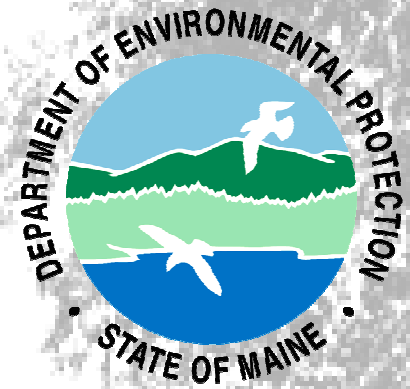




Report on Maine's Household E-waste Recycling Program

Department of Environmental Protection

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Table of Contents

I. Executive Summary	1
II. Background – Maine’s Shared Responsibility System for Household E-Waste.....	2
III. Evaluation of E-Waste Recycling Rates in Maine	4
IV. Review and analysis of state EPR programs and costs	6
A. Scope of review	7
B. Overview of cost drivers	7
C. Maine program features and cost data.....	8
D. Other states’ EPR program features and cost data	10
E. Comparative costs	16
F. Lessons for Maine’s program.....	17
V. Compliance and enforcement.....	19
VI. Recommendations for changes to Maine’s E-Waste Recycling Program	19
A. DEP administrative actions	20
B. Recommendations for the Legislature’s consideration	20
Appendix A - Participants and Process for State E-Waste Programs and Cost Review.....	23
Appendix B – Brief Comparison of State Laws on Electronics Recycling.....	25

I. Executive Summary

In 2006, Maine implemented the first electronics waste law which integrated extended producer responsibility to ensure products are recycled at the end of life. For 2010, the Legislature has directed the Department of Environmental Protection (DEP) to submit both a biannual report on the performance of the household e-waste recycling program and a one-time report reviewing the costs compared with similar programs in other states. Both reporting requirements offer the opportunity to make recommendations for changes in this program. This report addresses both reporting requirements.

The amount of e-waste recycled from households has increased significantly in each of the first three years of operation. On a per capita basis, Mainers recycled 3.20 pounds per capita in 2006, 3.61 in 2007, 4.06 in 2008, and are on track to recycle more than 6 pounds per capita in 2009. Using conservative assumptions, the DEP estimates the capture rate for household computer monitors and televisions available for recycling in 2006 at 43 and 44% respectively. This capture rate increased in 2008 to 50% of computer monitors and 51% of televisions. Municipalities are generally very satisfied with the service they receive from approved consolidators/recyclers in the program. The level of municipal satisfaction with the overall program is a bit lower. Suggestions from municipalities for improvements to the program include streamlining collection site inspection and paperwork requirements, extending the program to cover e-waste from small businesses, and expanding the State's role in promoting local collection events.

The DEP reviewed characteristics of other state extended producer responsibility programs for recycling of e-waste to understand the costs and cost drivers in the various programs and to identify opportunities for decreasing costs in Maine's program. DEP solicited input from representatives of the other state programs, manufacturers, consolidators [Universal Waste (UW) management companies that pick up small amounts of UW from collection sites, performing accounting services, and consolidate the UW into larger shipments for delivery to recyclers], recyclers, environmental organizations and municipalities. The amount of cost data is limited due to the relatively recent implementation of these laws and the manufacturers' desire to keep their cost information confidential. However, programs that have a more competitive system for establishing the costs for collection, transportation and recycling services generally have lower costs. DEP has identified two administrative initiatives it can implement this next year to introduce greater competition in setting the price manufacturers pay for these services in Maine's program, as well as one regulatory initiative to encourage more in-state processing of e-waste for recycling. Additionally, changing Maine's law to include e-waste from small businesses could drive the per pound recycling costs down due to advantages of economies of scale in transportation and recycling.

Two of DEP's major responsibilities in implementing the e-waste recycling program are to encourage and evaluate compliance of manufacturers, consolidators, retailers and collection sites, and to conduct enforcement as needed. DEP routinely offers training in the management of Universal Wastes, including e-waste, to collection site personnel, and conducts field visits to check compliance of the operations of the consolidators and recyclers. Additionally, DEP

examines products offered for sale to ensure retailers do not sell brands that are not registered or claimed by manufacturers, and conducts outreach to manufacturers when notified of delinquency in payment for recycling services. In 2007 and 2008, DEP enforcement action was limited to the issuance of Letters of Warning and Notices of Violation, which resulted in the parties coming into compliance.

As a result of reviewing program performance and other states' EPR programs and costs, and of implementing the 2009 changes to Maine's E-Waste Law, the DEP recommends the following changes to Maine's e-waste recycling program:

- DEP should implement administrative changes to increase price competition in the approval process for consolidators and to ensure consolidators receive only a reasonable rate of profit or return on investment within this program.
- DEP should amend Chapter 856, *Licensing of Hazardous Waste Facilities*, to allow electronics dismantling facilities permitted through an abbreviated licensing process to break cathode ray tubes (CRTs) under controlled conditions, which will result in a decrease in handling and shipping costs for in-state facilities that recycle CRTs.
- The Legislature should consider extending the scope of Maine's program to include covered electronic devices (e.g., TVs, computer monitors, desktop printers) from small universal waste generators.
- The Legislature should consider establishing a "de minimis" trigger to exempt manufacturers with very small amounts of information technology (IT) products in the waste stream from the annual registration fee requirement and establishing a reduced registration fee for TV/game console manufacturers with very small market shares.

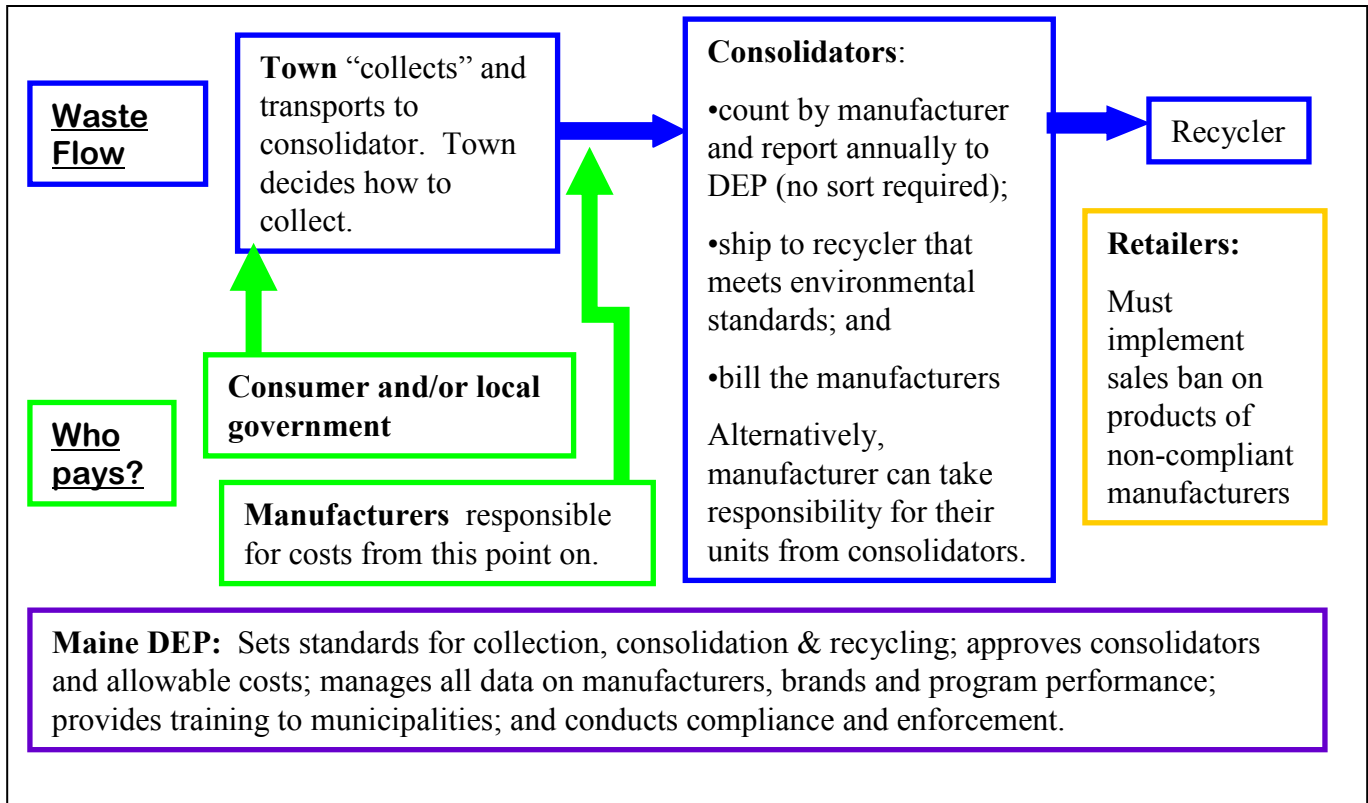
II. Background – Maine's Shared Responsibility System for Household E-Waste

This report responds to two studies requested by the Legislature. 38 MRSA §1610, sub-§8 requires the DEP to report on the recycling of electronic waste to the Natural Resources Committee every two years through 2014. The bi-annual report must include an evaluation of electronics recycling rates in the State, a discussion of compliance and enforcement related to the E-Waste Law, and recommendations for any changes in the collection and recycling of electronic devices in Maine. In addition, Public Law, Chapter 231 (LD 1156) enacted by the 124th Legislature in 2009, requires the DEP to convene a working group to identify opportunities to reduce costs in Maine's program, and to include the review results and any recommendations for changes to Maine's program in a report to the Legislature by January 15, 2010.

