

**Report to the Joint Standing Committee on Environment  
and Natural Resources  
128<sup>th</sup> Legislature, First Session**

# **Implementing Product Stewardship in Maine**

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## I. EXECUTIVE SUMMARY

This report is prepared in accordance with 38 M.R.S. §§ 1771 through 1776, Maine's *Product Stewardship* framework law. This law requires the Department of Environmental Protection ("Department" or "DEP") to annually develop a report for the Legislature that includes an evaluation of the performance of existing product stewardship programs, and recommendations for improvements and/or new programs consistent with the minimum standards contained in the law.

Product stewardship laws that mandate some level of manufacturer (producer) responsibility for proper product management at the end-of-life are known as extended producer responsibility (EPR) laws. EPR relieves the public sector of some of the burden of managing products at their 'end of life'. Through the enactment of several laws, first starting in 1994, Maine has mandated end-of-life management responsibilities for manufacturers of rechargeable batteries, mercury vehicle switches, consumer electronics, mercury thermostats, mercury lamps (light bulbs), and architectural paint. In addition, since 1978, manufacturers, distributors and retailers of most non-dairy beverages are required to participate in Maine's container redemption program to support reduction of roadside litter and the recycling of beverage containers.

Each of Maine's product stewardship programs were conceived and developed in response to identified, documented or perceived needs and threats. These included: a) the blight of litter on Maine's landscape, b) environmental contamination by mercury resulting in fish consumption advisories for Maine's vulnerable populations, and c) the ever-increasing expense to municipalities of managing discarded consumer products that contain toxics which threaten public health and the environment if improperly managed.

Table 1 provides performance measures of each of Maine's EPR programs, as well as a summary of recommendations for changes to each program, if any.

Maine's *Product Stewardship* framework law requires the Department to solicit and collect public comments on the content of the report for 30 days prior to submittal to the Legislature, and to append all comments received to the report. Upon submittal, this report provides the Joint Standing Committee on the Environment and Natural Resources (ENR) with a status check on Maine's current product stewardship programs, and information from a variety of perspectives on proposals for improvements or additional programs.

**Table 1 - Summary of Product Stewardship Programs' Performance**

<b>Product</b>	<b>Performance measure 2015</b>	<b>Estimated environmental benefit</b>
<b>Beverage containers</b>	Recycling estimates: <sup>1</sup> <ul style="list-style-type: none"> <li>• <b>26,000 tons glass</b></li> <li>• <b>5000 tons aluminum</b></li> <li>• <b>7,100 tons plastic</b></li> </ul>	Clean landscape - containers subject to deposit are not littered or do not remain as litter.
<b>Rechargeable batteries</b>	Number of active collection sites in Maine - <b>250</b>	34,965 pounds of materials recycled and diverted from disposal
<b>Mercury auto switches</b>	Percent switches from end-of-life vehicles recycled – <b>4%</b>	Estimated pounds of mercury release prevented: 2015 – 1.2 pounds Since 2003 – 117.3 pounds
<b>Consumer electronics</b>	Pounds per capita recycled – <b>9.2 pounds per capita</b>	6,328 tons recycled
<b>Mercury thermostats</b>	Percent of available thermostats recycled – <b>28.6%</b>	Estimated pounds of mercury release prevented: 2015 – 35 pounds Since 2001 – 445 pounds <sup>2</sup>
<b>Mercury lamps</b>	Percent of available lamps recycled – <b>Manufacturers – 12.0%</b> <b>Overall – 33.71%</b>	Estimated pounds of mercury release prevented: Manufacturers – 15.9 pounds Overall – 44.6 pounds
<b>Architectural Paint</b>	Percent population within 15 miles of a permanent collection site – <b>93.5%</b>	88,712 gallons latex and oil-based paint collected for recycling and fuel blending

<sup>1</sup> Returnable Services telecom with MEDEP 12/6/16 - estimate based on Container Redemption program experience

<sup>2</sup> Assuming an average of 3.1 grams per thermostat

## II. Introduction

The Maine Department of Environmental Protection (Department) is submitting this report in accordance with [38 M.R.S.A. § 1772\(1\), \*Product Stewardship\*](#). This law requires the Department to provide an annual update on the performance of existing product stewardship programs, a discussion of any additional products or product categories that when generated as waste may be appropriately managed under a product stewardship program, and recommendations for new product stewardship programs or revisions to existing programs. Maine currently has six extended producer responsibility laws (i.e., mandated product stewardship for manufacturers) that require producers to establish collection and recycling programs for their products. These include: dry mercuric oxide and rechargeable batteries, mercury auto switches, electronic waste, mercury thermostats, mercury lamps, and architectural paint. In addition, Maine's product stewardship law for cellular telephones requires cell phone retailers to collect and recycle unwanted cell phones.

