

*Prepared for
Ecology's Solid Waste and Financial Assistance Program*

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Small Business Economic Impact Statement

WAC 173-900 and WAC 173-303

Conclusion

Based on research and analysis required by the Regulatory Fairness Act – RCW Ecology has determined that the amendments to WACs 173-900 rule and 173-303 have a disproportionate impact on small business. Therefore, we must include cost-minimizing features in the rule where it is legal and feasible to do so.

Note to readers: This rule is unusual in that it transfers the cost of disposal from Washington citizens, businesses, and government bodies to manufactures of TVs, Computers, and Monitors. There is a net income effect for Washington businesses.

Background

2004 Recommendations to Legislature

At the request of Washington lawmakers in 2004, Ecology and the Solid Waste Advisory Committee (SWAC) developed recommendations for how the State can implement and finance a program to collect, recycle, and reuse electronic products. Ecology and the SWAC worked with the representatives below:

- Electronic product manufacturers
- Electronic product retailers and waste haulers
- Electronics recyclers
- Charities, cities, counties, environmental organizations, public interest organizations, and other interested parties

2006 Electronic product recycling law

Based on the 2004 recommendations from Ecology and the SWAC, Washington lawmakers approved a new law - RCW 70.95N, Electronic Product Recycling - which became effective July 1, 2006.

This new law requires computer and television manufacturers to provide consumer-convenient recycling of their covered electronic products throughout Washington.

The rule defines covered electronic products (CEPs) as

- Computers (including portable or laptop computers)
- Televisions
- Computer monitors

used by households, charities, school districts, small businesses, or small governments, located in Washington.

Manufacturers must make these services available to these groups by January 1, 2009.

Reason for this rule

Preventing Contamination in Landfills

There are toxic substances in CEPs that, under certain conditions, can leach into ground water when people throw them away in landfills. These toxic substances include:

- Metals - lead, mercury, and cadmium.
- Flame retardants.
- Plasticizers - additives that increase the plasticity or fluidity of CEPs.

Once these toxic substances contaminate ground water it is difficult and costly to fix the problem. Many landfill owners (private companies and municipalities) are experiencing long and expensive lawsuits from the release of these toxic substances from their properties. Some of these landfills are businesses.

Lead

The potential health effects of lead in humans are well documented.

Children

- Decreased learning ability can occur at a blood lead level (BLL) of fewer than 10 micrograms per deciliter (ug/dL).
- Behavior problems such as aggression can appear at a BLL of fewer than 25 ug/dL
- Kidney damage and anemia occur at a BLL over 60 ug/dL.
- Reduced birth weight occurs at a BLL fewer than 20 ug/dL.

Adults

- Increased blood pressure and kidney damage are possible at a BLL of fewer than 10 ug/dL.
- During pregnancy, increased blood pressure and kidney damage appear at fewer than 20 ug/dL, and spontaneous abortion can occur in the 30 to 40 ug/dL range.

Most metals, including lead, usually adhere to soils instead of moving into ground water. However, landfills can produce acidic conditions that increase the chances for ground water contamination to occur.

Mercury

Mercury is another hazardous substance that needs careful handling and is recognized as a landfill contaminant.¹ The main problem with mercury in landfills is that it can escape as a vapor that later enters the food chain. For example, certain species of fish contain high mercury levels. This requires the state health department to educate Washington's citizens on the safe amount and types of fish they can eat to reduce their mercury exposure, especially for children and fetuses. We know that continued exposure to mercury can cause:

- Neurological damage
- Mental illness
- Mental retardation
- Muscle spasms
- Irritability and depression

¹ ASTDR, Mercury CAS # 7439-97-6, April, 1999, <http://www.atsdr.cdc.gov/tfacts46.html>, downloaded 10/1/07. Health Effects, Mercury, <http://www.epa.gov/mercury/effects.htm>, Downloaded 10/1/07. Mercury, Basic Information, USEPA, <http://www.epa.gov/mercury/about.htm>, Downloaded 10/1/07.

Cadmium

In the case of CEPs, the primary source of cadmium is in the batteries and some of the plastic parts. Cadmium is a known carcinogen and competes with (replaces or reduces impacts of) zinc in many biological systems. It can also replace calcium and magnesium under certain circumstances.²

Flame Retardants and Plasticizers

Plasticizers, known as phthalates, and certain flame-retardants that contain bromine are being recognized as another form of contamination from discarded CEPs. The exact effects of these substances on humans are still being researched. However, they are frequently referred to as endocrine disruptors because of their ability to mimic estrogen-like hormones.³ Performing lab tests on animals and observing them under natural conditions, indicates that male fetuses can become feminized, thereby lowering their ability to reproduce. The highest levels of contamination are often found in water discharge pipes (outfalls) located downstream or below wastewater treatment plants, this is because the current levels of treatment are relatively ineffective at removing these substances.

The qualitative benefits of recycling the CEPs that contain these and other toxic substances, rather than disposing of them in landfills are clear. Recycling is the only reliable, controllable, and effective way to minimize the harmful effects these substances have on humans and the environment.

Sustainability and Resource Conservation

Some of the materials used to make CEPs, especially rare metals, are valuable. The amount of these materials in any one CEP is often small. However, because so many CEPs are made and later discarded, a significant amount of resources are sent to landfills each year. Discarding these resources seriously undermines our efforts to produce a sustainable economy because the materials that are permanently discarded in a landfill must be replaced by new materials. This requires extensive and often environmentally damaging mining, transporting, and manufacturing activities that produce additional contamination. Recycling, when done in an environmentally friendly manner, prevents the loss of these valuable materials by keeping them in the manufacturing stream. It also helps our efforts of attaining a sustainable future.

CEPs contain the materials listed in Table 1, below.

² Toxicological Profile For Cadmium, U.S. Department Of Health And Human Services Public Health Service, Agency for Toxic Substances and Disease Registry, July 1999, <http://www.atsdr.cdc.gov/toxprofiles/tp5.pdf>, downloaded 10/1/07

³ Multi-Year Plan For Endocrine Disruptors (FY2007-2013), Office Of Research And Development

Us Environmental Protection Agency Draft, August 2007. Filby, AL, T Neuparth, KL Thorpe, R Owen, TS Galloway and CR Tyler. Health impacts of estrogens in the environment, considering complex mixture effects. Environmental Health Perspectives, in press. September 5, 2007

Table 1

Reported material recovered by electronics recyclers in the United States.	
[In thousands of metric tons. Modified from National Safety Council (1999) and Sean Magaan (Noranda, Inc., Micro Metallica Corp., oral commun., 1999)]	
Type of material	1998
Glass	13.2
Plastic	6.5
Metals	
Aluminum	4.5
Steel	19.9
Copper	4.6
Combined precious metals (gold, palladium, platinum, and silver)	0.001
Other	3.6
Total	52.3
http://pubs.usgs.gov/fs/fs060-01/fs060-01.pdf	
Downloaded from USGS 9/10/07	

Mining Reduction and Resource Conservation

The electronics industry relies heavily on the mining industry for all of its metal components. Metals come from ores where the metal itself is only a small percentage of the total volume of the material that is mined. Even mining operations using responsible methods create massive disruption of the parent ore body and the surrounding environment. Frequently, many tons of ore must be removed and processed to extract a few ounces of metal. This situation is especially true in the case of gold and other rare elements.

Where less than responsible mining methods are used, the damage to the environment and health impacts can be more serious. Prime examples are the small gold mining operations that are common throughout much of South America. These operations frequently use a mercury amalgamation process that releases large amounts of mercury into the environment where it can contaminate soils and waterways. As discussed above mercury generates significant health effects for wildlife and humans.

Finally, shortages of natural supplies make the conservation of resources more valuable over time. Recycling reduces the damage to the environment and the amount of raw materials that are extracted from the earth.

Recycling Facilities

Many landfill and transfer station operators across the state have started to reject CEPs to prevent contamination. Many local governments have adopted ordinances banning disposal of CEPs. This has caused a rapid increase in the number of CEPs coming into recyclers. There are now an estimated 119 collection entities with over 169 collection sites statewide that are currently accepting CEPs. This service generates recycling of over 22 million pounds⁴ of CEPs per year.

4 Reported recycling total tonnage for CEPs in Washington. Survey data June 2007.

Ecology estimates that between 2003 and 2010 the number of obsolete CEPs in Washington State will be:

- 4.5 million personal computers,
- 3.5 million cathode ray tube monitors, and
- 1.5 million flat panel monitors.