In 2004, Maine adopted 38 MRSA §1610 *Electronic Waste* (Maine's "E-Waste Law"). This was the first "extended producer responsibility" (EPR) law in the country which required television and computer monitor manufacturers to ensure their products are recycled at the end-of-life when generated as waste by households. This end-of-life responsibility creates financial incentives for manufacturers to design products which are less toxic and easy to recycle. It also relieves municipalities of the financial burden of disposal or recycling of this relatively new and growing waste stream. In 2009, the Legislature added desktop printers, game consoles and digital picture frames as "covered electronic devices", and created an annual manufacturer registration fee to support DEP's program implementation duties.

The household e-waste recycling system established by Maine’s E-Waste Law is designed to take advantage of the existing municipal solid waste management infrastructure as well as private sector Universal Waste management companies (consolidators). The basic responsibilities are shared as follows.

Maine’s Shared Responsibility Model for E-Waste Recycling



Maine municipalities provide their residents with collection opportunities and arrange for a DEP-approved consolidator to pick up the e-waste to be recycled. Each municipality decides whether to have on-going collection at their local or regional solid waste transfer station or recycling center, or to hold periodic one-day collections.

The DEP approved consolidators perform the accounting of information technology (IT) equipment (computer monitors and desktop printers) by brand and manufacturer, and the weighing of TVs and game consoles as needed to invoice manufacturers for transportation, handling and recycling of their products. They also annually provide their program accounting to DEP. Consolidators may send Maine’s household e-waste only to recyclers that provide certification of meeting Maine's *Environmentally Sound Management (ESM Guidelines)*.

Each manufacturer is responsible for paying the consolidators for the costs of handling, transportation and recycling of their share of covered electronic devices. Each manufacturer must provide annually register with the DEP and pay a \$3000 annual registration fee beginning July 1, 2010.

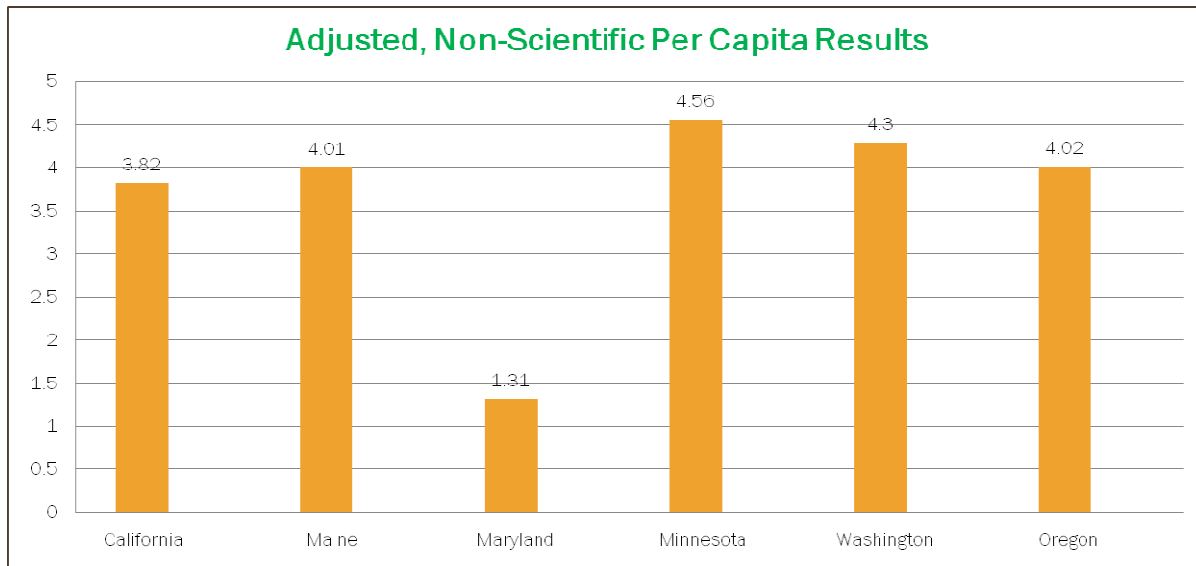
Retailers are responsible for ensuring they only sell products of manufacturers that are in compliance with Maine's E-Waste Law. DEP notifies all retailers of this responsibility, and provides them with a web site address to check the compliance status of manufacturers.

DEP is responsible for publishing the *ESM Guidelines* for recyclers, for adopting and implementing rules on allowable costs, for annually approving consolidators to participate in the program, and for annually calculating each manufacturer's recycling share. DEP also conducts education, outreach and compliance activities; assesses manufacturer, consolidator and retailer compliance with the law and regulations; and performs enforcement as needed.

III. Evaluation of E-Waste Recycling Rates in Maine

E-waste recycling rates are commonly measured by states in terms of pounds per capita annually. Based on data received to date, Maine's household e-waste program attained a recycling rate of 3.20 pounds per capita in 2006, 3.61 in 2007, 4.06 in 2008, and 6.19 pounds per capita in the first 6 months of 2009. This pounds per capita rate reflects only the televisions and computer monitors recycled. Computers (a.k.a. CPUs, the central processing unit) are often picked up and recycled by the consolidators because they have a net positive commodity value, but the weight of computers recycled is not reported because it is outside the scope of manufacturer responsibility in Maine's household e-waste recycling program.

National Center for Electronics Recycling Comparative Pounds per Capita Recycled by State



The National Center for Electronics Recycling (NCER) has calculated a comparative per capita recycling rate for several state programs. Recognizing that state e-waste recycling programs include a variety of electronic products and cover different sectors (e.g., households, small business, schools, non-profits), NCER developed factors to account for the differences in programs, and then calculated a comparative rate for each state program. The comparative

adjusted recycling rates reflect the calculated weight of televisions and computer monitors from households only in each state.

The pounds per capita metric can be useful for comparing performance between state programs (when adjusted for programmatic differences in covered electronic devices), and for evaluating year-to-year performance of a single program, but it does not reflect how much of the available e-waste is being captured. To utilize this metric, estimates of available e-waste based on average lifespan assumptions for different products are needed. For example, using an average 7 year product life, Dell estimates that in 2006 it took back 12% of its computer products originally sold approximately 7 years prior¹. USEPA performed a similar analysis in its July 2008 report *Electronics Waste Management in the United States* (EPA530-R-08-009). Based on projections prepared for this report² and market share data³, the amount of different e-waste products available for recycling from Maine households for 2006-2008 can be estimated as follows:

	Monitors - total available for recycling in U.S.	Household monitors available (48% of total)	Maine share of household monitors (0.44% of national)	Maine household monitor weight recycled	Maine monitor recycling rate
Year	Tons	Tons	Tons	Tons	
2006	662,538	318,018	1399	603	43%
2007	685,286	328,937	1447	697	48%
2008	677,935	325,409	1432	711	50%

	TVs - total available for recycling in U.S.	Household TVs available (90% of total)	Maine share of household TVs (0.44% of national)	Maine TV weight recycled	Maine household TV recycling rate
Year	Tons	Tons	Tons	Tons	
2006	846,755	762,080	3353	1477	44%
2007	910,581	819,523	3606	1645	46%
2008	951,264	856,138	3767	1927	51%

These calculated rates assume that Maine residents historically have purchase computer monitors, laptops and televisions at the average rate of all U.S. residents. Also, the weight recycled does not include products which Maine consumers may have recycled through other programs offered by manufacturers and retailers.