Similarly, manufacturers, distributors and retailers of most beverages are required to participate in Maine's beverage container redemption program to support recovery and recycling of those containers. All these programs are aimed at minimizing the negative health, safety, environmental and social impacts of these products when they are no longer wanted by the consumer, and at supporting the recycling of product materials into new products when appropriate. As resources allow, the Department works collaboratively with manufacturers to educate consumers and collection sites to support effective and efficient implementation of Maine's EPR laws.

In addition, Maine has other product stewardship laws that do not include an EPR mandate. These include Maine's cellular telephone recycling law, which requires retailers of cellular telephones to offer free recycling of unwanted cell phones, and Maine's mercury product laws that require manufacturers of mercury-added products to provide a tri-annual notification of the amount of mercury currently used in each of its mercury products, and to label these products so consumers know to recycle them at the product's end of life. The mercury product notifications provide state policy makers and staff with information to help target additional efforts to prevent releases of mercury to the environment. Data from this reporting can be viewed at the Interstate Mercury Education and Reduction Clearinghouse ([IMERC website](#)).<sup>3</sup>

Each of Maine's product stewardship programs were conceived and developed in response to identified, documented or perceived needs and threats. These included the blight of litter on Maine's landscape, environmental contamination by mercury resulting in fish consumption advisories for Maine's vulnerable populations, and the ever-increasing expense to municipalities of managing materials from consumer products that could be recycled into new products. After enactment of several product stewardship laws, Maine's legislature developed 38 M.R.S. §§ 1771 through 1776, the *Product Stewardship* framework law. This framework law requires the Department to develop a report each year for the Legislature that includes an evaluation of the performance of existing programs, and recommendations for improvements and/or new programs consistent with the minimum standards contained in the law. It also requires the Department to solicit and collect comments on the content of the report for 30 days prior to submittal to the Legislature, and to append all comments received to the report.

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<sup>3</sup> IMERC provides technical and programmatic assistance to 13 states and their regulated communities to streamline implementation of mercury reduction laws.

**Table 2 – Primary Aspects of Maine's Extended Producer Responsibility Programs**

Product	Statute	Year implemented	Who participates	Funding mechanism	Disposal ban?	Annual fees paid to DEP
Beverage containers	<a href="#">38 M.R.S. § 3101 et seq.</a>	1978	Anyone	initiators of deposit internalize costs*	No	Label registration and licensing fees
Rechargeable batteries (nickel-cadmium and sealed lead acid only)	<a href="#">38 M.R.S. § 2165</a>	1994	Manufacturers provide recycling for government agencies, and industrial, communications and medical facilities	manufacturers internalize costs	Partial	No
Mercury auto switches	<a href="#">38 M.R.S. § 1665-A</a>	2003	Manufacturers, end-of-life vehicle handlers	manufacturers internalize costs	Yes	No
E-waste (Consumer products with video displays > than 4", desktop printers, game consoles)	<a href="#">38 M.R.S. § 1610</a>	2006	Households, small businesses, K-12 schools	manufacturers internalize costs	CRT's, flat screens containing mercury	Manufacturers pay annual registration fee
Mercury thermostats	<a href="#">38 M.R.S. § 1665-B</a>	2007	Anyone	manufacturers internalize costs	Yes	No
Mercury lamps	<a href="#">38 M.R.S. § 1672</a>	2011	Households only	manufacturers internalize costs	Yes	No
Architectural paint	<a href="#">38 M.R.S. § 2144</a>	2015	Households, businesses other than large quantity generators of oil-based paint waste	consumer pays fee at point of sale	No (paint must be solidified)	Manufacturers pay actual DEP program costs

\*Cost internalization = costs included in pricing of product; no visible "recycling" fee at sale