Ecology expects the amount of recycled CEPs to increase to 56.5 million pounds after we implement the rule.⁵ This rule will allow recyclers to treat CRTs that come from households (small quantities) along with those that come from businesses (large quantities). Without this rule, recyclers would have to separate the waste streams and they would be required, under the dangerous waste rule, to treat all of the streams mixed with CRTs as dangerous waste. Recyclers can always keep wastes separate. This rule will make it easier for recyclers merge the waste streams because the CRTs will be exempt.

This rule will also take advantage of a federal exemption for cathode ray tubes (CRTs) that, once adopted by states, will allow recycling of CRTs to continue and increase. This will be an advantage to businesses who are dangerous waste generators when they discard CRTs.

Without this rule, recycling will be an increased financial burden on Washington citizens, small businesses, and landfills. This rule implements the law and the law transfers the cost of recycling CEPs to the companies that manufacturer the CEPs.

The law and the rule provide a net savings for Washington.

Scope of analysis

This analysis reviews the annual costs including the costs of Phase 1 and Phase 2 of this rule-making process. The analysis covers both capital and annual costs. Capital costs are annualized on a 20-year basis.

Comparison of the current and amended rules

Current rule requirements

Ecology is writing the rule in two phases. We have already implemented Phase 1 of the rule . During Phase 1, Ecology adopted rules that:

- Require manufacturers, collectors, and transporters of CEPs to register with Ecology.
- Sets a fee structure and payment schedule for manufacturers.
- Require mandatory brand labeling of all CEPs.

This analysis covers the costs of both phases of adoption.

⁵ It is unclear at this time what the relative share of CEPs from business vs. residences will be. Given that a larger share of the TVs may come from homes, Ecology believes at least 45% of the pounds will be residential. However, the share for residences could be much higher.

Description of changes

For Phase 2 of the rule making, Ecology is adopting the rest of the requirements of the new law. This includes:

- Recycling plan submittal
- Plan review and content
- Program implementation
- Return share and equivalent share calculations
- Direct processor registration and standards
- Registration and performance standards for collectors and transporters
- Exemption from the Dangerous Waste Rule for recycled cathode ray tubes

Baseline for Analysis

The Electronic Product Recycling law, RCW 70.95N, the existing electronic product recycling rule (WAC 173-900), and the existing Dangerous Waste Rule (WAC 173-303) form the baseline for this analysis. Existing federal and state laws and rules regarding disposal of solid waste, dangerous waste, and electronics also form part of the baseline. However, this analysis covers the costs and benefits of the law and the rule. The reason for this is that the law creates the benefits but those benefits cannot be realized without the rule to implement the law.

Law – RCW 70.95N, Electronic Product Recycling

The law includes many detailed requirements, which Ecology must follow. Most of the rule is drawn word for word from the law.

Existing rule – WAC 173-900

The existing rule outlines the:

- Definitions for words within the rule.
 - Registration process for manufacturers, transporters, and collectors.
 - Administrative fees.

Existing dangerous waste rule – WAC 173-303

The current Dangerous Waste Rule would require generators to designate CEPs as dangerous waste.

Analysis of Compliance Costs for Business

This SBEIS is atypical in that the costs to all the affected sectors are going to be borne by the Plans and the manufactures who are members of the plans. Therefore, for each major requirement in the rule the total costs are calculated. The plans will be responsible for paying for their total return share. Therefore, this SBEIS uses the return shares for each manufacturer multiplied by the total cost to estimate the cost per employee for small and large business. A more typical measure is provided for one small company that is no longer going to continue processing.

Costs for collectors

Ecology did a survey of existing collectors and analyzed their costs. Then we extrapolated to all collectors based on the assumption that there must be at least 88 collection sites throughout Washington State that do collection for a plan (see the map in figure 1, below).

There may be other collection sites that do not collect for a plan. The law requires that there must be at least one service in each county of the state as well as in cities with a population of greater than ten thousand.

Collection facilities responding to the survey reported they would need the plans to pay the collectors at the rate of \$0.27 per pound for their collections. It is not clear what rates the plans will negotiate with their collectors.

Staffing collection site during operating hours: The rule requires staffing during collection times. Only one of the surveyed collection sites reported they had an honor system for dropping off CEPs. All other facilities staff their collection sites during operating hours. However, this one facility recently decreased its hours of operation instead of adding more staff. They therefore meet the requirement without added costs.

Storage facilities: The new rule requires every collection site to store CEPs in enclosed storage areas that are protected from the weather and have solid floors. Alternatively they must place the CEPs in a container designed to reduce the risk of contamination from glass and other fine solids from the CEPs. Currently, about 5% of collection sites do not have this type of storage area. Ecology estimates it will cost those facilities a total of \$21,000 to install the proper type of storage. The use of trucking containers for storage, as allowed by the rule, may decrease these costs.

Annual registration: The rule requires annual registration. Ecology estimates it will cost collectors about \$80 each to submit their annual registration using the electronic registration process. This is a total of about \$7,000 for all facilities.

Registration updates: The rule requires collectors to notify Ecology within fourteen days when there is a change to the information provided with their registration. Ecology estimates, on average, that each collector will have about 4 registration updates per year. Assuming a cost of \$50 per hour⁶ and 30 minutes to submit these changes, Ecology estimates a total cost of \$8,500 a year for collector registration updates.⁷

Documentation of CEPs: The rule requires that the plans must collect data on what county each CEP comes from and then provide this information to Ecology. For this analysis, Ecology assumes this cost will accrue to the plans via activity at the collection sites. Ecology expects it will cost an average of \$4,000 per site. Most of the sites however will be located within a large city within a county and it should be obvious that the CEP is from that county. The rule will not require those counties to collect this data. Ecology has identified twenty counties where this assumption cannot be made and the sites will need to collect data so they can report it to Ecology. These counties do not contain a city of 10,000. The total cost for those 20 counties to meet this requirement will be \$80,000.

⁶ The mean wage in Washington for first line supervisors/managers is \$22.29/hr. We assume employer cost for benefits, management: \$13.43/hr for a total of \$35.72/hr. This is rounded up to \$50 to account for collection site overhead. This estimate may be high. In a setting where someone working for the collector may be under utilized because they are waiting for customers, there may be excess hours of “down time” that can be applied to this work.

⁷ $(\$50/\text{hour}) \times (0.5 \text{ hours}) \times (3.9 \text{ updates/year}) \times (88 \text{ collectors}) = \$8,563/\text{year}$ for collector registration updates

Posting information at collection sites: Recycling plans are required to provide information to collectors for them to post in a visible location at their sites. This is to inform covered entities of how and where CEPs received into the program are recycled. The cost of this is minimal.

Lost revenue from charges to drop off CEPs: When Ecology implements this rule, collection sites will no longer be allowed to charge consumers if the collectors are charging a plan for the CEP. This will affect 95% of the collectors, who currently charge to take CEPs. Prices reported now range from:

- \$5.00-\$19.00 or \$0.35-\$1.00/lb for monitors and \$0.40/lb for laptops.
- \$20 and up for televisions.

This is a loss of \$59,000 per year, per facility, for a total of \$4.9 million.⁸

Lost revenue from foregone sales of reused parts: This rule will require collectors to stop stripping parts from CEPs for reuse in order to participate in the program. 29% of these collectors currently do this. Ecology estimates a \$15,000 loss for each of these collectors and a total loss of about \$375,000. The income is not lost to Washington because the rule transfers this income from the collectors to the processors.⁹

Lost revenue from foregone sales of recyclable parts: This rule will require collectors to stop stripping parts from CEPs for recycling to participate in the program. 43% of these collectors currently do this. Ecology estimates a \$13,000 loss for each of these collectors and a total of about \$500,000. The income is not lost to Washington because the rule transfers this income from the collectors to the processors.¹⁰

Plan participation: The plans will hire and pay the collectors to collect CEPs for them. Thus, a cost to the collectors will become a cost to the plans. Collection sites will be reimbursed to participate in a plan; the respondents estimated that they want to be reimbursed \$0.27/lb. This is a higher rate than would be necessary to recover the costs the respondents discussed and may indicate a desired profit margin. It is not clear why the respondents estimated the necessary reimbursement as being this high. Ecology estimates 1 million units, weighing 56.5 million pounds, will be collected in the first year. Ecology expects the total reimbursement the collectors will ask for, including the income transfer, to be \$15.1 million.