¹ *Current Metrics* presentation by Jason Linnell, National Center for Electronics Recycling, September 22, 2009 workshop on *Performance Measures for Electronics Recycling Programs*, Orlando FL

² Data available at www.epa.gov/osw/conserve/materials/ecycling/docs/app-1.xls

³ *Market Share Data Used by State Electronics Recycling Systems, Finding and Methodology for NCER Minnesota Market Share Weight Study*, provided to Carole Cifrino, DEP, by Jason Linnell, Executive Director, National Center for Electronics Recycling

Additional Performance Measures

Another aspect of program performance is customer satisfaction. In the Fall 2009, DEP surveyed a sampling of municipal collection site operators from across Maine. This sampling included operators from both small and large municipal sites as well as regional recycling facilities. They were asked their level of satisfaction with the services provided by the approved consolidators and their level of satisfaction with the overall e-waste recycling program. One hundred percent of respondents were either somewhat satisfied or very satisfied with consolidator services (10.5% and 89.5% respectively). The level of satisfaction with the overall program was not as high, with 63.2% responding they were very satisfied, 26.3% somewhat satisfied, and 10.5% somewhat unsatisfied. Comments included the recommendation that schools and small businesses should be included in the program, that inspection and paperwork requirements could be reduced, and that the State should take the lead on marketing and public outreach to support and promote locally offered collection events.

Program results can also be measured in terms of greenhouse gas reductions. Recycling creates commodities that are used to make new products, reducing the need for obtaining virgin materials. This conserves energy and natural resources, prevents pollution, and saves landfill space, all of which contribute to greenhouse gas reductions. Using the Northeast Recycling Council (NERC) *Environmental Benefits Calculator*⁴, in 2008 the recycling of TVs and computer monitors through Maine's household e-waste recycling program created an estimated energy savings of 87,445 million BTUs and an estimated reduction in greenhouse gases of 1248 metric ton carbon equivalents.

IV. Review and analysis of state EPR programs and costs

Public Law, Chapter 231 (LD 1156) enacted by the 124th Legislature in 2009 requires the DEP to convene a working group to identify opportunities to reduce costs in Maine's program. The study charge includes a review of the costs of collection, transportation, handling, and recycling of Maine's household e-waste program compared to costs associated with other states' manufacturer responsibility programs. During the hearing on LD 1156, a manufacturer testified that preliminary cost data from other state programs indicated that Maine's program costs to manufacturers may run high, higher even than in states where manufacturers have responsibility for collection costs as well as administration, transportation, and recycling.

The legislation requires that the working group include representation from: manufacturers for each product category, an environmental advocacy group, a recycling or consolidation business, a statewide municipal association, and other interested parties. The legislation requires DEP to include the results of the review along with any recommendations for changes to Maine's program in a January 2010 report to the Legislature. The process used to conduct this review and develop the information in this section is included as Appendix A along with a listing of all participants.

⁴ www.nerc.org/topic_areas/environmental_benefits_calculator.html

A. Scope of review

The scope of this review was limited by the number of states that have implemented EPR programs and that have actual cost data available. Minnesota's EPR program was implemented in August 2007. The IT manufacturers implemented programs in Texas in September 2008, in Oklahoma in January 2009, and in Virginia in July 2009. Washington and Oregon implemented their e-waste EPR programs starting January 1, 2009, and Rhode Island implemented its program in February 2009. Manufacturers consider cost information associated with their OR, MN, TX, OK, and VA programs as business confidential; the only cost information available for the programs in these states was provided by the Consumer Electronics Association (CEA) based on a survey of their member manufacturers conducted in the fall of 2009.

Common standards for all these programs include:

- All involved in handling waste do so in conformance with all applicable laws and regulations;
- Collection is "convenient";
- Only e-waste from covered sector(s) is collected into program;
- Recycling is performed in an environmentally-sound manner and is auditable by regulators and manufacturers; and
- Record-keeping is complete and accessible for review by regulators and manufacturers.

Only two states, Washington and Rhode Island, have more than one data point of publically-available cost data. Washington and Rhode Island were able to provide actual cost information with details of related program features from their state "standard" programs for this study. The only cost data available for other states' programs is the single data point for each as provided by CEA. Because there is more cost data available from Washington and Rhode Island, this study includes an in-depth review of the Washington and Rhode Island programs to identify features which may be driving cost differences from Maine's program. Additionally, characteristics of other state programs which may drive cost differences are also noted.

B. Overview of cost drivers

Based on discussions with manufacturers, consolidators, recyclers, and program staff from other states, the major drivers of costs in the various e-waste recycling programs reviewed include:

- The volume of e-waste available for recycling. This is dependent on the overall population and the sectors served, e.g., household, schools, small businesses, charities.
- The scope of products included in the program, e.g., TVs, monitors, CPUs, desktop printers. Each product has different handling and dismantling costs, different commodity value in the resulting materials, and different residual disposal costs (if any).
- The level of competition for providing collection, transportation and recycling services.
- The level of collection service required. Collection costs include: labor (unloading of vehicles, collection site operations), establishment and maintenance of storage capacity (building and/or enclosed containers), and proper labels and packaging (pallets, gaylords and shrink wrap) for shipment.

- Transportation cost variables, including pounds of material to be transported from collection sites per mile to be travelled to processors (a.k.a recyclers) (population density is a surrogate measure), and the distance from processors to commodity markets.
- Regulatory and administrative requirements, including handling, transportation and recycling standards, the costs of waste tracking and data recording (e.g., more data recording is required when financing is based on return share than when based on market share), financial management, and reporting requirements.

Secondary influences on program costs may include:

- Regional consumer product preferences and purchasing patterns, and storage/disposal habits (this may result in less e-waste per capita and/or lower value e-waste available for recycling);
- Regional differences in processing costs, labor costs, and other factors;
- Competition for e-waste from exporters for re-use and refurbishment;
- Administrative cost variables, including level of collector management needed (finding, hiring, overseeing, and paying collectors), number of entities billing manufacturers, timeliness of manufacturer payment;
- The amount of risk/uncertainty involved in any activity, e.g., there is greater uncertainty when an entity first participates in a program.

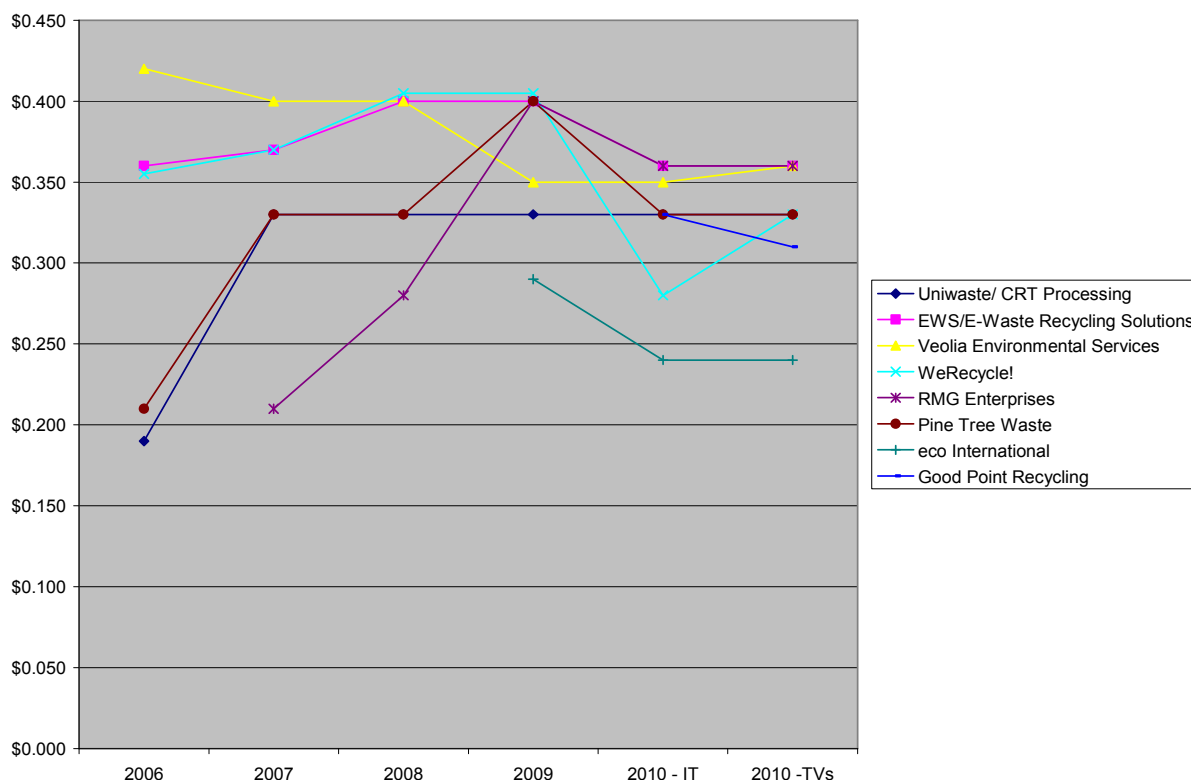
Additionally, the overall costs borne by manufacturers participating in different programs varies depending on whether the program requires them to finance a percentage of all the eligible e-waste collected for recycling (e.g., ME, RI and WA standard programs) or a set weight obligation based on a percentage of sales (e.g., MN).