### III. Existing programs' performance and recommendations

#### A. BEVERAGE CONTAINER REDEMPTION PROGRAM – [38 M.R.S §§ 3101 - 3117](#)

**Program description:** Maine's Beverage Container Redemption, or "Bottle Bill", Program was implemented in 1978. The program was originally administered by the Department of Agriculture, Conservation & Forestry ( D ACF) until November 2015 when that authority was transferred to the Department. This law requires the producers and distributors of covered beverages to charge a deposit in conjunction with the sales of their beverages to encourage the return of the empty container by providing the consumer a refund of that deposit when the beverage container is returned. These beverage containers are then processed for recycling, keeping these containers out of the environment and disposal facilities. The system includes label registration (to ensure redemption values are clearly marked, and to identify the parties responsible for each beverage container), licensing of redemption centers, and payment of a handling fee for each container managed at a redemption center by the initiator of the deposit.

**Current performance:** The Department is unable to provide a quantitative assessment as to the performance of the program since there is no requirement for all beverage manufacturers to report annual product sales and redemptions claimed. The Container Recycling Institute estimates that 80-90% of covered beverage containers sold in Maine are redeemed for deposit.<sup>4</sup> It is estimated that the following quantities of container materials were recycled through the container deposit program in 2015:

- Glass – 26,000 tons
- #1 & #2 Plastics – 7,100 tons
- Aluminum – 5,000 tons<sup>5</sup>

**Discussion:** During the first year administering the program, the Department's primary objective was to ensure a smooth transition through utilizing label registration, redemption center licensing, and compliance protocols established by DACF. To ensure systems met financial auditing standards, the Department integrated redemption center licensing processes with the State's 'Advantage' accounting system. Department staff also worked with staff from the Maine Revenue Services (MRS) to assess and improve compliance with MRS unclaimed deposit reporting requirements, and with the Bureau of Alcoholic Beverages and Lottery Operations (BABLO) to conduct outreach resulting in improved compliance with product registration requirements.

As a result, in 2016 the Department processed over 36,000 beverage container label registrations (a 10% increase from the previous year), licensed over 500 redemption centers and over 200 initiators of deposit, and assisted over 200 small retailers in transitioning from licensing as redemption centers to a no-cost alternative compliance option. In addition, the Department has engaged InforME to develop an on-line product label registration portal that will work in conjunction with BABLO's product registration portal to provide one-stop services for manufacturers and distributors of liquor products in Maine.<sup>6</sup>

In 2017 the Department plans to continue refining and targeting program activities to improve the sharing of information and continue to improve compliance. These activities include:

- completion of development of an all-inclusive on-line label registration system;
- rule-making to clarify responsibilities and streamline label registration requirements;
- increase compliance assistance to redemption centers and beverage manufacturers; and,
- increasing the efficiency of the redemption center network across Maine.

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<sup>4</sup> Container Recycling Institute "[Beverage Container Recycling Rate by State, March 2015 Update](http://www.container-recycling.org/images/stories/PDF/Beverage%20Container%20Recycling%20Rate%20March%202015%20Update.pdf)"; available at: [www.container-recycling.org/images/stories/PDF/Beverage%20Container%20Recycling%20Rate%20March%202015%20Update.pdf](http://www.container-recycling.org/images/stories/PDF/Beverage%20Container%20Recycling%20Rate%20March%202015%20Update.pdf), accessed December 5, 2016.

<sup>5</sup> Returnable Services telecom with DEP 12/6/16 - estimate based on Container Redemption program experience

<sup>6</sup> [InforME](#) is a public/private partnership formed as a result of the 1997 [InforME Electronic Access to Public Information Act](#) to create "a portal network to public information"; it provides an "Internet gateway for businesses and citizens to interact with government electronically".

## **B. RECHARGEABLE BATTERIES – [38 M.R.S. § 2165](#)**

**Program description:** Manufacturers of nickel cadmium and small sealed lead acid batteries must provide recycling services at no cost to government agencies, and industrial, communications and medical facilities, which are required to recycle these batteries.