Will plans pay? As stated earlier, collectors said they need to get a high value of \$0.27 per pound from the plans. Ecology believes it is unlikely that the plans will be able to pay that much to the collectors. This is because there is a cap on total costs in the law and the plans must also pay to recycle and transport CEPs. The cap is \$.50 per pound for collection, transport, and processing. If they fail to collect enough CEPs they have to pay \$.50 to other plans to do the collection for them. Thus, the collectors will have to share the \$.50 per pound with the transporters and processors. Further, the plans will not want to collect more than their share because Ecology gets \$.05 per pound of any \$.50 per pound payments made by one plan to another. Thus, once a plan has collected and processed its share of CEPs they will

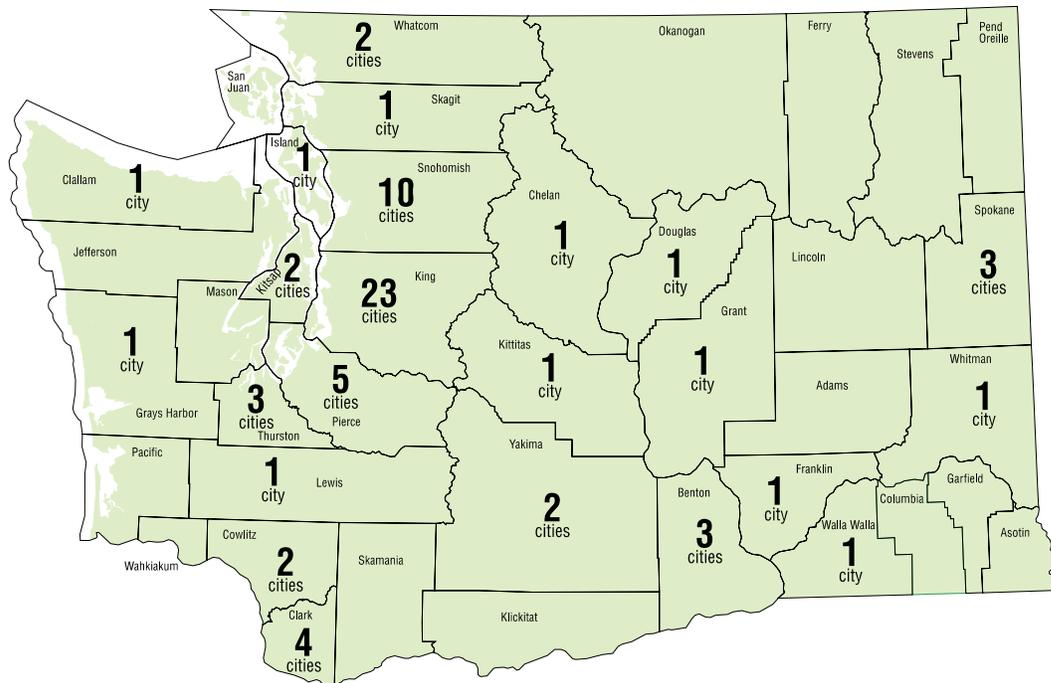
8 (95% of collectors currently charge for CEPs)*(88 collectors)*(\$58,583 revenue loss/collector) = \$4.9 million in lost revenue for not being able to charge for collection

9 (29% of collector currently strip components for resale)*(88 collectors)*(\$15,000 revenue loss/collector) = \$377,143 loss in revenue for no longer being able to strip components for resale

10 (43% of collectors currently strip components for recycling)*(88 collectors)*(\$13,333 revenue loss/collector) = \$502,857 loss in revenue for no longer being able to strip components for recycling

be unwilling to pay more than \$.45 per pound because that is all that they will be reimbursed by the other plans. Given the other costs of transportation and processing, what this limit means is that the estimated \$15.1 million cost will have to come down to under \$11.5 million in order to meet the maximum rate that the plans will be willing to pay. Since Ecology assumes this is the maximum the plans would be willing to pay, given the lowest possible costs of transport and recycling, this will be the cost.

Figure 1: Map of counties and number of cities requiring collection services



Costs for transporters

The plans will hire transporters to move CEPs from collection sites to processing sites. Therefore, costs to the transporters will become costs to the plans. Ecology surveyed a number of transporters and found that very few companies plan on transporting electronics. Additionally, those that were planning on this type of transport found it hard to estimate how much per pound they would have to be reimbursed to participate in a plan.

In another approach, the Washington Utilities and Transportation Commission estimated that it would cost between \$70 and \$83 per hour to transport electronics, an average of \$76.50/hour and therefore \$1.28/minute.

Ecology then estimated the distance from each of the 88 mandatory collection sites to the closest of 8 cities with known processors; this was then doubled to account for a roundtrip. The average roundtrip distance from a collection site to the nearest processor was 114 miles, or 138 minutes.¹¹ Multiplying the 138 minutes/roundtrip by \$1.28/minute gave an average cost of \$176.50/trip.

According to the three surveys Ecology did receive, the respondents estimated an average load of 11,833 pounds per truck load. Dividing the average per trip (\$176.50) by the average

¹¹ http://ops.fhwa.dot.gov/freight/freight_analysis/perform_meas/fpmtraveltime/index.htm average truck speed on I-5

weight per trip (11,833 pounds) gave a reimbursement of \$0.02 per pound for transporting electronics. Ecology estimates that transporters will transport over 1 million units weighing 56.5 million pounds, for a total cost of \$1.1 million.

Costs for processors

The plans will hire processors to recycle the materials. Therefore costs to the processors will become costs to the plans.

Ecology surveyed processors. Seven processors responded. Most processors currently working in Washington do more than simple processing. They offer collection or transportation services, too.

There are 3 sets of costs that require analysis.

1. The cost of continuing the processing operation as they have in the past.
2. The incremental added costs of meeting requirements which are new for the processor.
3. The foregone revenue for activities that the processor may be giving up if they do not get a contract with a plan.

Ecology estimated the cost of continuing operations based on current charges. Survey results¹² indicate a wide range of charges for processing. The reported costs range from a high of \$0.43 per pound for one company that collects, transports, and processes down to \$0.16 per pound for another company that only does partial processing but will not continue to process under the rule.

Some processors collect and process CEPs. These processors have a different cost for collection than most collectors. If you subtract the collector costs above from the costs of the processors who do both, the costs become negative. This is because they are open for business for other reasons such as repair, reuse, refurbishing, or sales of new items. Therefore, their cost per unit of collection is lower and there are no costs for transportation. This makes it difficult to decide what portion of their costs to attribute to the processing activity alone. Because of this, Ecology took their cost for collection and processing and subtracted out the \$0.02 per pound for transportation and then divided the remainder of the costs for these facilities in half, arbitrarily splitting the remaining cost between collection and processing. This produced a range from \$0.11 to \$0.22 per pound and an average cost of \$0.207 per pound for processing.

The new costs for processors

Most processors already do most of the items required in the rule. However, the rule does add new requirements for direct processors and some of these requirements were not included in the above costs for some of the processors.

For each processor the potential compliance cost is different. The items of concern included costs for:

- Registration.
- Reporting.
- Sampling.

¹² One known processor declined to respond.

- Environmental health and safety management systems.
- Buying scales.
- More space to operate their business.

These costs did not apply to every processor but produced a range of added costs from \$0.018 to \$0.05 per pound with an average cost of \$0.019. When we add this cost to the \$0.207 above, the cost rises to \$0.226 per pound. Recent information on the prices of processing indicates that processors may not be able to get enough money to cover a \$0.22 per pound cost. It is now unclear where this material will go for processing.

There is a limit to what the processors can charge the plans. The plans that sell to other countries will have very low costs or net gains depending on what is in the containers. Given this, some plans may ship to other countries. Thus, not all the new or existing flow of business will come to the American processors. This does not affect the cost of the program here in Washington but may affect the unquantified cost of contamination affecting other countries.

Existing processors report 22 million pounds of recycled CEPs annually. Ecology has extrapolated from the pounds reported by the smaller processors to an estimated 5 additional collector/processors that may exist in repair shops. This would bring the total pounds currently being processed to 23 million. The current cost of processing these pounds is about \$5.3 million (\$.226/lb). Ecology believes this is less than half of the total pounds of CEPs that will be processed under the rule. The estimated total pounds of recycling under the rule are expected to be 56.5 million. The cost of processing these pounds is about \$12.8 million.

The Washington range of costs is comparable to averaged costs reported by other states.¹³

Table 2

Cost Data from Other States				
State	Collectors	Transporters	Recyclers	All
California	\$0.20		\$0.28	\$0.48
Maine	\$0.12	\$0.06	\$0.19	\$0.37
Minnesota	\$0.17	\$0.05	\$0.04	\$0.27
Maryland: computers only			\$0.05	

One processor does not expect to be able to comply with one of the components of the processor standards. This means they will not be able to get a contract, which will reduce their annual income by about \$50,000.

