Preliminary Benefit-Cost & Least Burden Analysis
For
WAC 173-900
Electronic Product Recycling

Prepared by:

Washington State Department of Ecology

July 2006

06-07-022

Original printed on recycled paper

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Ecology welcomes comments on any part of this analysis.

Executive Summary

Ecology is proposing adoption of a new rule implementing Chapter 173-900 RCW. The proposed rule establishes requirements for a convenient, safe and environmentally sound system for collection, transportation and recycling of electronic products in Washington State. Ecology has proposed a rule re-stating and clarifying several of the requirements in the statutes. In reviewing the rule proposal, there are three specific cases that trigger further economic analysis. These areas include definitions, registration procedures for manufacturers, collectors and transporters and Ecology's interpretation of the administrative fee.

This rule has been reviewed and the direct benefits of the electronic product recycling program exceed the range of the costs for current administrative fees.

For such a program, the estimated willingness to pay is at least $5.4 million per year. This is a low value including only current levels of returns and may eventually be 3 to 6 times higher. The fee cost for Phase 1 is $475,000 for the first 18 months and $220,000 annually thereafter. This creates net benefits of $5 million in the initial year.

A least burden analysis indicates this rule is the least burdensome alternative for those who are required to comply, given the goals and objectives of the statute. During the rule-making process, Ecology considered a variety of approaches for the fee structure. The legislature chose cost internalization of the recycling program (manufacturers internalize the costs of the program in their overall costs of doing business) over other financing methods as it would have the least impact on in-state retailers and their customers.

This rule establishes the administrative fees that will be paid by manufacturers to Ecology to pay for the agency's administrative, oversight and enforcement costs. The law directed Ecology to "base this fee on a sliding scale that is representative of annual sales of covered electronic products in the state." Ecology determined that unit sales will be the basis for the administrative fee rather than dollar sales and the fee structure is composed of tiers to reduce both the cost and the amount of data gathered annually. The procedures set forth in this rule are effective for the purpose of implementing this rule.

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1. Introduction

Background

Electronic products have become an increasingly vital component of the economy and daily lives of households and businesses worldwide. Chapter 173-900 RCW provides for the recycling of covered electronic products once they are no longer wanted. This law generates benefits by reducing potential damages from hazardous components of discarded electronic products and from conservation of valuable resources that they contain.

Ecology estimates that between 2003 and 2010 more than 4.5 million computer processing units, 3.5 million cathode ray tube monitors and 1.5 million flat panel monitors will become obsolete in Washington State. If discarded improperly, these items could cause significant environmental harm. These electronic components may contain chromium, lead, beryllium, mercury, cadmium, nickel, zinc, polybrominated diphenyl ether, or other brominated fire retardants. One concern is that cathode rays contain a large amount of lead, which can be harmful to the environment if not disposed of properly through a company that has the facilities to handle such waste.

Rule Development

In 2004, ESHB 2488 directed Ecology, in consultation with the Solid Waste Advisory Committee created under RCW 70.95.040, to conduct research and develop recommendations for the implementation and financing of an electronic product collection, recycling, and reuse program. Ecology and the Solid Waste Advisory Committee consulted with stakeholders, including representatives of covered electronic product manufacturers, covered electronic product retailers, waste haulers, electronics recyclers, charities, 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.

As a result, ESSB 6428 was passed during the 2006 Washington State legislative session to become effective July 1, 2006. Due to the timeline and numerous procedures required, Ecology chose to divide the rule-making process into two phases. Phase one of the rule making will focus on the following topics:

- Manufacturer registration process
  - All manufacturers who plan to have their covered electronic products sold in or into Washington after January 1, 2007 must be registered with the Department of Ecology.
- Manufacturer fee structure and payment schedule
  - This rule specifies the fee structure and requires manufacturers to pay their fees by January 1, 2007.
- Mandatory Brand labeling
  - Manufactures must brand label covered electronic products by January 1, 2007.
- Collector and Transporter registration:

> In order to provide adequate notice to collectors, transporters, the registration form has been developed for phase 1.

Phase 2 rule making will focus on developing rules to implement the remaining portions of SB 6428. This will include: recycling plan submittal, review and content; program implementation; return share and equivalent share calculations; processor registration; standards for collectors; transporters and processors; and additional topics identified during the public involvement process. This analysis will be modified for the adoption of Phase 2.