C. Maine program features and cost data

There are three unique features of Maine's program which may drive some variation in costs from other state programs.

1. The price of consolidator services to manufacturers is set annually as a result of an application process administered by the DEP. In accordance with the regulations, DEP must approve consolidators that demonstrate they meet financial capacity and technical ability standards, and that in aggregate provide services to the entire state and "submit the lowest cost schedules". Because the DEP may approve up to 10 consolidators to ensure adequate and competitive pick-up services are available to municipalities, each year multiple consolidators have been approved, each with its own price schedule. As part of the application review process, DEP has allowed technically and financially qualified applicants to submit revised price schedules in order to remain competitive with other applicants. Although this process does serve to drive costs down to some extent, applicants also are able to gain a good sense of the approvable price range, and therefore may offer an acceptable price rather than their best possible price.

Approved consolidator prices per pound in Maine's household e-waste recycling program



2. Maine's system is unique in that the administration of payments for consolidation and recycling services is implemented by the approved consolidators. This means that multiple consolidators are invoicing all manufacturers. To date, each year there have been manufacturers that don't fully understand this feature of Maine's program and therefore don't make timely payments to some consolidators. This causes the consolidators to have greater administrative costs to carry outstanding receivables and expend resources to pursue overdue payments. The consolidators include this "cost of doing business" in Maine's system when proposing their price schedules.
3. The Maine program is the only state program in which manufacturers do not bear at least some responsibility for providing for collection services. In other states, the manufacturers either pay collectors for e-waste or provide for collection sites and events at which eligible e-waste is collected at no charge to consumers. In establishing the first EPR program, the Maine legislature sought to share responsibility for household e-waste recycling between manufacturers and municipalities by utilizing the extensive UW collection network already offered by municipalities to fulfill their municipal solid waste management responsibilities. Unlike some other states, in Maine's system there is no prohibition against collection sites charging a fee for drop off of electronics, i.e., collection sites are allowed to charge an end-of-life fee to help cover their operational costs.

Additional factors which contribute to cost differences for Maine's program in comparison with other states' programs include: a lower population density; lesser amounts of eligible material (Maine's program has the most limited scope of covered material, i.e., only TVs and computer monitors from households, as well as a relatively lower population); greater distances from the recyclers to commodity markets; and rigorous regulatory licensing requirements for the in-state processing of CRTs as hazardous waste.

D. Other states' EPR program features and cost data

Washington State

Manufacturer responsibility for e-waste recycling in Washington began on January 1, 2009. In Washington, manufacturers are responsible for "convenient collection," transportation, and recycling. Convenient collection is defined minimally as a collection site in every municipality with a population of 10,000 or greater and one collection site in every county, resulting in a minimum of 88 collection sites throughout the state⁵. Manufacturers can participate in the "standard program" operated by the Washington Materials Management Financing Authority (WMMFA) (a quasi-state agency established to plan and implement a collection, transportation, and recycling program for manufacturers), or may have their own plans approved by the WA Department of Ecology. The WMMFA is overseen by an 11-member Board of Directors comprised of representatives of manufacturers and retailers, with two advisory members for the Department of Ecology and the Department of Community, Trade and Economic Development. In 2009, all manufacturers participated in the standard program

Anyone who collects "covered electronic devices" (CEDs) in Washington must be registered with the Department of Ecology. To participate in the standard program, collectors must be under contract to the WMMFA, and WMMFA ensures its collector network is extensive enough to provide "convenient collection". When a collector is ready to ship material as part of the standard program, it notifies the WMMFA and provides a log of the material and who it was received from. The WMMFA reviews the information to confirm that the CEDs are eligible for the manufacturer-financed program, and provides the collector with a Bill of Lading for transport to a processor (recycler) and the contact information for a transporter; both the transporter and recycler are also under contract to the WMMFA.

Under the standard plan, the WMMFA annually determines each manufacturer's "equivalent share" obligation. This is the percentage of the waste stream for which the manufacturer must finance the collection, transportation, processing, and recycling. The WMMFA invoices manufacturers quarterly for their percentage of the amount of covered e-waste projected to be collected the next quarter, adjusted for the difference between previously invoiced projected and actual expenses. It budgets for expenses based on current contracted rates for collection, transportation, and recycling, and anticipated administrative costs as well as a built-in reserve to manage the uncertainty inherent in the art and science of cost projection. For the first quarter, the WMMFA projected a cost of approximately \$0.27 per pound plus the need for a 30% reserve, or a per pound price of approximately \$0.35. After

⁵ <http://www.ecy.wa.gov/pubs/0707031.pdf>

three quarters of activity, the WMMFA projected a per pound cost of \$0.243 plus the need for a 12% reserve, equating to an approximate per pound price of \$0.27.

Manufacturers with minimum return share may apply to the Department of Ecology for approval to implement an independent plan. To date, two independent manufacturer plans have been submitted, but neither was approved due to deficiencies in their proposed collection networks⁶. If approved, an independent manufacturer program must collect its equivalent share amount of product (established by the Department of Ecology on a return share basis). If it falls short of this goal, it incurs the projected cost of the standard program recycling (which the Department of Ecology has set at \$0.30 per pound for 2010) plus a \$0.05 administrative fee to pay the standard program cost of recycling the manufacturer's shortfall. Because standard program obligations are based on a combination of return share and market share factors, manufacturers with a return share percentage smaller than their market share actually incur a lesser material obligation if they operate an independent plan than if they participate in the standard plan. If some manufacturers implement independent programs, the manufacturers remaining in the standard program will bear the cost of recycling the difference in the manufacturers' material obligation as well as a greater portion of the cost of the statewide convenient collection system maintained by the WMMFA. This is perceived by many as a significant flaw, i.e., unfairness, caused by the program structure.

Notable features and potential issues in Washington's program which have been highlighted to DEP staff include:

- Because recyclers compete to provide the lowest possible per pound cost of recycling, they may need to process higher volumes to earn a reasonable profit.
- Manufacturers are responsible for a percentage of the waste stream – final obligations are unknown until the year has ended, i.e., manufacturers implementing independent plans do not know what their ultimate annual obligation is until after the collection period has ended.
- The WMMFA Executive Director attributes the ability of WMMFA to hold down costs in part to its authority to award business to transporters and recyclers based on the level of service they provide (turn around time to pick up from collectors, administrative efficiency) and the volume of waste it controls⁷.
- Potential weaknesses in the Washington program include the opportunity for inefficiencies and redundancies to be introduced when manufacturers implement independent plans. The fewer manufacturers participating in the standard plan, then the greater the proportional share of administrative costs borne by member manufacturers, and the lesser the negotiating leverage afforded to the WMMFA due to a reduced amount of material managed.
- There is a perceived issue of potential "leakage" of material because collectors may make a higher profit selling e-waste to be exported for re-use. Export of unprocessed e-waste has been documented by the Basal Action Network to supply e-waste to

⁶ Miles Kuntz, Washington Department of Ecology, telecom 11/30/09 with Carole Cifrino, DEP.

⁷ John Friedrich, Executive Director, WMMFA, November 17, 2009 telecom with Carole Cifrino, DEP

recycling operations in developing countries that cause worker exposure to toxics, environmental degradation, and uncontrolled land disposal of un-recycled e-waste⁸.

There are fixed features and attributes of Washington's program that contribute to a lower overall price of recycling vis-à-vis Maine and Maine's program. These include:

- Washington's population is five times greater than Maine's, therefore a greater total volume of e-waste is available for recycling.
- Washington's program covers e-waste from sectors in addition to the household sector covered by Maine's program, including school districts, small government entities, charities, and small businesses. This again provides for a greater volume available for recycling.
- Washington has a population density of 98.42, more than twice Maine's population density of 42.66 people per square mile, which can contribute to greater efficiencies in transportation.
- The scope of product to be recycled in Washington includes CPUs, which have a positive recycling value (the commodity value exceeds the costs of collection, transportation and recycling). In fact, the WMMFA contracts with processors require processors to address the value of CPUs in their price proposals to WMMFA⁹, resulting in a lower per pound cost for the entire CED waste stream.
- Washington's West Coast location precludes cross-country transportation costs on commodities shipped to Asian markets, increasing the commodity value to the processors.