**Current performance:** In 1996, battery manufacturers established the Rechargeable Battery Recycling Corporation, now known as Call2Recycle, to offer free rechargeable battery collection and recycling to any business or government entity. In 2015, there were 130 retail, 82 government and 38 private business locations across Maine that actively participated in the program. Call2Recycle voluntarily reported that Maine participants collected and recycled 34,965 pounds of all types of rechargeable batteries (nickel cadmium, lithium ion, nickel metal hydride and sealed lead acid) in 2015 (a slight increase from the 33,210 pounds collected in 2014). Since reporting of sales is not required, it is not possible to assess what percent of rechargeable batteries this represents.

In recent years, Call2Recycle has reported an increase in the cost of "free riders" in its battery recycling program. "Free riders" are primary and rechargeable battery manufacturers whose products are collected and recycled by Call2Recycle, but who do not pay for the recycling of their batteries. U.S. manufacturers (e.g., Duracell, Energizer, Stanley Black & Decker, Samsung, Dell and HP) that support the Call2Recycle program are paying a cost not borne by the manufacturers (often overseas) who profit from placing the batteries into commerce.

In 2016, the Maine legislature considered a proposal to institute a mandatory extended producer responsibility program for all consumer batteries (rechargeable and primary, a.k.a. "single use") as Section 1 of LD 1578, *An Act to Update Maine's Solid Waste Management Laws*. This proposal was originally developed by battery manufacturers and recyclers. The Environment and Natural Resources (ENR) Committee then amended the proposal to align with Maine's *Product Stewardship* framework law and to address concerns of the automotive industry (by exempting key fobs). LD 1578 ultimately failed in favor of LD 313, *An Act to Create a Sustainable Solution to the Handling, Management and Disposal of Solid Waste in the State*, a bill that included identical provisions exclusive of the consumer battery stewardship proposal.

**Discussion:** Following the guidance of Maine's *Product Stewardship* framework law, the Legislature may want to review last year's consumer battery stewardship proposal contained in LD 1578 as amended by the ENR Committee. The amended bill would eliminate the burden of free riders currently placed on the existing rechargeable battery program.

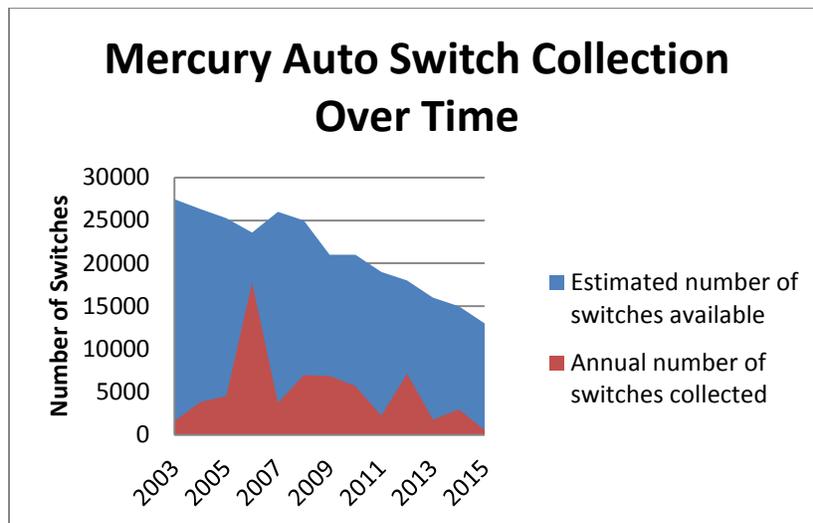
## **C. MERCURY AUTO SWITCHES - [38 M.R.S. § 1665-A](#)**

**Program description:** 38 M.R.S.A § 1665-A, was passed in 2001 and the program began in 2003. It requires end-of-life vehicle handlers to remove and recycle all mercury switches. The law also requires manufacturers to provide a free recycling system, including an incentive payment, if the person turning in the switches provides information on the vehicles from which the switches have been removed.

At the start, manufacturers provided a \$1 incentive for each mercury auto switch delivered to drop-off locations in Portland and Bangor. In 2006, in response to manufacturer requirements that

Vehicle Identification Numbers (VINs) be provided with switches, the incentive was increased to \$4 per switch. In 2011, the auto manufacturers changed the system for returning switches to integrate with a nationwide program administered by End-of-Life Vehicle Solutions (ELVS), a non-profit stewardship organization established by vehicle manufacturers. In place of the VIN, auto recyclers were asked to provide information on make, model, and year of the source vehicle, and switches are now returned via the shipping company FedEx. ELVS provides auto dismantlers with free buckets, shipping, and recycling and pays the \$4 per switch incentive.