Description and Purpose of the Benefit-Cost Analysis & Least Burden Analysis

As required under RCW 34.05, Ecology is developing and issuing this Cost-Benefit Analysis (CBA) as part of its rule adoption process. Ecology will use the information developed in the CBA, as required by law, to ensure that the proposed rules are consistent with legislative policy.

The economic impacts of the proposed rule will be considered in this analysis. Section two contains a comparison of the baseline and the proposed rule language to identify the impacts and provides a qualitative description of the benefits and costs. Section three provides a quantitative outline of costs and benefits where it was possible to obtain this information and provides a conclusion on the rule-making effort.

The benefit-cost analysis evaluates the economic efficiency of proposed regulations. This analysis will determine if the rule makes sound economic sense by weighing the benefits of undertaking the rulemaking against the additional costs. RCW 34.05.328(d) further describes the requirements under the Administrative Procedures Act:

> *"Determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented."*

The benefit-cost analysis below evaluates and analyzes the quantitative information where available and qualitative information where the economic science is not to the point of providing reliable quantitative values for benefits and costs. Uncertainty is explicitly addressed by considering a range of estimates for uncertain variables. There is no consideration of the distribution of impacts to various populations in this analysis.

The Administrative Procedure Act (Chapter 34.05 RCW) also requires that significant legislative rules be evaluated to:

> *"[d]etermine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection." (RCW 34.05.328(1)(d)).*

This determination must be documented prior to final rule adoption and included in the rulemaking record. The Least Burden analysis is also provided as part of this document.

2. Estimated Costs and Benefits

Introduction

The proposed rule re-states much of what is explicitly presented in Chapter 70.95N RCW and clarifies several aspects likely to be relevant to electronic product recycling. The three most significant changes are related to the definitions, manufacturer registration process and the administrative fee structure. Ecology has evaluated each of the proposed new rule sections and determined which are likely to have significant impacts on future applicants. These are described below along with a discussion of the baseline.

Rule Description and Baseline Development

In order to discuss the impacts of the proposed rule it is necessary to consider the proposed rule language and the baseline from which the change in requirements is measured. The baseline is Chapter 70.95N RCW. Implementation is not possible without the rule.

Rule Language which Differs from the Statute

Most of the rule merely reiterates what is in the law. The proposed rule language interpreted the law included the definitions section (173-900-030), registration requirements (173-900-200) and the administrative fee (173-900-210). The definitions and most of the registration requirements contain clarifications that will have a minor if not insignificant impact on the implementation of the rule.

Definition modifications:

An extensive definitions list was provided in the statute in section 173-900-030. The proposed rule language has added the definition of a computer, television, monitor and video display device.

Registration modifications:

Additionally, implementation methods have been defined for the registration process (173-900-200). Under the statute, manufacturers, transporters and collectors must register with Ecology.

- Manufacturer registration modifications:
    - As part of the registration form, manufacturers must provide a color graphic and word description of all brand labels of their products.
    - A definition of acceptable signors of the registration application has been added.
    - Ecology will give manufacturers 60-days notice of their registration fee before the fee is due.
    - Ecology will have a 60 day review period for the manufacturer registration application.

    - The application may be submitted by mail or electronically. Faxes will not be accepted.
- Transporter and collector registration modifications:
    - A definition of acceptable signors of the registration application has been added.
    - The application may be submitted by mail or electronically. Faxes will not be accepted.
    - Transporters and collectors that are not currently registered can submit their registration at any point throughout the year.
    - Transporters and collectors that are previously registered will need to submit their application form between July 1 and September 1 each year to control Ecology workload.

Administrative Fee Modifications:
The Administrative fee (173-900-210), has been developed according to section 23 of the statute, "Ecology must base the registration and plan review fees for manufacturers on a sliding scale that is representative of annual sales of "covered electronic products" in the State." This economic analysis examines the way Ecology chose to interpret this section of the bill.

Summary of modifications:
The definitional and registration clarifications do not cause substantive changes. The administrative fee is addressed in the cost estimation of this Cost Benefit Analysis and Least Burden Analysis.

Summary of Benefits and Costs

The estimated net benefit remaining after implementation of phase 1 is $5 million in the initial year of the program.

The law generates estimated benefits of at least $5.4 million per year. The rule generates costs of nearly $500,000 in the first 18 months. Because the law cannot be implemented and the benefits will not accrue without this rule, the costs of the rule are compared with the benefit of the law itself. The benefits quantified below represent the benefits of the law and the rule while the costs only represent phase 1 costs. In phase 2, additional electronic waste will be recycled and participation will increase. Therefore, when the phase 2 rule-making is developed, the net benefits will be re-evaluated.