Competition from exports

American recyclers currently compete with the option of offshore export of CEPs. This will not change. Due to the commerce clause in the US Constitution, Ecology must leave open the potential for export of CEPs to other countries. The plans will be responsible for showing that recycling occurs offshore. However, in some countries there are fewer compliance issues

¹³ California data from Form 220A, <http://www.ciwmb.ca.gov/Rulemaking/EWaste/Regs061127.doc>, and <http://www.ciwmb.ca.gov/Electronics/Act2003/Retailer/Fee/>. Maine data from Consolodator data and contract information for regions 1 through 4. Minnesota data from <http://www.pca.state.mn.us/oea/plugin/ElectronicsReport.pdf>

and the rule can't require recyclers in other countries to comply with Washington's rule. In addition, exporting is not just cheaper, it pays. This provides the potential for private sector economic gains from CEP export, against which most of the American processors compete.

There is an economic incentive for manufacturers to sell CEPs to offshore companies because they pay for scrap. For example, offshore companies will pay:

- \$1.50 per pound for scrap monitors. However, if they are still running they pay \$7 to \$10 per pound. The sale price for a shipping container of scrap monitors is \$2,000 to \$10,000.
- \$2.50 per pound for scrap computers. Ones in better condition may sell for \$25 each. A container load may be worth \$3,200 to \$32,000. Assuming that it costs less than \$2,000 worth of scraps to fill a container, and knowing that it costs manufacturers to process in the United States, there is a potential net gain to manufacturers for selling all types of CEPs at all levels of quality.

Further, Washington is shifting from a system where one individual pays for the recycling of their own equipment to a system where manufacturers pay for this recycling. Because it costs too much for individuals, compared to manufacturers, to export CEPs it raises the potential that manufacturers will see a net gain if they export CEPs for processing. This makes exportation a very attractive option for manufacturers.

The processors must charge the plans to do the recycling required by the rule. Manufacturers are therefore comparing the potential for a minimal net gain with the potential for a net cost as they develop their strategy and select a plan. Manufacturers who want to protect their brand names may not want to follow the path of exporting the CEPs. However, manufacturers with less known brand names don't have this issue and may choose an independent plan that finds a way to divert flow to exports. In addition, the processors must set their prices as they negotiate with the plans, knowing they are competing with net gains.

In the long term it will be hard for American processors to compete. Given this, the actual cost of the plan activities may be much lower than the processing costs estimated below. However, because it was the desire of all the parties at the table to design a program that would work within the US, the costs associated with processing in the US has been estimated as a worst-case cost.

Costs for sampling

RCW 70.95N.110 requires statistically significant sampling to determine the percentage return share by brand name. This sampling will cost the plans. The rule requires:

- Ecology to develop a quarterly schedule for when sampling is done at the facilities of direct processors used by plans.
- Plans to make sure that the processor's staff or their own supplemental staff is available to perform sampling with minimal disruption to normal operations.
- An independent third party, selected from an Ecology-approved list, to observe sampling.

Sample allocation and days

The total necessary number of samples per year to get a 95% confidence interval and a 0.005 significance level is 10,070 units. Ecology assumes that 4 plans will be conducting sampling, and that 6 processors may handle material for the plans.¹⁴ Based on the sampling method the total required days of sampling to get the sample size will be 108 days each year.

Staff labor costs

Ecology assumes a sampling crew of 5 members will be required for each sampling day, including 1 manager and 4 staff.

Mean wage in Washington for first line supervisors/managers: \$22.29/hr¹⁵
Employer cost for benefits, management: \$13.43/hr
Total: \$35.72/hr

Mean wage in Washington for material movers, hand: \$12.39/hr¹⁶
Employer cost for benefits, material moving: \$7.31/hr
Total: \$19.70/hr

Total crew cost is \$114.60 per hour. Thus the total labor cost per 8-hour sampling day is \$916.80 per day. The cost of 108 sampling days is \$99,014.40 annually.

Third party labor costs

Plans will also need to employ one third party observer per sampling day. Ecology expects the plans will compensate this person similarly to a professional statistician.

Mean wage in Washington for statisticians: \$31.55/hr¹⁷
Employer cost for benefits, professional: \$13.43/hr
Total: \$44.98/hr

The total labor cost per sampling day for third party observers is \$359.84 per day. The cost of 108 sampling days is \$38,862.72 per year.

Equipment costs

Sampling will require specialized equipment including, but not limited to, the items in Table 3 below.

Table 3

Type of Equipment	Cost
Scale (registered with Department of Licensing, 400 pound capacity)	\$1500
Dollies or other appropriate equipment for moving units	\$500
Programmable (wireless) bar code readers, printers, stickers	\$1000
Computer capable of running a sampling database program provided by Ecology	\$700
Digital camera for photographing unidentifiable units	\$200

14 Based on the plans of current processors responding to the survey.

15 Bureau of Labor Statistics

16 Bureau of Labor Statistics

17 Bureau of Labor Statistics

Maintenance and replacement costs after the first year

10% per year

Each plan will be required to supply equipment. Since these are fixed costs for each contractor, Ecology will estimate total costs assuming 4 plans must purchase and maintain equipment. Total annualized¹⁸ equipment costs are \$875 each year per plan, or a total of \$3500 each year.

Total sampling costs: \$141,000 per year.

Processor costs

The processors will have to set aside time and space for sampling. This cost will have to be wrapped into the amount a processor charges a plan and will have to be small. Only two processors discussed sampling with Ecology. One processor reported that they may not have sufficient room for sampling. Because no processor reported expected costs, the costs are unknown.

Costs for CEP recycling plans

The rule requires manufacturers to participate in a plan and set up the Standard Plan.

The rule will allow manufacturers to opt out of the Standard Plan if they receive Ecology approval to use an independent plan. Ecology assumes that manufacturers will only use an independent plan if it costs less. Therefore, the cost of the Standard Plan would be the highest cost option.

The plans must cover the cost of collection, transportation, processing, recycling, and sampling for their manufacturers. These costs are included in the sections above. Plans must also submit a plan, pay a fee for review of the plan, do record keeping, participate in public outreach, and submit reports.

Being a part of an independent plan may generate costs for manufacturers; however, no one is required to create an independent plan so these are not required by the rule. Further, Ecology assumes the manufacturers will only form an independent plan if the cost is lower than participation in the Standard Plan.

At the time of this writing, work on the Standard Plan has begun. The costs of the plan, plan review fee, record keeping, audits, public outreach, and reports are still not available for this Cost Benefit Analysis. As a placeholder, Ecology assumes these requirements will cost \$100,000 per year.

Registration costs

Ecology has tried to develop a simple registration process for the transporters, collectors, direct processors, and manufactures. Ecology estimates it will take between five minutes and two hours for each company to fill out the registration form. If Ecology assumes a cost of \$50 per hour, then it will cost between \$4 and \$200 for transporters, collectors, direct processors, and manufactures to register. Manufacturers who have many brands and collectors running more than one site will need more time to fill out the form. If 300 companies require \$75 worth of time to fill out the forms this will cost \$22,500.

¹⁸ Equipment cost is annualized based on a real discount rate of 2.1% and a return on capital of 8%.

Uncertainty and analysis results

The following variables probably generate costs that this analysis does not address.

1. Cost of CEP recycling plan

The cost of collection, transportation, processing and recycling dominates all other costs. The cost is highly dependent on the number of pounds and on how competition affects the rates the collectors, transporter, and processors charge.

For the first 5 years, the maximum cost that the manufactures will pay to the collectors, transporters and processors is \$.45 per pound. This is because the law sets the reimbursement rate for plans that do not collect their equivalent share. If the rate that collectors, transporters, and processors offer to plans totals more than \$0.50, then they will not collect or process very many CEPs. The range of costs reported by each component of recycling is large and costs will shift as the market adjusts. The market should be competitive if there are sufficient processors and costs could fall over the first few years. They will also pay \$.05 per pound for each pound that they under collect in administrative fees. Given that this will be an 11% increase in their recycling costs, Ecology assumes the plans will try to meet their equivalent shares.

2. Cost of Travel for sampling

It is unclear where the third party observers will be traveling to observe sampling activities so we did not estimate this cost.