**Figure 1 – Mercury auto switch collections in Maine over time**



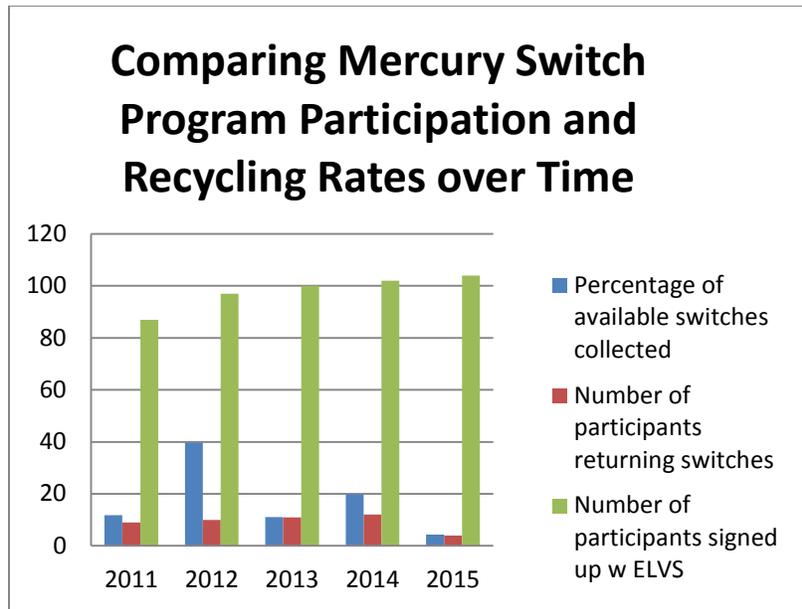
**Current performance:** In 2015, 563 mercury auto switches were recycled through the program, with only 4 different auto dismantlers sending in switches. This represents 4% of the switches estimated to have been available for recycling from end-of-life vehicles in 2015 in Maine. The National Vehicle Mercury Switch Recovery Program (NVMSRP) estimates that there will be 10,000 switches containing approximately 20 pounds of mercury in the cars that will be removed from service in Maine in 2017.<sup>7, 8</sup> These estimates (which NVMSRP asserts underestimate the actual number of switches available<sup>9</sup>) suggest that the program has captured between 20 and 30% of the switches available since its inception. Department staff began outreach to end-of-life vehicle handlers in June 2016, and program performance through the first 3 quarters of 2016 shows significant improvement (1810 switches collected from 17 businesses).

<sup>7</sup> This weight number assumes an average of .035 g of mercury per switch, which is the calculation used by NVMSRP.

<sup>8</sup> National Vehicle Mercury Switch Removal Program, “Estimating Population of Mercury Convenience Light Switches”, available at: [http://elvsolutions.org/?page\\_id=1298](http://elvsolutions.org/?page_id=1298), accessed October 31, 2016.

<sup>9</sup> National Vehicle Mercury Switch Removal Program, “Estimating Population of Mercury Convenience Light Switches”, available at: [http://elvsolutions.org/?page\\_id=1298](http://elvsolutions.org/?page_id=1298), accessed October 31, 2016.

Figure 2 – Mercury auto switch recycling rates in Maine



**Discussion:** Auto recyclers noted to Department staff that that they have seen far fewer mercury switches of late, and that, as commodity prices have fallen, auto recyclers have scaled back their recycling businesses. Many end-of-life vehicle handlers had been unsure how to participate in the program since the collection system changed from drop-off to FedEx return: some had not turned in switches since the change, while others had turned in an initial bucket and then been unsure of how to proceed. ELVS does not automatically send new buckets to participants; they must be ordered online or over the phone. Fortunately, many of these individuals have continued to pull and collect mercury switches, and the Department is seeing an increase in the recycling numbers for 2016 as those stored switches are turned in following contact from the Department.

Moving forward, the Department will continue to reach out to entities that have not sent in mercury switches for recycling in the past three years. The Department also plans to contact other auto recyclers registered with the Maine Bureau of Motor Vehicles (BMV) that have not signed up with the program. Concerted efforts will be made by the Department to identify mobile car crushing companies and initiate or improve their participation in the program, and to ensure permanently-located crushers are operating in compliance with the law by removing switches before crushing.