Benefit Estimation

The direct benefit of this rule is the establishment of a state-wide, electronic manufacturer funded recycling program for unwanted electronic products. To estimate the value of this benefit, Ecology assessed the expenditures that individuals and businesses are paying in Washington to recycle monitors, computers, laptops and televisions in Washington State. To estimate the willingness to pay of electronic product recycling, Ecology evaluated a sampling of recycling facilities around Washington State and averaged the electronic

recycling fees. The quantity of annually disposed computers (including laptops), televisions and monitors in Washington was estimated by the Cascadia Consulting Group based on national trends extrapolated to Washington based on population. A Consumer Electronics Association survey found that 42% of households recycle their electronic waste. Given those assumptions, the estimated willingness to pay (WTP) for electronic recycling by Washington citizens is $5.4 million. The results are displayed in Table IIa. Details of the data are located in Appendix A.

This is a conservative estimate of the benefits of this rule. The program is expected to increase the share of electronic components that are recycled. This analysis does not count the gains from appropriate disposal or recycling of electronic product, which would otherwise have been disposed of improperly by individuals who were unwilling to pay a fee for appropriate disposal. This latter value would be either the cost of appropriate disposal which is imposed on others or the potential cost of the contaminants not captured by the current system. This proposed program requires that fees be collected by the manufacturers based on their market share determined by Ecology. The system allows for convenient disposal of unwanted electronics at the end of the useful life for no charge to the owners at that point. This provides no disincentive to dispose of the product responsibly, improves the chance that the product will be recycled, and creates less environmental harm. Further, in so far as there are more places to turn in the equipment, the disincentives created by travel costs associated with the delivering of the unwanted electronic product to the recycling center are reduced. Due to the time constraints of this rule, estimating these benefits is not possible. Information on this value may be available in October 2006 from Maine's new program.

Table IIa.

	Monitors	Computers (Desktop PC's)	Laptops	Televisions	Total
Recycling fees in WA (per item)	$10.84	$10.20	$8.97	$20.52	
Quantity Disposed Annually	206,105	120,416	59,182	425,910	
Quantity Recycled Annually (Assumed 42% recycling rate)[1]	86,564	50,575	24,856	178,882	
Estimated WTP for Electronic Recycling in WA	$938,147	$515,918	$223,069	$3,669,768	$5,346,862

Cost Estimation

Ecology is requesting feedback on the cost estimates during the comment period.

The majority of the costs of phase 1 of the rule are borne by the manufacturers. These costs include the cost of registering their product, and the administrative fees that Ecology will collect for manufacturer registration. There are also registration costs to companies that collect, or transport the electronic equipment.

Fees are the primary cost. These fees will cover the start-up costs of the registration implementation and two FTE's assigned to administrative and enforcement duties. The appropriated budget in the fiscal note of the bill for the initial year is $475,000. The subsequent year, the appropriated amount drops to $221,500 and will increase by the

1 *CEA Study Finds Most Unwanted Electronics Go To Secondary Users,* Recycling Today.

fiscal growth factor every succeeding year. Table IIb below displays the total Ecology will collect each year for the administrative fee.

Table IIb.

	2007	2008	2009
Appropriated to collect	$475,000	$221,500	$221,500
Fiscal growth factor			5.25%
Adjusted budget collection	$475,000	$221,500	$233,129

The administrative fee structure for annual manufacturer registration was detailed in the proposed rule. Ecology created a tiered fee schedule based on each manufacturer's segment market share of units sold for annual registration fees. The reasoning behind interpreting annual sales in terms of units is detailed in the Least Burden Analysis.

Each year, Ecology will use the best available data to determine each manufacturer's unit market share. The tiered structure is displayed below in Table IIc.

Table IIc

	Initial year administrative fee per company
Tier 1	1% or greater
Tier 2	0.1% to <1%
Tier 3	0.03% to <0.1%
Tier 4	0.01% to <0.03%
Tier 5	Below 0.01%

Ecology has tried to make the registration process as simple as possible for the companies involved. The expected time needed to fill out the registration form is estimated to be from 5 minutes to 2 hours per manufacturer. There may be some initial confusion between companies that own a brand and companies that produce the equipment. If a company owns a brand and must develop additional contracts with the companies that actually produce the equipment, then the cost may be higher.

Ecology is requesting comment on these costs during the comment period.

Uncertainty and Analysis Results

The analysis provided is potentially sensitive due to the innovative nature of this law. This is a newly established extensive electronic recycling program. The rule will affect all manufacturers of covered electronic products in Washington.