⁸ See www.ban.org/E-waste/technotrashfinalcomp.pdf

⁹ John Friedrich, Executive Director, WMMFA, November 17, 2009 telecom with Carole Cifrino, DEP

State E-Waste Recycling Program Characteristics

State	Collection start date	Waste types	Covered sectors	Who runs collections?	Administrator for recycling & billing	Pounds per capita recycling rate achieved	Population served	Population density (people per mile ²)
ME	1/18/2006	TVs, monitors and laptops (desktop printers & game consoles added for 2010)	Household only	Municipalities & consolidators	Consolidator/ recycler	3.99	1,316,456	42.66
MN	8/1/2007	TVs, monitors and laptops for manufacturer obligation; desktops, printers, keyboards, fax machines & DVD players also collected	Consumers	Anyone	Manufacturers	6.46	5,220,393	65.57
OK	1/1/2009	desktops, laptops, and monitors	Consumers	Manufacturers	Manufacturers	unknown	3,642,361	53.04
OR	1/1/2009	TVs, computers (desktop and laptop), and monitors	Households, small businesses, small non-profits and anyone dropping off 7 or less items	Manufacturers with approved programs plus default state contractor program through contract administered by OR DEQ	Manufacturer Plans and state contractor program	3.9 YTD, projected to 5.17	3,790,060	39.48
RI	2/1/2009	TVs, computers, laptops, monitors	Households, and elementary and secondary schools	Manufacturers with approved programs plus default State-run Plan operated by RIRRC, a Quasi-state agency	RIDEM has responsibility for compiling statewide data on all programs and billing manufacturers for the State-run program	TBD	1,050,788	1005.61
TX	9/1/2008	Desktops, laptops and monitors, and an accompanying mouse and keyboard made by same manufacturer	Consumers	Convenient collection, free at the time of recycling: responsibility of each manufacturer	Manufacturers	unknown	24,326,974	92.92
VA	7/1/2009	Desktops, laptops and monitors	Consumers	Manufacturers or third party contractors	Manufacturers	unknown	7,769,089	196.22
WA	1/1/2009	TVs, computers (desktop and laptop), and monitors	Consumers, charities, small businesses, schools, and small governments	Independent organizations via agreements with operating Entity created by law (WMMFA)	WMMFA created by law - managed by mfg represented board	5.63	6,549,224	98.42

Rhode Island

On February 1, 2009, Rhode Island implemented a manufacturer responsibility law for the collection and recycling of waste computers (CPUs), computer monitors, and televisions from households and elementary and secondary schools. Under Rhode Island's e-waste law, manufacturers may submit their own "independent plan" to fulfill their obligations, or they may participate in the "state program".

The state program is implemented by the Rhode Island Resource Recovery Corporation (RIRRC), a public, tax-exempt entity separate from the State of Rhode Island, which is responsible for implementing a statewide solid waste management system. RIRRC also sets the collection goals for independent manufacturer plans. Dell, Sony, HP, Samsung, and the Electronics Manufacturers Recycling Management Company (a.k.a. MRM, a consortium of 16 manufacturers, including Panasonic, Toshiba, Sharp and Vizio) are implementing their own independent plans during the first program year. Any manufacturer which does not achieve its collection goals through its independent plan must participate in the state program beginning the next year, and pay the state for the recycling of its shortfall plus 10%.

Notable features and potential issues in Rhode Island's program which have been highlighted to DEP staff include:

- Rhode Island's population is just a little less than Maine's, but RI's program also covers e-waste from schools, therefore similar volumes of material may be available for recycling. However, RI's population density is 50 times that of Maine, and the average distance from collection sites to the recyclers is significantly less. Both these factors contribute to lower transportation costs.
- The RI program is also similar to the Maine program in that the IT manufacturer responsibility is based on return share, so the recycler must perform an accounting of each item by brand and weight.
- Two primary programmatic differences which can affect costs in RI as compared to Maine are:
 - RI's scope of covered products includes CPUs, which contribute a positive value to the recyclers, and
 - Manufacturers can implement their own programs.

The price per pound data available from RI's programs include the contracted price for the RIRRC-run state program, and a price point provided by the Consumer Electronics Association (CEA) based on a survey of manufacturers implementing their own plan. For the first year, the RIRRC contract awards were based on the qualifications of the firm (50%), experience (25%) and price (25%). The contracts were awarded to firms with original bid prices of \$0.309 per pound and \$0.385 per pound (although bid prices are public information, final contract prices are not). The CEA provided an "aggregated" price for the manufacturer independent plans of \$0.26 per pound¹⁰; due to confidential business information concerns, the surveyed

¹⁰ Parker Brugge, CEA, December 2, 2009 telecom with Carole Cifrino, DEP

manufacturers would not allow CEA to reveal how many manufacturer programs are included in this aggregated price.

Two major issues noted by RIRRC staff¹¹ implementing Rhode Island's program result from the law allowing independent manufacturer programs in addition to the state program. First, although the RI "state program" requires manufacturers to finance the recycling of all e-waste collected rather than a predetermined amount, independent manufacturer programs are only required to recycle a predetermined amount. Therefore, manufacturers with independent programs can focus on achieving their assigned amount rather than providing a consistent recycling service.

Second, because the state program has to provide for on-going collection operations at the Central Landfill as well as in each municipality that opts for hosting a collection site, manufacturers without independent plans bear the entire cost of the state program to guarantee convenient (local on-going) collection. Additionally, independent manufacturer programs create collection sites in the same local area. For example, MRM is collecting at U-Haul storage sites, Dell collects at Goodwill, and the state program collects at municipally-operated sites – any one town can have all three programs serving the same geographic area. This type of redundancy adds to the total collection costs in the system, and can be confusing to consumers if not all types of covered electronics or brands are accepted at each collection site.

Other states

In Oregon, the state contractor program has 33.5% of the volume, MRM has about 41%, with the remaining 25.4% managed by two other independent manufacturer programs. Collection must be convenient, with on-going collection required in each county and in each municipality with greater than 10,000 people. The state manages all finances of the state program, while the manufacturer programs independently manage their responsibilities. CEA provided an aggregated cost per pound for recycling in Oregon from their manufacturer survey of \$0.27 per pound; the State Contractor Program provided a cost of about \$0.25 per pound.

In Minnesota, manufacturers reported to CEA that they pay an average of \$0.17 per pound for recycling. However the Minnesota program differs from Maine's program in two significant ways:

- In Minnesota, manufacturer responsibility is limited to recycling a set amount of a much broader scope of product, whereas in Maine they must finance the recycling of the total amount of covered e-waste collected. In fact, during the first year of the program, manufacturers stopped picking e-waste up from and paying collection sites once they had achieved their recycling targets¹². This caused the supply of collected electronics to far outweigh manufacturers' demand, depressing the cost of recycling services below their true cost.¹³

¹¹ Mike McGonagle, RIRRC, October 22, 2009 telecom with Carole Cifrino, DEP

¹² See www.co.goodhue.mn.us/departments/publicworks/solidwaste/reinstatingfeesforresidentialwaste2009.pdf for an example of the type of notice provided by public sector collection sites when manufacturer support ceased.

¹³ Parker Brugge, CEA, December 2, 2009 telecom with Carole Cifrino, DEP

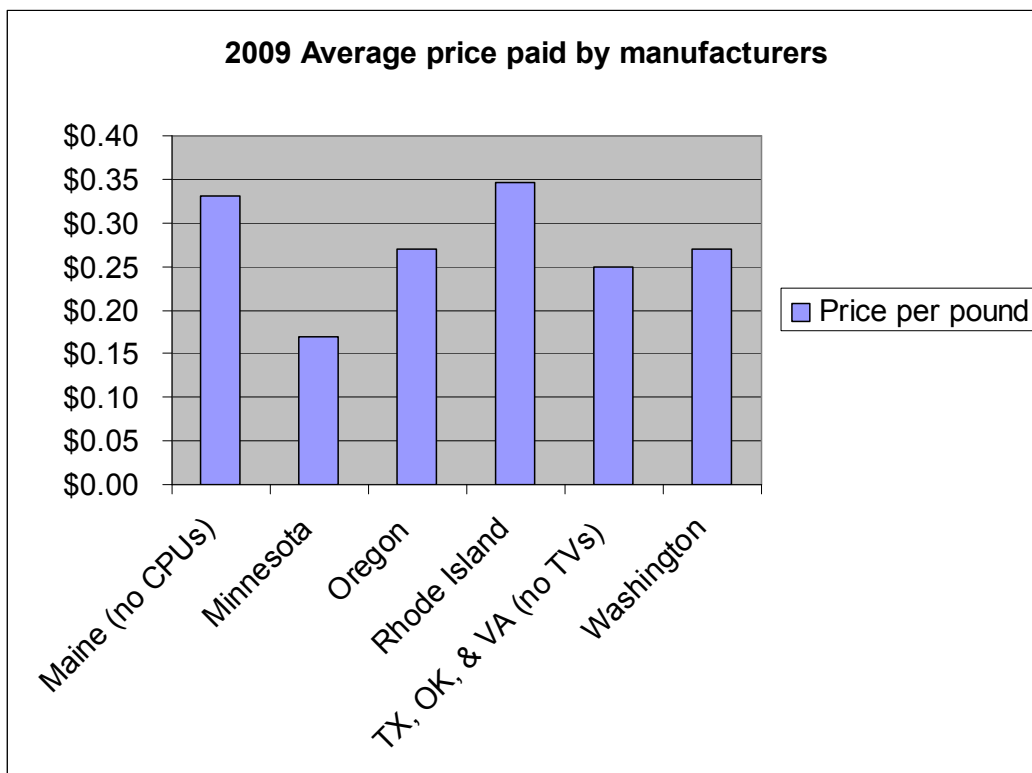
- There is no requirement for manufacturers to provide collection services throughout the state, although a premium is awarded for material collected from rural areas.