Qualitative costs

The qualitative costs of the rule include the need for many collectors and recyclers to reorganize how they do business. This is an expensive process in terms of time and effort. For some companies their primary business is to collect and reuse parts and products. These companies also do some of the activities that constitute recycling. A few of these companies will decide to drop the recycling activity and become collectors while the rest will pay for the added requirements in the rule and will become registered direct processors. They are deciding between the added revenue from the plans for collection coupled with the loss of sales of parts for metals extraction versus the additional revenue from plan payments for recycling coupled with the cost of complying with the direct processor requirements.

Two companies are trying to figure out what new niche they can fill because they don't expect the plan payments to cover their current costs and they expect they will not be able to continue to dismantle computers in order to sell parts for recycling. One of these companies has decided they will not continue processing but the other is still considering its options.

In the case of computers, more than one processor has indicated they can sell them for recycling in other countries for more than they receive for recycling in Washington. Some may choose to do this. As stated earlier, the downstream cost of contaminant releases in other countries is not known.

Retailers will have some costs because they need to look at the Ecology web site before ordering CEPs to make sure the brand name is listed. At one time, Ecology expected there would be some costs because some companies would not list their brands. However,

compliance has been good. Retailers with new brands, who previously sold white box¹⁹ CEPs, will be in the program as manufacturers.

Quantification of Costs and Ratios

The cost of the rule will be covered by manufacturers who are members of plans. The plans may find ways to reduce the costs listed above. Ecology does not know how the plans will bill their members. The costs below assume the plans will bill their manufacturers based on each manufacturers return share. The ratio of cost per employee was calculated based on public data in Appendix 5. The impact is disproportionate as the cost per employee is much smaller for large business than for small business.

Table 4

<i>Comparison of Small and Large Business Costs of the Recycling Program</i>	<i>Cost per Employee</i>	
	<i>Small Business Costs</i>	<i>Large Business Costs</i>
Costs to Plan Members	\$715.84	\$ 0.01
Processors dropping out	\$16,700	

Actions Taken to Reduce the Impact of the rule on Small Business

Ecology considered a variety of approaches and ended with a rule that sticks very closely to the requirements in the law. Most of the costs of this rule are actually a transfer of costs from individuals, landfills, collectors, transporters, and processors to manufacturers. The legislature chose to require the manufacturers to internalize the costs of the recycling program in their overall costs of doing business because it would have the least impact on in-state retailers and their customers. Ecology has provided cost-minimizing features.

(a) Reducing, modifying, or eliminating substantive regulatory requirements:

- Processor standards evaluated early in the rule development process were very costly. These have been abandoned because most plans would probably have opted to export the waste to the third world for recycling. This could have caused bankruptcies in Washington. The processor standards have been taken from the requirements in the EPA’s Responsible Recycling Practices for Electronics Recyclers Facilitator Draft Strawproposal. This rule is the first performance standards for electronic product processors being considered for adoption by rule in the country. By using the EPA voluntary standards we anticipate that other states that follow in Washington's footsteps will adopt similar standards. This will allow Washington’s processors to compete in the national market.
- The primary locations for sampling have been shifted from collection sites to processing sites.
- The transporter standards had several costly options, which were considered. The rule does not add any additional requirements.
- Televisions and monitors would normally designate as dangerous waste. This rule will allow an exemption for processors that dismantle TVs and monitors. These are granted using an exclusion that is based on a federal exclusion from 40 CFR 261.4A, 261.39A, 261.40, 261.41, and 260.10.

¹⁹ White box is the term used in the industry for unlabeled product that can be labeled at the store.

(b) Simplifying, reducing, or eliminating record keeping and reporting requirements:

- The forms for the application process have been simplified. The forms minimize the requirements of duplicate information.
- The companies only have to submit additional information if they are requesting placement in a different Tier.
- The tier re-assignment process for most small manufacturers is much less stringent than for large businesses. Manufacturers who request to be reassigned from Tier 3 or 4 do not have to provide statistically valid market share data validated by a certified public accountant.
- Ecology has attempted to minimize time and expense for all businesses by striving to allow manufacturers, collectors and transporters to register via the internet and e-mail.

(c) Reducing the frequency of inspections:

- There is no inspection frequency specified in the rule. The primary activity prescribed in the rule is third party review of sampling that sets the return share. This activity actually protects smaller companies from entities with sufficient market share to bias the data. Ecology will select third party sampling contractors, from which the plans can choose. The third party will become accustomed to the logos and this should speed up the sampling if questions arise. One major potential cost of the rule is the possibility of moving costs from one plan to other plans by manipulating the sampling. If any plan controls more than 40% of the return share the potential gain to that plan and cost to its competitors could be over \$1 million per year. Thus the integrity of sampling is critical. The sampling portion of the rule gives the plans and processors only 24 hours notice (more notice can be given if the notice would otherwise be given on a holiday or weekend). This should reduce the ability of the individual who controls throughput to the processor to game the system by manipulating the sample which arrives at the plant.

(d) Delaying compliance timetables:

- This would not help the companies. They need to be listed as manufacturers in order to market their product.

(e) Reducing or modifying fine schedules for noncompliance:

- Fine schedules are in the RCW. No modification is possible.

(f) Any other mitigation techniques:

- The tiered fee structure that allows companies that manufacture fewer units to contribute less for the administrative costs of this rule.

The primary possible cost of this rule for those who are required to comply derives from the \$0.45 cents per pound, which is in the law, and must be transferred from plans that do not meet their equivalent share to plans that over meet their equivalent share. It is unlikely that the actual cost of collection, transport, and processing will be this high. Therefore, the transfer payment has the potential to substantially raise the cost of the rule for plans that under perform. By getting the data in immediately after samples are taken adjustments can be made by the plans to assure they meet their targets.

The Involvement of Small Business in the Development of the Rule Amendments

Ecology and the Solid Waste Advisory Committee consulted with stakeholders to gather information about the possibility of implementing and financing an electronic product collection, recycling, and reuse program. These stakeholders included small and large business that represented covered electronic product manufacturers, covered electronic product retailers, waste haulers, electronics recyclers, and charities. Other stakeholders included cities, counties, environmental organizations, public interest organizations, and other interested parties that have a role or interest in the collection, reuse, and recycling of covered electronic products.

Throughout the rule-making process for phase 1 and phase 2, Ecology encouraged participation by all entities as we considered the impacts and outcomes of the rule.. Small businesses were represented on the advisory panel that helped write the rule. This public process was open to both small and large businesses.

The NAICS Codes of Impacted Industries

This table lists the NAICS codes affected by the rule. A more detailed listing by company is in Appendix 5.

Table 5: NAICS Codes of Affected Companies

333293	33411	3343	335110	423410	45211	541511	517110	811212
333313	334111	334310	33993	423430	452112	541512	518210	811310
333315	334113	334413	339932	423620	452910	541519	522298	
	334119	334419	339999	423990	453310	541618	54511	
	334210	334613		443112		541840	5614999	
	334220			443120				

Labor Impacts

This rule is unusual in that it transfers the cost of disposal from Washington citizens, businesses, and government bodies to manufactures of TVs, Computers, and Monitors. Most of these companies are out of state. There is a net income effect for Washington households, governments, and businesses. Some of this income effect will probably be offset in the long run by an increase in the prices of CEPs.

Ecology used the 1997 OFM input output table to estimate labor impacts.²⁰ The share of the savings from not having to pay for recycling was allocated to each sector based on the share of total output. We based the share for education on the remainder of savings available. Net cost impacts for the rule were included for the additional costs created by the rule. The savings effect combined with the net cost impacts for specific sectors creates a net increase of approximately 343 jobs within Washington. It is likely that this effect is offset elsewhere by losses outside of Washington. This does not include any injection impact from cash flowing to Washington from outside Washington for recycling work done here because it is likely that the prices of electronics will have an offsetting increase over time.