It is unclear how much companies will spend in order to establish which Fee Tier they belong in. Most companies will only spend money generating the data needed to move them out of one tier and into another, if it will save them money. Thus the maximum that is likely to be spent would be the entire fee savings (See Table IId, Column "Rounded" which shows a hypothetical set of fees and subtract the Tier a company would like to be in from the Tier that it is in). This means that a company wanting to move from Tier 1 into Tier 2 would be willing to spend up to $9,000 if they believed they be successful in convincing Ecology their Tier assignment was incorrect. A company eligible to move from Tier 2 to Tier 3 would be willing to spend up to $2000. A company eligible to move from Tier 3 to Tier 4 would be willing to spend up to $1,400. Finally a company eligible to move from Tier 3 to Tier 5 would be willing to spend up to $1,850.

In the extreme, if every company requested a Tier reassignment, the cost of the rule could double. However, since the categories are broad, it is unlikely that all the companies would spend the maximum on Tier reassignment. It is likely that small companies will estimate how many units they sell into Washington and simply tell Ecology. It is possible that a few large companies will generate certified estimates in order to move from Tier 1 or 2 to a lower fee tier. Ecology would welcome comment on what companies expect to spend in order to change their Fee Tier.

As companies move into and out of tiers, the fee for each tier will change. Two possible scenarios are displayed in Table IId. Until companies provide their unit declarations to Ecology it is not possible to know the fee for each tier.

Table IId: Fee breakdown with two scenarios

Scenario 1: 1.1 million units in Washington									
First Year									
Tier	**# Companies**	**% of Costs**	**# Units**	**Fee per unit**	**Minimum Fee per Unit**	**Maximum Fee per Unit**	**Total Collection**	**Individual**	**Rounded**
1	25	67.5%	742,500	$0.42	$0.07	$1.14	$311,850	$12,474	$12,500
2	25	20.0%	220,000	$0.42	$0.34	$3.36	$92,400	$3,696	$3,700
3	25	10.0%	110,000	$0.42	$1.68	$5.61	$46,200	$1,848	$1,850
4	50	5.0%	55,000	$0.42	$1.44	$4.32	$23,100	$462	$475
5	50	0.5%	5,500	$0.42	$0.41	$45.00	$2,310	$46	$45
Total			1,100,000				$475,860		
Second year									
Tier	**# Companies**	**% of Costs**	**# Units**	**Fee per unit**	**Minimum Fee per Unit**	**Maximum Fee per Unit**	**Total Collection**	**Individual fee**	**Rounded**
1	25	67.5%	742,500	$0.20	$0.03	$0.55	$148,500	$5,940	$6,000
2	25	20.0%	220,000	$0.20	$0.16	$1.64	$44,000	$1,760	$1,800
3	25	10.0%	110,000	$0.20	$0.82	$2.73	$22,000	$880	$900
4	50	5.0%	55,000	$0.20	$0.67	$2.00	$11,000	$220	$220
5	50	0.5%	5,500	$0.20	$0.20	$22.00	$1,100	$22	$22
Total	175		1,100,000				$226,600		
Source: Jay Shepard, Dept. of Ecology									
Scenario 2: 2.2 million units in Washington									
Initial year									
Tier	**# Companies**	**% of Costs**	**# Units**	**Fee per unit**	**Minimum Fee per Unit**	**Maximum Fee per Unit**	**Total Collection**	**Individual fee**	**Rounded**
1	18	67.5%	1,415,600	$0.21	$0.09	$0.75	$297,276	$16,515	$16,500
2	25	20.0%	440,000	$0.21	$0.17	$1.68	$92,400	$3,696	$3,700
3	32	10.0%	289,400	$0.21	$0.86	$2.88	$60,774	$1,899	$1,900
4	50	5.0%	110,000	$0.21	$0.68	$2.05	$23,100	$462	$450
5	50	0.5%	11,000	$0.21	$0.20	$45.00	$2,310	$46	$45
Total	175		2,200,000				$475,860		
Second year									
Tier	**# Companies**	**% of Costs**	**# Units**	**Fee per unit**	**Minimum Fee per Unit**	**Maximum Fee per Unit**	**Total Collection**	**Individual fee**	**Rounded**
1	18	67.5%	1,415,600	$0.10	$0.02	$0.36	$141,560	$7,864	$7,900
2	25	20.0%	440,000	$0.10	$0.08	$0.82	$44,000	$1,760	$1,800
3	32	10.0%	289,400	$0.10	$0.41	$1.36	$28,940	$904	$900
4	50	5.0%	110,000	$0.10	$0.68	$2.05	$11,000	$220	$450
5	50	0.5%	11,000	$0.10	$0.20	$45.00	$1,100	$22	$45
Total	175		2,200,000				$226,600		
Source: Jay Shepard, Dept. of Ecology									

3. Least Burden Analysis

The proposed rule is the result of a concerted effort to develop language that meets the statutory objectives while ensuring an efficient system for electronic product recycling where costs are fairly distributed across manufacturers. During development of this rule, several alternative rule processes and rules were considered.