These factors can severely compromise the convenience of collection as consumers find high end-of-life fees re-instituted by collection sites at varying points in the year, and rural residents may find available collection opportunities to be few and far between.

The list of covered products in the programs in Texas, Oklahoma and Virginia include desktops, laptops and monitors. In contrast to televisions, these items have higher commodity value when recycled, and little to no residuals with associated disposal costs. CEA reports an aggregate manufacturer reported cost of \$0.25 per pound for recycling in each of these three programs.

E. Comparative costs

Currently, cost data from state EPR e-waste recycling programs is extremely limited. The average per pound recycling cost for manufacturers in Maine's program is higher than reported costs in most other states.



Minnesota has the lowest reported costs. However, there are no minimum standards for a collection infrastructure, and manufacturers are required to recycle a set amount of material rather than all the material collected. This can result in areas being underserved, as manufacturers purchase materials collected by public or private collectors sporadically as needed to meet their recycling obligations.

The next lowest reported costs are in Texas, Oklahoma and Virginia. To date these states do not include televisions in the scope of covered products. Televisions are more costly to turn into

commodities and the commodities overall have lower values than those generated from IT equipment. This significant difference from Maine's program makes any price comparison invalid.

The information from Washington State's program is more robust, but the data represents less than one full year of operations. Significant cost control is exercised in that one quasi-public authority, the Washington Materials Management Financing Authority (WMMFA), has implemented all aspects of this program to date. The WMMFA ensures that the collection network meets at least minimum statutory standards, and it controls the waste from collection sites through contracts with transporters to contracted recyclers. The WMMFA is able to use a confidential contracting process to negotiate the best price it can for services. It then invoices manufacturers for their share of costs.

The reported average per pound cost for manufacturers in Oregon's program is similar to the cost reported in Washington. The Oregon and Washington programs are similar in structure. Although there are independent manufacturer programs operating in Oregon as well as the state standard plan, there is not enough data to know how this increased competition for material may affect the per pound price for recycling services.

Reported costs in Rhode Island are similar to the prices in Maine's program. However, data is available from only the first year of program operations, when there is the greatest uncertainty about potential costs.

F. Lessons for Maine's program

The overall goal of e-waste recycling programs is to recycle the greatest amount of e-waste possible by providing for convenient collection, and cost efficient and effective transportation, recycling, and administration. Each state EPR program provides a slightly different model for achieving this goal, yet no state program has been embraced by all manufacturers and the public sector as the best program for achieving maximum recycling at the lowest possible cost.

However, it is true that costs for manufacturers in most other state EPR programs are less in comparison with their Maine program costs. Factors driving lower costs in other state programs include:

- In some states, manufacturer costs are limited because they are responsible for a pre-determined amount of material rather than a percentage of all that is collected;
- In some states, the scope of products does not include TVs, which are more costly to recycle than IT equipment alone;
- Some states have no minimum standards imposed on manufacturers for providing "convenient collection";
- All other states have shorter transportation distances from collection to recycling, and/or from recycling to the commodity markets;
- Some states have a single entity administering invoicing;
- Some states have a greater volume of material available for recycling; and
- All other state programs utilize a more competitive, confidential process for setting the price of services to manufacturers.

Because most programs have been in place for less than two years, there is insufficient data to draw any conclusions about whether making certain structural changes in Maine's program would

achieve significant cost savings while providing for collection at least as convenient as currently exists. Without making wholesale structural changes to its program, the DEP and Maine Legislature can consider administrative and legislative options to affect the last two items listed above.

One way to increase the volume of material available for recycling through Maine's program is to extend manufacturer responsibility to include covered electronic devices generated as waste by municipalities, schools, and/or small businesses. Along with gaining economies of scale by increasing the volume of material handled, this may also increase the overall value of the waste stream as e-waste generated by small businesses tends to have more commodity value than that generated by households. Although this could help decrease the per pound price for recycling, it would actually increase the overall cost to manufacturers for Maine's program.

Maine's Chapter 415 regulations, *Reasonable Costs for the Handling and Recycling of Electronic Wastes*, currently provide for annual approval of up to 10 consolidators to provide e-waste pick-up and recycling services to municipalities. To date, DEP has utilized an application process to approve all consolidators that demonstrate they have the financial capacity and technical ability to implement the statutory and regulatory requirements provided their pricing meets a mathematical standard when considered in consort with other applicants' proposed costs. This process ensures there are several consolidators available to service municipal needs, but also allows a range of prices to be charged, with those on the high end of the range significantly greater than costs in other states' programs. DEP will work with the Attorney General's office in 2010 to determine if there are other processes that can be used to increase the competitiveness of the cost approval process and/or price limits that can be imposed within the existing statutory framework without compromising the level of service currently afforded to municipalities.

Additionally, beginning July 1, 2010, DEP will receive annual registration fee payments from electronics manufacturers to support DEP's oversight of the e-waste program. This can be used to fund an in-depth audit of consolidator applicants to ensure that the profit they make from Maine's e-waste program meets the regulatory allowable costs standard of Chapter 415, paragraph 2.C(7) of "A reasonable rate of profit or return on investment".

Maine's household e-waste recycling program has supported the growth of e-waste consolidation services in Maine; two consolidators report they have collectively added more than 20 jobs in Maine to meet the needs of this program. These consolidators have also expressed interest in expanding their operations to include dismantling of the e-waste in Maine (all e-waste in the household recycling program is currently shipped out of state for processing into commodities). DEP Chapter 856, *Licensing of Hazardous Waste Facilities*, provides an abbreviated licensing process for electronics dismantling facilities. However, if a dismantling facility wants to break hazardous components, such as cathode ray tubes and mercury lamps, it must go through a very extensive full hazardous waste treatment, storage and disposal facility licensing process. Because the technology now exists for breaking of CRTs and mercury lamps under controlled conditions which prevent the release of toxics to the environment, the DEP should amend Chapter 856 abbreviated licensing process for electronics dismantling to allow the breakage of CRTs and mercury lamps provided the applicant can demonstrate that its proposed processes meet performance standards that are protective of human health and the environment. This will encourage the growth of e-waste recycling facilities in Maine, which may decrease handling and shipping costs, resulting in an overall reduction in the recycling costs for e-waste from Maine.

In summary, it is difficult to make direct cost comparisons between state e-waste recycling programs because of the variability in program structure and characteristics. Additionally other state programs have not yet been in place long enough to know how their costs and performance will change over time. There is not enough information at this point to recommend making significant structural changes to Maine's program with the intent of lowering the per pound cost paid for recycling by manufacturers in Maine's system without running the risk of diminishing Maine's program effectiveness. DEP will examine opportunities to make administrative and regulatory changes to ensure costs are competitive given Maine's low population density, geographic location, and limited amount of material included within the program. Also, DEP will continue to evaluate the costs in Maine's system vis-à-vis other state programs and the relative performance of the different programs. As state programs mature and their costs stabilize, there will be more comparative information available to assess whether additional changes to Maine's program are needed to ensure that recycling costs are commensurate with services provided.

V. Compliance and enforcement

One of DEP's primary responsibilities for implementing Maine's E-Waste Law is to evaluate compliance and take enforcement action as needed to ensure that all parties are meeting their responsibilities under the law. Parties that must comply with this law include manufacturers, consolidators, municipalities, and retailers.

DEP annually conducts outreach to all participants in Maine's e-waste program to update them on program performance and any changes to the program. With the addition of desktop printers, game consoles and digital picture frames to the scope of covered products in 2009, DEP did more extensive educational outreach to manufacturers newly subject to the law. DEP also conducts training programs for municipal personnel in proper management of e-waste to ensure protection of public health and the environment as well as worker safety. All these educational outreach activities are aimed at ensuring everyone is fully knowledgeable of and appropriately prepared to handle their responsibilities in Maine's e-waste program.