²⁰ <http://www.ofm.wa.gov/economy/io/default.asp>

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[918-363567476-289395834&kw=computer%09monitor](#), Monitors (Computer), Global
I

Appendices

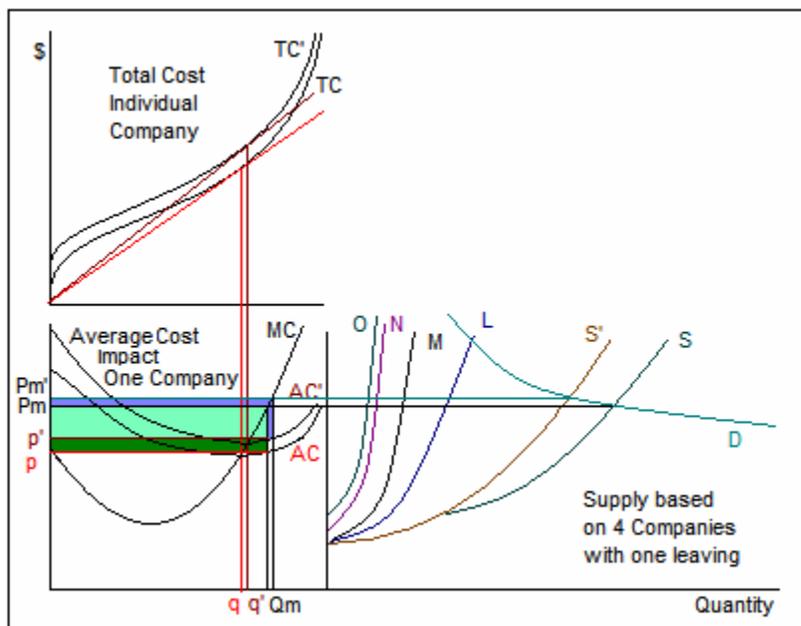
Appendix 1: Effects of a Competitive Market

In Phase 1, one commenter indicated that Ecology does not understand the market because manufactures are price takers (in other words, they have no control over market prices). The commenter described actions by other sectors and major retailers over which the company had no power. The law gives Ecology a model that places the cost on the manufacturer. However, *through the competitive market some of these costs will be shifted to the consumer.*

It is normal in a competitive market for an individual manufacture to experience market actions that indicate it has no market power. The electronics market is extremely fluid with multiple new entrants, new products, reduced prices for old products given market saturation, and major players merging every year. These factors generate significant price and quantity shifts in every reported time period.

Costs imposed on industry, especially one this fluid, will tend to be shared with the consumer. It may not appear to be so, given that demand for old product drops each year with market saturation. However, the change does take place if demand is taken as a separate phenomena, that is quality driven and unaffected by the fee. Within the theoretical structure that supports the statement that the fee will be shared with the consumer, it is important to note that the fee is *not* a marginal cost. It is a flat amount of cost added to the total cost. This flat cost adds to the average cost but does not affect the marginal cost of any additional unit unless the manufacture grows sufficiently to shift into another fee tier. Thus, in the very short run, the profit margin for a given manufacture drops. Graphic A1 below represents one scenario.

Graphic A1: Theory of Cost Allocation and Price Changes



Note: If you print this in black and white, the bright green prints as light gray, the dark green prints as dark gray, and the purple prints as medium gray.

Key:

- Graphically the profit margin drops from the bright green plus dark green areas to just the light purple area. If all manufactures stay in the market then this is the primary effect.
- Manufactures represented by supply curves labeled “N”, “M”, and “L” have lower average costs and remain in the market. “O” represents manufactures that have an insufficient profit margin to pay the fee. These manufactures may decide not to sell their product in Washington. Ecology expects these manufactures will leave the market to produce something else, then the supply at each price level will decrease, shifting from S (the original total supply curve) to S' (the total supply curve after the one company leaves). This would cause a price increase (P_m to P_m'), giving the manufactures that remain a profit increase represented by the light purple area. In terms of the net profit impact for the individual firm represented in the graphic above, it would depend on whether the pale green area is larger than the dark green area. When this happens in a market that is experiencing falling prices, such as electronics, any price increase due to a fee would merely reduce the speed with which prices fall.

Appendix 2: Current Electronic Recycling Rates

2006 Rates	Locations	Monitors	Computers (Desktop PC's)	Laptops	TV's
King County website					
Trashbusters	Seattle	\$13.00	\$10.50	\$13.00	\$27.50
3RTech, LLC		\$15.00	\$3.00	\$0.00	\$15.00
Computer Bank Charity		\$10.00	\$2.00	\$10.00	
Computer Equipment Resources	Carnation	\$10.00			
Computer Giveaway Project		\$5.00	\$9.10		
George Electronix	Bellevue	\$7.50	\$10.00	\$0.00	\$37.50
Happy Hauler	Seattle	\$12.00	\$7.80		\$21.50
InterConnection	Seattle	\$10.00	\$5.00		
Micro-Recycle		\$10.00	\$10.00		
PC-Recycle	Bellevue	\$10.00	\$1.00	\$40.00	
PC-Salvage	Tacoma	\$10.00	\$9.10		\$14.70
Philip Services Corp	Seattle, Tacoma	\$12.40	\$10.40		\$19.60
Rabanco	Seattle	\$15.00			\$35.00
Re-PC	Seattle	\$10.00	\$2.50		\$30.00
	Seattle, Tacoma, Bellevue, Bothell, Issaquah, Redmond,				
Staples	Burien, Kent	\$12.00	\$8.00	\$8.00	
Total Reclaim	Seattle	\$10.00	\$9.10	\$2.80	\$14.70
Snohomish County website					
County Recycling and Transfer Stations		\$14.00	\$10.00	\$10.00	\$23.50
City of Tacoma website					
Centerforce		\$10.00	\$10.00		
Philip Services Corp	Tacoma	\$12.40	\$10.40		\$19.60
PC Salvage	Tacoma	\$10.00	\$5.00	\$5.00	\$10.00
Staples	Tacoma	\$12.00	\$8.00	\$8.00	
Spokane					
Earthworks Recycling	Spokane	\$15.00	\$10.40	\$3.20	\$34.00
Thurston County website					
Thurston County Recycling Days	Thurston County	\$10.00	\$10.00	\$10.00	\$10.00
Thurston County Waste and Recovery Center	Thurston County	\$15.64	\$15.64	\$15.64	\$15.64
Clark County					
CREAM Recycling Program	Vancouver, Washougal	\$0.00	\$0.00	\$0.00	\$0.00
Nationwide					

2006 Rates	Locations	Monitors	Computers (Desktop PC's)	Laptops	TV's
Apple Computers			\$30.00		
Dell			\$15.00		
HP			\$23.50		
IBM			\$29.99		
Average		\$10.84	\$10.20	\$8.97	\$20.52

Note: Landfills and transfer stations charge less on average.

September 2007 Charges	Computer	Monitor	Computer and Monitor
HP	\$21	\$29	\$46
Dell (Dell products only)	\$0	\$0	\$0

2007 - Average charges at landfills and transfer stations²¹ to take CEPs

Type of CEP	Average cost	\$ per pound
Computers	\$7.67	\$0.64
TVs	\$13.81	\$0.25
Monitors	\$8.79	\$0.44

NOTE: The \$/lb depend on assumptions regarding weight. There is a trend to weight through time. For example computers are getting smaller, TVs with the same screen size are lighter with the phase out of CRTs but screen size is increasing. Thus the static numbers in the literature may be inaccurate for forecasting into the future.

21 Purdy, South Prairie, Tacoma, Puyallup, Snohomish, Thurston.

Appendix 3: Ecology Processor Survey Questions

Note to Readers:

Most processors were only able to answer part of these questions.

Data came from 7 processors.

Revised Processor Survey

Thank you for filling out this survey. It will help Ecology estimate the cost of changes to the rule.

Please put in your code _____.

If you can't answer some of the questions, please give us the information you do have.

When you answer the questions please consider all your costs including things that people usually forget such as:

- *reporting*
- *record keeping*
- *compliance costs*
- *professional services*
- *equipment*
- *supplies*
- *labor*
- *increased administrative costs*
- *lost sales or revenue*

Why are we redoing the survey?

The rule is being changed based on feedback from the last meeting. So it is likely that some things will have changed, especially for companies that were afraid they would lose a revenue source.

Some companies fear they will lose business. Therefore, as a starting point, we need to understand your current costs and revenues and how the rule will change these.

1. What is the current total value of your revenue in processing Electronic Products?
2. Do you currently take CEPs? yes _____ no _____
3. Employees: We need to estimate your costs on a cost per employee basis.
How many employees do you currently have? _____
4. What percentage of your revenue is from CEPs? How many tons per year are from CEPs?
5. What percentage of this revenue is at risk if you can't obtain a contract with a plan?
6. How much do you currently charge, on average, per pound to handle CEPs

	Retail	Public Agency	Contracts
TVs	_____	_____	_____
Monitors	_____	_____	_____
Desktops	_____	_____	_____
Laptops	_____	_____	_____

7. Please indicate which kind of CEPs you currently handle and what you do with them. If you know the approximate annual weight or number of units please write that in the blanks.