Prior to the legislature taking statutory action, Ecology considered several alternative rulemaking processes. In addition to the fee charged to manufacturers which is being implemented in this rule, Ecology also considered consumer advanced recovery and end-of-life fees. It was determined that the companies that were manufacturing the products should be made responsible for the full life cycle cost of the product, including a safe and responsible disposal. Therefore, manufacturers will be allocated a portion of the administrative fee based on their market share determined by Ecology. These fees are expected to be embedded in the initial cost of the products and will allow covered entities to recycle the products conveniently and responsibly for "free" at the end of their useful life.

The administrative fee structure for annual manufacturer registration was detailed in the proposed rule. Under section 23 of the statute, *Ecology must base the registration and plan review fees for manufacturers on a sliding scale that is representative of annual sales of "covered electronic products" in the State*.

Ecology's interpretation of this statement in the bill was shaped by an Advisory Panel of stakeholders including representation for manufacturers, processors, collectors, retail groups, environmental non-governmental organizations and local governments. The panel showed strong support that "annual sales" in the law above would be most equitably interpreted to mean annual unit sales rather than annual dollar sales. The panel's reasoning was:

- Basing the fee on annual dollar sales penalizes higher value and often smaller, more easily recycled and less toxic and more durable products. Using sales dollars creates a disincentive to produce environmentally responsible products. One component of Governor Christine Gregiore's veto message for this law stated that she directs Ecology "To evaluate alternatives for managing legacy e-waste products in a manner that does not create competitive differences between existing and new companies, including a way to distribute costs of recycling past products more fairly among all affected parties and to evaluate the use of product toxicity in lieu of, or in addition to, product weight, when determining equitable cost shares."
- Annual unit sales rather than dollar sales reduces the disproportionate negative impact for resource responsible products that tend to be more expensive and reduces the disincentive to produce inexpensive environmentally harmful products. Therefore, annual unit sales rather than dollar sales as a basis for the fee structure more equitably represents the distribution of fees manufacturers must pay for the registration process.
- Data on dollar sales that is available from information vendors is generally based on unit sales rather than actually collecting information on dollars of sales. Therefore the data available may be more reliable if Ecology uses units sold rather than sales dollars.

Ecology considered many alternatives for the administrative fee structure:

- Charging each manufacturer their Ecology determined separate market share of both televisions and computers: It became clear that this method would require a highly detailed level market share study in Washington State as no reliable data source could be agreed on for this information.
- Charging a simple per unit fee: This was expected to generate an incentive for every party to protest fees each year. Some stakeholders argued that would have created a need for expensive data and could have had the effect of increasing everyone's fees overall.
- Tiered category approaches: The discussion indicated that this approach facilitated less debate over what fee a manufacturer would be charged.

During the rule-making process, Ecology considered a variety of approaches for the fee structure. Ecology chose to direct the fee towards manufacturers rather than create a consumer base advanced recovery or end-of life fee. Ecology also determined that unit sales will be the basis for the administrative fee rather than dollar sales and the fee structure is composed of tiers to reduce both the cost and the amount of data gathered annually. The procedures set forth in this rule are deemed to be the most effective for the purpose of implementing this rule.

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Appendix A: Current Electronic Recycling 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
Staples	Seattle, Tacoma, Bellevue, Bothell, Issaquah, Redmond, 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					
Apple Computers			$30.00		
Dell			$15.00		
HP			$23.50		
IBM			$29.99		
Average		$10.84	$10.20	$8.97	$20.52
End of life estimates (2005)		206,105	120,416	59,182	425,910
Average weight (lbs)		31	26	8	49
Quantity recycled		86,564	50,575	24,856	178,882
WTP (assuming 42% electronic recycling)	42.00%	$938,147.09	$515,918.34	$223,068.79	$3,669,768.33
Estimated WTP					**$5,346,903**