DEP compliance activities routinely include: review of products offered for retail sale to identify unregistered brands and manufacturers; review of approved consolidator operations; investigation of legal status of manufacturers, and investigation of consolidator referrals of manufacturers for non-payment. In cases of possible non-compliance, DEP contacts the alleged violator and/or conducts a field inspection to confirm the facts, and follows up with a Letter of Warning (LOW) or Notice of Violation (NOV) if they do not come into compliance. Each year of the program, the number of LOWs and NOVs issued has decreased as the familiarity of all entities with their roles and responsibilities in Maine's program has increased. Other than issuing a handful of LOWs and NOVs, no other enforcement action was necessary in 2007 and 2008.

VI. Recommendations for changes to Maine's E-Waste Recycling Program

Based on the experience of and information gained from participants in Maine's E-Waste program, DEP will implement administrative and regulatory changes, and recommends consideration of two statutory changes to the program.

A. DEP administrative actions

Administratively, the DEP will implement new processes to create greater price competition and ensure only a reasonable profit as part of the annual consolidator approval process (as discussed in Section IV above). Additionally, DEP will move forward with revisions to Chapter 856, *Licensing of Hazardous Waste Facilities*, to streamline the permitting process for e-waste processors. DEP will also continue to evaluate relative costs of different state programs to determine if additional changes are needed to ensure a cost-competitive system.

Based on the survey responses from a sampling of municipalities, DEP will seek more detailed information from municipalities concerning the amount of inspection and paperwork requirements appropriate to ensure protection of public health and the environment for municipal collection sites handling e-waste.

B. Recommendations for the Legislature's consideration

Two changes for the Legislature to consider are whether to include e-waste from the non-household sector in the program, and whether to establish a cut off and/or lesser registration fee for manufacturers with de minimis amounts of their product in Maine's waste stream or very low market share.

Recommendation to the Legislature: Consider extending Maine's E-Waste Program to allow recycling of e-waste from small universal waste generators to qualify for manufacturer support.

Many states have included e-waste from small businesses within the scope of their programs (Appendix B is a table compiled by the Electronics Takeback Coalition showing the parameters and requirements of the different state e-waste programs). Allowing small business e-waste into the program will increase the amount of e-waste managed at collection sites, providing for more efficient transportation. It will also provide a greater volume of e-waste managed to the recyclers, which in other state programs has been cited as key to driving down the per pound cost of recycling.

Some municipally-operated e-waste collection sites accept e-waste from business for recycling, and fund that service by charging a fee at drop off. However, many smaller municipal collection sites do not offer the service because they cannot provide both adequate staffing on site to handle money and ensure adequate oversight to manage the waste brought in by their residents. If the recycling of e-waste from small businesses was financially supported by the manufacturers, the need to collect end-of-life fees from businesses would be minimized and more municipalities would likely allow small businesses to drop off their e-waste at their collection sites. One other issue that many municipal collection sites confront is that of adequate storage space. As funds allow, the State should consider re-instituting funding for recycling infrastructure development grants to municipalities and regional recycling facilities.

The Legislature could consider two different approaches to qualifying business e-waste for Maine's shared responsibility system. One approach would be to add covered electronic devices from any Small Universal Waste Generator (SUWG) (i.e., any business that accumulates 200 or less universal waste items at a time or in any given month) to the program. When a SUWG is ready to send its covered e-waste for recycling, it would have three options for appropriately managing that waste:

- 1) contact and pay any UW management company the market cost for transportation and recycling outside of Maine's EPR system (as they currently do);
- 2) transport the e-waste to a municipal collection site to be recycled as part of Maine's EPR program along with the household e-waste (municipal collection sites will still determine whether they will accept business e-waste based on their ability to handle the increased volume); or
- 3) contact a consolidator approved to work within Maine's EPR program to pick up the waste (the consolidator may charge the SUWG a transportation fee as the SUWG would not generate enough e-waste at its facility to require full manufacturer funding of transportation to the consolidator's facility).

The second approach to consider is to limit manufacturer responsibility for recycling of e-waste from SUWG to the business e-waste collected through municipally-owned collection sites or municipally-contracted collection events. SUWGs would then have the option of transporting their e-waste to a municipal collection site or event that will accept it from small businesses as part of Maine's EPR program, or of continuing to contract with a UW management company to recycle their e-waste outside of Maine's EPR program.

Recommendation to the Legislature: Consider establishing a de minimis waste amount for IT manufacturer registration fees and a lower registration fee for TV and game console manufacturers with de minimis market share.

Due to a 2009 change in Maine's E-Waste Law, beginning in mid-2010 manufacturers will pay a \$3000 annual registration fee to help support DEP's oversight of the program. This fee applies to any manufacturer that has historically sold or is presently selling covered electronic devices into Maine. Both IT and TV manufacturers have suggested to DEP that Maine establish a trigger to exempt manufacturers from the registration fee or to provide a lower registration fee for manufacturers with de minimis sales. A few states that have annual registration fees set differing fee levels depending on the manufacturer's responsibility for products in the system, but no two of these states have the same registration fee structure.

The Information Technology Industry Council (ITIC), an IT industry trade group, has recommended that the Maine program establish a de minimis trigger for IT company registration fees based on the number of a manufacturer's product that appears in Maine's waste stream. Specifically, they proposed that manufacturers with an average of fewer than 100 devices per year based on the most recent 3 years of collection data be exempted from paying the registration fee. A review of Maine's collection data shows that this would exempt 85 out of 109 manufacturers with monitors in the waste stream. A more distinctive break in the data appears between manufacturers with 50 or fewer units in total collected over the previous three years and those with more than 50 units in total. Therefore DEP recommends setting a de minimis level to exempt monitor and printer manufacturers from paying the annual registration fee if there were 50 or fewer monitors or printers from a manufacturer collected in total in the previous three years. This will provide relief from the registration fee for manufacturers that no longer sell and/or have not sold significant quantities of covered devices for several years without exempting them from responsibility for the recycling of their product as it appears in the waste stream.

In several states, television and game console manufacturers pay a registration fee amount based on their recent sales. All except Connecticut and Wisconsin require any manufacturer that is currently

selling covered products to pay some amount. In Maine, TV and game console manufacturers with less than 0.1% market share do not carry any responsibility for paying for the recycling of their products, however they are still allowed to offer their products for sale in Maine. If the Legislature wants to consider a lesser registration fee for smaller TV and game console manufacturers, for consistency DEP recommends that the 0.1% market share be utilized as the amount below which a manufacturer's annual registration fee is set at a lesser amount.

Appendix A

Participants and Process for State E-Waste Programs and Cost Review

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Appendix A

Participants and Process for State E-Waste Programs and Cost Review

Study Process

- 3 stages : preparation, research & documentation
- Contacts through: e-mail correspondence; conference calls; meeting(s); targeted conversations with key personnel; report review and comment

Preparation phase

- Identification of key personnel from all sectors
- Outline of development process and timeline
 - DEP solicits and compiles available data on states' programs and costs;
 - DEP distributes data to participants for review and comment;
 - DEP hosts informal discussion session with participants available in the afternoon of September 22 prior to the E-Scrap conference in Orlando, FL;
 - DEP schedules additional meetings/conference calls as needed;
 - By December, DEP circulates draft review results and recommendations to participants for review and comment.
- Request for interest in participation/acting as resource

Research phase

- Review requirements of other EPR programs
 - Program parameters
 - Cost drivers
- Identify available cost data, its scope and limitations
 - Maine data
 - RI data
 - WA data
 - OR data
 - SWEEP/ACES/ESABC data (Canada)
- Circulate comparison of program requirements as cost drivers and available cost data to group for verification and identification of other relevant information
- Circulate draft study report for additional input and verification

Study instructions from Maine Legislature

The department shall conduct a review of the costs of collection, transportation, handling, and recycling of Maine's household e-waste recycling program established in 38 MRSA §1610 and of manufacturer responsibility programs implemented in other states for the purpose of identifying opportunities to reduce costs in Maine's program. The department shall include the results of this review, as well as any recommendations for changes to the Electronics Waste law and draft legislation to implement the recommended changes in the report due January 15, 2010 pursuant to 38 MRSA §1610.8.

The department shall convene a working group to assist in this review. The working group will include representation from at least one manufacturer from each product category covered by the Electronic Waste law, an environmental advocacy organization, a recycling or consolidation business, a statewide municipal association and other interested parties that may have a role in the collection and recycling program. The Joint Standing Committee on Natural Resources is authorized to submit legislation to amend Maine's Electronics Waste law to the Second Regular Session of the 124th Legislature.