Weight	Sell for Reuse	Dismantle For Parts	Dismantle For Recycling
TVs	_____	_____	_____
Monitors	_____	_____	_____
Desktops	_____	_____	_____
Laptops	_____	_____	_____

Number of Units	Sell for Reuse	Dismantle For Parts	Dismantle For Recycling
TVs	_____	_____	_____
Monitors	_____	_____	_____
Desktops	_____	_____	_____
Laptops	_____	_____	_____

If you have dismantled for materials and feel you cannot be a processor under the rule will you opt to:

8. Be a collector and not to be a processor, you could not dismantle CEPs for materials. How would that affect your annual revenue? \$ _____
9. Not be a collector for a plan and continue doing what you are doing now and have a reduced flow of materials coming through your business? How would that affect your annual revenue? \$ _____

From here on please think about how much the rule will change your costs:

10. Do you have a certified scale? Yes _____ No _____
 How much did it cost? _____
 Would you consider using a truck scale or public scale? Yes _____ No _____ How much would it cost? _____
11. Given the following list of requirements, how much would it cost you to comply with each:
12. Do an EMS. An EMS includes the items below. Cost? \$ _____
 - Identify environmental impacts, and legal and regulatory requirements;

- Establish environmental goals, objectives and targets;
- Plan actions that work toward achieving identified goals;
- Plan for emergency preparedness and response; and
- Provide management support.
- Establish roles and responsibilities for the EMS and provide adequate resources;
- Train and assure they are capable of carrying out responsibilities
- Establish a process for communicating about the EMS within the business.
- Monitor key activities and track performance;
- Identify and correct problems and prevent recurrence; and
- Provide a measurement system that quantifies the application of the model.
- Conduct annual progress reviews;
- Act to make necessary changes to the EMS; and
- Create and implement an action plan for continual improvement.
- Have a worker safety and health management plan that conforms to a consensus-based standard covering worker health and safety such as ANSI Z10 or to a similarly rigorous in-house standard.
- Have a plan for responding to and reporting exceptional releases that could pose a risk to worker safety, public health, or the environment. Such releases include emergencies such as accidents, spills, fires, and explosions. The direct processor must submit this plan to all appropriate emergency responders— e.g., police, fire department, hospitals.
- Be conformable with ISO 14001, Institute of Scrap Recycling Industries’ Recycling Industry Operating Standards (“RIOS”), the International Association of Electronic Recyclers’ (“IAER’s”) standard, or other standards designed at a level appropriate for the processing of CEPs at the facility.
- Ensure all employees understand and follow the portions of the EMS relevant to the activities they perform.

Ensure safety and legal compliance

Capital costs _____
Labor costs _____
Consulting or professional services _____

Provide a sheltered enclosure, an appropriate catchment system, which protects CEPs and wastes from adverse atmospheric conditions and floods, which is secure from unauthorized entrance and has clearly labeled containers and/or storage areas

Capital costs _____
Labor costs _____
Consulting or professional services _____

180 day storage maximum

Capital cost _____
Labor costs _____
Consulting or professional services _____

Assure that any CEPs and CEP components to be transported are packaged in compliance with all applicable transport laws and rules

Capital costs _____

Labor costs _____
Consulting or professional services _____

Assure that you direct each material stream to a facility that employs technologies designed to accommodate all the contents of the stream in a manner protective of worker safety, public health, and the environment

Capital costs _____
Labor costs _____
Consulting or professional services _____

Direct materials that are not directed to reuse, to materials recovery unless doing so poses unacceptable risk or is not technically feasible. IE expensive is not a sufficient reason to dispose at a landfill.

Capital costs _____
Labor costs _____
Consulting or professional services _____

The following components must be removed and managed in conformance with all applicable laws.

- Mercury containing components
- Batteries
- CRTs and leaded glass
- Circuit boards

Capital costs _____
Labor costs _____
Consulting or professional services _____

How much will it cost you to not be allowed to use prison labor? _____

Reporting and Record Keeping

13. How much will it cost you to do an Annual report to the Plan? _____
- The total weight in pounds of CEPs including documentation verifying processing of that material for:
- CEPs collected, reported by county, not including CEPs gleaned for reuse or refurbishment
 - CEPs recycled
 - Non-recycled residual from CEPs
 - Final destination for the processing of CEPs and their components and final destination for disposal of residuals
 - CEPs received from each nonprofit charitable organization primarily engaged in the business of reuse and resale used by the plan
 - CEPs that were received in large quantities from small businesses, small governments, charities and school districts

14. How long do you keep your records? _____

15. How much would it cost you to keep the records for the Plan for 3 years?

Space needed _____

Labor costs _____

Appendix 4: Ecology Collectors Survey

Thank you for filling out this survey. It will help Ecology estimate the cost of changes to the rule.

Ecology will provide you a code if you wish for this information to remain confidential.

Please put in your code _____

When you answer the questions please consider all your costs including things that people usually forget such as:

- reporting
- record keeping
- compliance costs
- professional services
- equipment
- supplies
- labor
- increased administrative costs
- lost sales or revenue

We need to understand your current costs and how the rule will change your costs.

1. How many hours per week are you open for operation now? _____

2. How many employees does it take to staff the site during operating hours? _____

How many employees do you have? _____

What are the labor costs to staff the site during operating hours? \$ _____

3. Do you currently have enclosed storage areas protected from the weather and have impervious floors? YES NO

If no, how much would it cost to get this type of storage? _____

4. Given the following requirements, how much would it cost you to comply with each:

Document what county the CEP came from and provide that information to the plan.

Post recycling information provided by the plans at the collection location. _____

Submit registration via email or internet service. _____

5. We are trying to find out how many times in a year you expect to update your registration. Any changes to the following must be submitted to ecology within fourteen days of the change under this rule. How often do you expect the following things to change in a year:

- contact and location information _____
- business license information _____
- permit information _____
- description of services provided _____
- geographic areas where services are provided _____
- hours of operations _____

6. Do you currently charge to take a CEP? YES NO

If yes, under what circumstances? _____

How much do you charge? \$ _____

7. Do you offer pickup services? YES NO

If yes, how much do you charge? \$ _____

8. How much revenue will you lose from this source if you become a collector for a plan and can't charge for CEPs that are dropped off? \$ _____

9. How much will a plan need to pay per pound to persuade you to participate? \$ _____

10. Do you ever check whole CEPs to see if they work and send them somewhere for resale or resell them yourself? YES NO

If yes, how much revenue pre year will you lose if can not resell whole CEPs for the plan. You may still resell CEPs, but they can not be counted towards the plan for collection reimbursement. \$ _____

11. Do you ever check components of the CEP to see if they work and strip them for resale or reuse? YES NO

If yes, how much revenue per year will you lose if you can not resell or reuse components of CEPs that you count towards a plan for reimbursement?
\$ _____

12. Do you ever strip components for recycling? YES NO

If yes, how much revenue will you lose if you have to stop doing this in order to participate in the program? \$ _____

13. Based on your current knowledge, would you be willing to participate in this program?
 YES NO

Appendix 5: Income and Employment data from Hoovers.com

Company	Sales (mil.)	Employment	Income (mil.)	SIC Code	NAICS Code
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Company	Sales (mil.)	Employment	Income (mil.)	SIC Code	NAICS Code
3M Touch Systems	\$91.0	845		3577	334119
4th Dimension Computer	\$0.1	1		7373	541512
A-1 Best Computer	\$0.3	4		7378	811212
Abacus Office Machines	\$0.6	5		5734	443120
ABS Computer Technologies Inc	\$20.1	120		2571	334111
ACC Tech		3		5045	423430
Acer America Corp	\$0.1	1		7389	5614999
Alden Associates Redmond		20		5734	443120
America Action Inc	\$5.6	20		5064	423620
Aopen America Inc	\$15.4	70		5045	423430
APH USA, Inc.	\$9.1	30		5064	423620
APH USA, Inc.	\$0.4	3		5065	423690
Apple	\$19,315.0	16,820	\$1,989.0	3571	334111
Asus Computer International	\$30.1	130		5045	423430
AT&T Corporation	\$63,055.0	302,000	\$7,356.0	4813	517110
Audiovox Corp. c/o Levy Stopol & Camelo	\$456.7	750	\$2.9	3651	334310
Averatec Inc	\$1.4	45		5045	423430
BenQ America Corp	\$5,389.6	19,765	\$159.3	3663	334220
Best Buy	\$35,934.0	140,000	\$1,377.0	5722	443112
Broksonic c/o Hatzlachh Supply Inc	\$2.3	14		5043	423410
Brother International Corporation	\$1,425.0	1,500		5044	333313
Casio, Inc	\$13.8	350		3931	339992
Charisma Productions	\$0.2	4		8748	541618
Circuit City Stores Inc	\$12,429.8	43,011	\$8.3	5731	443112
Coby Electronics Corp	\$20.5	90		5099	423990
CommWise Inc	\$0.3	3		7379	541519
Compucare	\$19.9	87		5734	443120
CompUSA Inc				5734	443120
Computer 5 Inc	\$6.1	35		7373	541512
Computer Nut Hut	\$0.2	2		5734	443120
Computer Stop	\$0.6	5		5734	443120
Computer Technology Link	\$23.8	120		3577	334119
Computer Technology Link	\$23.8	120		3577	334119
Computers & Applications	\$0.2	3		7371	541511
Custom Computer Sales & Svc	\$0.8	6		5734	443120
CTX Technology	\$2.7	15		5045	423430
Daewoo Electronics America Inc	\$24.0	65		5064	423620
Deer Park Computer Sales & Service	\$0.1	1		7379	541512
Dell Computer Corp	\$55,908.0	66,100	\$3,572.0	3571	334111
Dex Computers & Things,LLC	\$0.2	2		5734	443120
DPI Inc	\$0.1	2		7371	541511
Eager Beaver Computers	\$0.3	2		5734	443120
Elo TouchSystems	\$32.4	300		3679	334419
Emerson Radio Corp	\$233.8	115	\$16.6	3651	334310
Envision Peripherals Inc	\$200.0	50		5045	423430