Appendix B

Brief Comparison of State Laws on Electronics Recycling

ELECTRONICS **TakeBack** COALITION www.electronicstakeback.com

Updated Oct 26, 2009

State	Date Law Signed	Program Collection Start Date	Scope of Products Covered	Who Gets Free Recycling?	Who Pays	Language on Toxics?	Goals or targets for collection	Includes Disposal Ban?
Connecticut	July 6, 2007	July 1, 2009 start up delayed, pending approval of Rules. Est. start now June 2010	TVs, monitors, personal computers, laptops	Consumers or any resident dropping off 7 or fewer products at once	Return Share. Municipalities arrange for collection and transportation to recyclers, Recyclers bill the manufacturers	No	State will establish statewide collection goals by Oct 2010	Yes effective Jan 2011
Hawaii	July 2008 Bill to add TVs in 2009.	Jan 2, 2010	Computers, monitors, laptops, printers covered now. NOT TVs. Bill to add TVs passed legislature, awaiting governor signature.	Consumers, businesses, non-profits. government	Manufacturers must establish plans to collect and recycle their products.	No	No	No
Illinois	Sept 17 2008	Jan 1, 2010	<u>Scope for figuring mfgr obligation:</u> Computers, laptops, TVs, monitors, printers. <u>Scope for free collection:</u> TVs, monitors, laptops, desktops, mobile phone, computer cable, keyboard, mouse, fax, MP3 player, PDA, video game console, VCR, DVD player, zip drive and scanner	Consumers	Overall statewide goal is a return share goal (increased up to 10% over previous year goal.) Converting the statewide goal into company obligations is based on market share for TV companies & return share for IT companies.	Disclosure. Companies must disclose whether their products are ROHS compliant.	Statewide goals	Yes, starting 2012
Indiana	May 13, 2009	April 1, 2010 Program year is April – March.	<u>Scope for figuring mfgr obligation:</u> video display devices (TVs, monitors, laptops). <u>Scope for free collection:</u> TVs, monitors, laptops, desktops, printers, keyboards; fax machines; VCR and DVD players	Households, public schools, small business <100 employees	Market share. Producers pay for collection, transportation, and recycling, meeting goals based on market share of video display devices sold.	Disclosure Companies must report on display devices sold exceeding the maximum ROHS levels toxics	Manufacturers must recycle amount equal to 60% of what they sold by weight in previous year. Penalties for not reaching goals start in year 3.	Yes, starting 2011
Maine	2004 Modified 2009.	January 2006	TVs, monitors, Laptops. Doesn't cover CPUs unless attached to monitors.	Households only	Producers pay for transport & recycling, some collection costs. Municipalities pay for some collection costs. IT co's split costs	No	No	Yes

Appendix B

State	Date Law Signed	Program Collection Start Date	Scope of Products Covered	Who Gets Free Recycling?	Who Pays	Language on Toxics?	Goals or targets for collection	Includes Disposal Ban?
					by return share. TV co's split costs by market share (as of 2010)			
Maryland	2005	Jan 2006 Ends 2010	Monitors, computers (CPUs), laptops. Televisions were added in 2007.	Not specified	Manufacturers pay fees to State. State funds reimburse Counties who pay for recycling via grants. This is a modest 5 year pilot program.	No	No	No
Michigan	Dec 26, 2008	April 1, 2010	Computers, monitors, TVs, laptops	Consumers, small business dropping off 7 or fewer units per day	Producers pay for collection, transportation, and recycling, but no level of service is mandated.	None	TV companies have non-binding goal of 60% by weight of what company sold in prev year	No – will be studied
Minnesota	May 8, 2007 Revised in 2009.	August 2007	Scope for figuring mfrg obligation: video display devices (TVs, monitors, laptops). Scope for free collection: TVs, monitors, laptops, desktops, printers, keyboards; fax machines; and DVD players	Consumers	Market share. Producers pay for collection, transportation, and recycling.	Disclosure Companies must report on display devices sold to households if they exceed the maximum ROHS levels for lead, mercury, cadmium, hexavalent chromium, (PBBs),(PBDEs)	Year 1: Manufacturers must recycle amount equal to 60% of what they sold by weight in previous year Year 2+: 80% of previous year sales	Was already in place
Missouri	Jun 16, 2008	Plans due July 1, 2010. Collection starts after that.	Desktops, laptops, monitors, but NOT televisions	Consumers	Producers pay for collection, transportation, and recycling, but no level of service is mandated.	No	No	No
New Jersey	Jan 15, 2008 Revision signed Jan 2009.	Jan 1, 2011 New legislation delayed from 2010.	TVs, monitors, personal computers, laptops	Consumers and small business (50 or less employees)	Return share. Producers pay for collection, transportation, and recycling. TV companies assign costs of collective return share via market share.	Must be ROHS compliant on heavy metals.	Law directs state agency to set goals by Jan 2011.	Yes as of Jan 1, 2011.
New York City	4/1/08	7/1/2009 Delayed by lawsuit by industry.	Computers, TVs, monitors, laptops, printers , keyboards, mice	Everyone – consumers, business, etc.	Market Share. Producers must collect and recycle products.	No	Yes. Collection goals based on market share: 2012: 25% 2015: 45% 2018: 65%	Yes, as of July 1, 2010
North Carolina	Aug 31, 2007	Jan 1, 2010 (2008 law delayed start till 2010)	2007 law: Desktops, laptops, monitors, keyboards, mice 2008 law added televisions and delayed start by 1 year. In 2011, the State will look at adding printers to the scope.	Not specified	Producers must pay for transportation from collection sites (run by govt, retailers, or non-profits) as well as recycling costs. They don't pay for collection. Market share for TV co's. Return share for IT companies.	No	No	Yes, landfill and incinerator ban as of Jan 2012

Appendix B

State	Date Law Signed	Program Collection Start Date	Scope of Products Covered	Who Gets Free Recycling?	Who Pays	Language on Toxics?	Goals or targets for collection	Includes Disposal Ban?
Oklahoma	5/13/08	Jan 1, 2009	Desktops, laptops, monitors, but NOT televisions	Consumers	Producers pay for collection, transportation, and recycling, but no level of service is mandated.	No	No	No
Oregon	June 7, 2007	Jan 1, 2009	TVs, monitors, personal computers, laptops	Households, small businesses, small non-profits and anyone dropping off 7 items or less to collection points	Producers pay for collection, transportation, and recycling. TV companies assign costs of collective return share via market share.	No	No	Yes
Rhode Island	June 27, 2008	Feb 1, 2009	Computers, laptops, monitors, televisions	Households or public and private elementary & secondary schools	Producers pay for collection, transportation, and recycling	Must disclose video display devices sold that exceed ROHS levels.	No	Yes, as of Jan 31, 2009.
Texas	June 15, 2007	Sept 1, 2008	Desktops, laptops, monitors, but NOT televisions	Consumers	Producers pay for collection, transportation, and recycling, but no level of service is mandated.	No	No	No
Virginia	March 11, 08	July 1, 2009	Desktops, laptops, monitors, but NOT televisions	Consumers	Producers pay for collection, transportation, and recycling, but no level of service is mandated.	No	No	No
Washington	March 2006	January 2009	TVs, monitors laptops, and desktop computers	Consumers, charities, small businesses, schools and small governments.	Producers pay for collection, transportation, and recycling. Return share.	No	No, but specifies collection sites in each county	Not in bill, but some counties have passed bans
West Virginia	4/1/08	January 2009	TVs, monitors laptops, and desktop computers	Consumers	Producers pay registration fee of \$10K if they have no takeback program, or \$3k if they do.	No	No	no
Wisconsin	10/23/09	Jan 2010	<u>Scope for figuring mfrgr obligation:</u> video display devices (TVs, monitors, laptops), printers <u>Scope for free collection:</u> TVs, monitors, laptops, desktops, printers, keyboards; fax machines; DVD players, VCRs	Consumers (Households)	Producers pay for collection, transportation, and recycling based on their market share. Goal is 80% by weight of products sold to households and schools 3 years previous.	Yes, manufacturers must declare which products they sell that do and do not comply with ROHS directive.	Yes	Yes as of Sept 1, 2010

Appendix B

State	Date Law Signed	Program Collection Start Date	Scope of Products Covered	Who Gets Free Recycling?	Who Pays	Language on Toxics?	Goals or targets for collection	Includes Disposal Ban?
California	Sept 25, 2003	January 2005	TVs and Monitors only. Portable DVDs added 2006. NOT CPUs or other products.	All owners – consumer and business	Consumers pay a fee at purchase. Fee money goes to state, used to reimburse recyclers and collectors.	Comply with RoHS Directive on heavy metals. Companies can't sell laptops, monitors, TVs, portable DVD players that exceed RoHS levels for Lead,Mercury, Cadmium, and Hex.chromium.	Bill set goal to eliminate electronic waste stockpiles and legacy devices by December 31, 2007	Was already in place

For more detailed comparisons of these bills, go to: <http://www.electronicstakeback.com/legislation/Detailed%20State%20Law%20Comparison%20ALL.pdf>