Company	Sales (mil.)	Employment	Income (mil.)	SIC Code	NAICS Code
Envision Peripherals Inc	\$200.0	50		5045	423430
Epson America Inc	\$2,645.4	832	\$107.1	3577	333315
Equus Computer Systems Inc.	\$42.9	350		3571	334111
First International Computer				3571	334111
Fourstar Group	\$4.2	25		5099	423990
Fujitsu Computer Systems Corporation				3571	334111
Fujitsu General America Inc	\$3.9	43		3663	334220
Funai Corporation, Inc.	\$1,507.4	53		5064	423620
Gateway Manufacturing LLC	\$3,980.8	1,700	\$9.6	3571	334111
General Electric Co	\$163,391.0	319,000	\$20,829.0	6159	522298
HANNspree California Inc	\$80.0	60		5064	423620
Hard Drives Northwest	\$12.9	65		5734	443120
Hewlett Packard	\$1,811.4	1,400		3571	334111
Hitachi Home Electronics America Inc	\$75.3	676		3651	334310
Hyundai Imagequest America	\$52.0	12		5065	423690
IBM	\$91,424.0	355,766	\$9,492.0	7379	541512
iiyama North America Inc	\$1.2	10		3575	334113
Imation Corp	\$1,584.7	2,070	\$76.4	3695	334613
Infotech Systems Inc	\$1.0	12		7371	54511
Initial Technology Inc	\$97.0	39		5064	423620
Itronix Corp	\$13.6	90		3571	334111
J.C. Penney Corporation Inc	\$19,903.0	155,000	\$1,153.0	5311	45211
JVC America Corp	\$25.9	980		7622	811310
Konka America Inc	\$7.0	8		7313	541840
KTV USA Inc	\$1.4	7		5064	423620
Last Stop Computers	\$0.4	2		7378	811212
Lenovo	\$365.1	19,500	\$143.6	3571	33411
LG Electronics USA Inc	\$6,448.8	2,500		5064	423620
Lux Entertainment LLC	\$53.9	431	\$1.6	3679	334419
Main Business Systems	\$0.2	2		5734	443120
Mattel, Inc.	\$5,650.2	32,000	\$592.9	3944	339932
Medion AG	\$2,992.3	1,551	\$10,895.6	3571	334111
MGA Entertainment	\$6.7	60		3942	33993
Micron Technology	\$5,272.0	18,800	\$408.0	3674	334413
Microsel Inc	\$0.1	2		7374	518210
Mirus Innovations, LLC	\$5.0	9		3571	334111
Mitsubishi Digital Electronics America	\$271.0	2,400		3651	334310
Motorola Inc	\$42,879.0	66,000	\$3,661.0	3663	334220
MPC Computers	\$285.0	680	\$58.7	3571	334111
MSI Computer	\$2,205.9	1,829		3577	334111
Ncc National Computer	\$1.0	7		5045	423430
NCR Corporation	\$6,142.0	28,900	\$382.0	3577	33411
NEC Display Solutions	\$600.0	150		3577	33411
No Nonsense Computers	\$0.1	1		7379	541512
Norcent Technology, Inc	\$160.0	35		5064	423620
Orion America Inc	\$53.9	163		5064	423620

Company	Sales (mil.)	Employment	Income (mil.)	SIC Code	NAICS Code
Osram Sylvania	\$746.7	11,200		3641	335110
Panasonic Corporation of North America	\$316.4	2,800		3679	334419
Pc Gamers Tech Inc	\$0.5	4		5734	443120
PC Recycle	\$0.1	2		7379	541512
Petters Group Worldwide	\$2,200.0	3,200		5099	339999
Philips Electronics	\$11,686.6	391,948	\$762.1	3651	334310
Pioneer Electronics (USA), Inc.	\$166.9	500		3651	334310
Planar Systems Inc	\$212.7	391	\$6.3	3577	334119
Polycom Inc	\$682.4	1,727	\$71.9	3661	334210
Port Townsend Computers, Inc	\$0.2	2		7371	541511
Premio Inc				3571	334111
Prima Technology	\$0.2	3		5731	443112
Princeton Digital (USA) Corp	\$1.2	12		3577	334119
Proview Technology Inc	\$14.1	58		5045	423430
Puget Sound Systems Inc.	\$3.0	15		5734	443120
Pyramid Distributing	\$0.3	2		5045	423430
Quality Computers & Svc	\$0.2	2		3571	334111
RadioShack Corp	\$4,777.5	40,000	\$73.4	5731	443112
Regent USA	\$2.0	5		5045	423430
Re-Pc Recycled Computers		1		5932	453310
Richman Poorman Computers	\$0.8	7		7373	541512
Ritzville Computer & Internet		2		5734	443120
Runco International	\$53.0	104		3651	3343
Samsung Electronics Co	\$78,992.7	128,000	\$7,485.0	3674	334413
SANYO Manufacturing Corp (SMC)	\$21,804.7	106,389	\$1,757.8	3651	334310
Savvy Computers	\$0.1	1		5734	443120
Sceptre, Inc.	\$14.2	100		3577	334119
Sceptre, Inc.	\$14.2	100		3577	334119
Sears Roebuck & Co	\$30,030.0	249,000		5311	45211
Sharp Electronics Corporation	\$23,786.6	46,872	\$754.1	3679	334419
Silicon Graphics Inc, SGI	\$518.8	2,423	\$146.2	3571	334111
Softline Computers & Svc	\$4.9	19		5045	423430
Sony Electronics Inc	\$2,147.5	26,000		3651	334310
Summit Computers	\$10.0	21		7379	541519
Sun Microsystems	\$13,068.0	38,000	\$864.0	3571	334111
SuperView Technology Inc	\$0.1	1		7379	541512
Syntax-Brilliant Corporation	\$193.0		\$18.9	3679	334419
Systemax Manufacturing Inc	\$18.0	100		5045	423430
Target Corporation	\$59,490.0	352,000	\$2,787.0	5311	452112
Tatung Science & Technology, Inc.	\$11.7	52		5045	423430
Tech-101 Arcus Inc	\$4.0	25		5045	423430
TLC Computer Care	\$0.2	2		5734	443120
TLCO Inc	\$0.3	2		7373	541512
Toshiba America Inc	\$133.5	2,300		3674	334413

Company	Sales (mil.)	Employment	Income (mil.)	SIC Code	NAICS Code
Twinhead Corp	\$190.3	330		3571	334111
Unisys Direct	\$5,757.2	31,500	\$278.7	7373	541512
US Micro PC Inc	\$6.0	13		5734	443120
ViewSonic Corp World HQ	\$1,200.2	647	\$8.3	3577	334119
Wacom Technology	\$6.4	50		3577	334119
Wal-Mart Stores Inc	\$348,650.0	1,900,000	\$11,284.0	5331	452910
West End Computers	\$0.1	1		5734	443120
Westinghouse Digital Electronics LLC	\$4.8	30		5065	423690
Wyse Technology	\$0.2	2		5734	443120
Xerox Corporation	\$15,895.0	53,700	\$1,210.0	3577	333293
Yamaha Corp of America	\$806.3	1,000		3931	339992
ZT Group International Inc	\$25.8	100		3571	33411