**D. CONSUMER ELECTRONICS - [38 M.R.S. § 1610](#)**

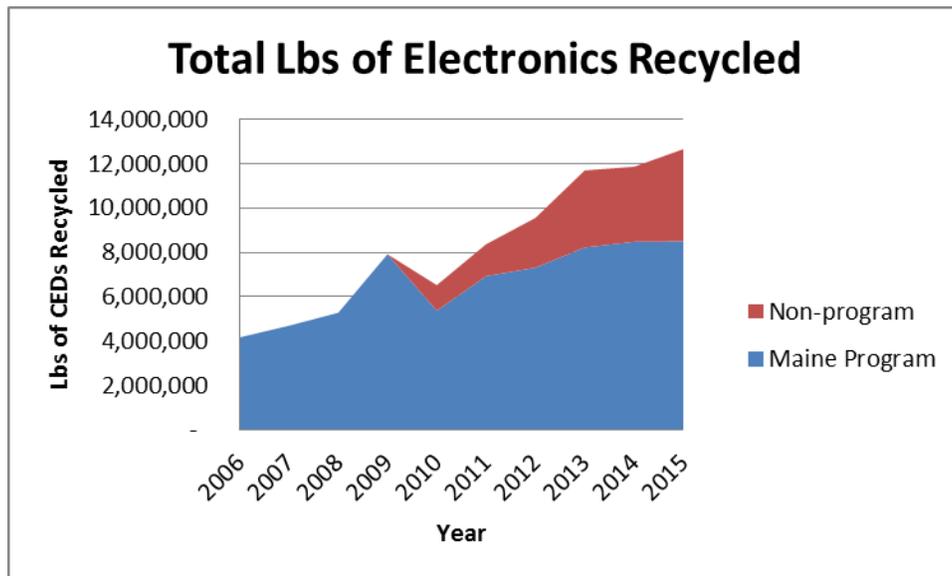
**Program description:** Maine’s Electronic Waste law establishes a “shared responsibility” system for the recycling of consumer electronics with video display screens that are greater than 4 inches measured diagonally and that contain one or more circuit boards (computer monitors, laptops, tablets, digital picture frames, televisions and portable DVD players; cellular telephones are addressed in 38 M.R.S. § 2143), desktop printers and game consoles generated as waste by households, small businesses, and K-12 schools. In Maine’s program, municipalities and businesses that have been approved by the state as electronic waste consolidators, and other entities, provide

convenient collection sites for consumers. After collecting a pre-determined quantity of covered devices, the collection sites work with consolidators who pick up the devices, sort them, and send them to be recycled. Manufacturers are responsible for the cost of consolidation, processing, and recycling of covered electronic devices (CEDs) as invoiced by the approved consolidators. To comply with Maine law, manufacturers must complete annual registrations and pay assigned recycling costs.

Recycling costs are assigned in one of two ways, depending on product type. The costs of consolidation, processing, and recycling televisions, game consoles, and portable DVD players are assigned to manufacturers based on total U.S. market share by weight. Computer monitors, laptops, tablets, digital picture frames, and desktop printers are individually counted and weighed by state-approved consolidators so that manufacturers pay for the recycling of their own products as these products show up in the waste stream. Rather than having the consolidators recycle their products, manufacturers of these types of CEDs can opt to pick up their products from consolidators and recycle them on their own. The cost of recycling “orphan” products, for which the state can assign no responsible party or successor in interest, is divided among registered manufacturers according to their proportion of the total weight of products recycled in a given year.

**Current performance:** Since Maine’s *Electronic Waste* law was passed in 2005, over 82 million pounds of CEDs have been collected and recycled; about 67 million of those pounds were recycled through the state program; the rest were non-covered products (e.g., desktop computers, peripherals), or collected by voluntary initiatives such as the Dell-Goodwill Re-Connect partnership.<sup>10</sup> In 2015, Mainers recycled 12,655,691 pounds of electronics, or about 9.5 pounds per person, up from 8.9 pounds per person in 2014. The Maine law has succeeded in providing a consistent recycling service to citizens throughout the state.

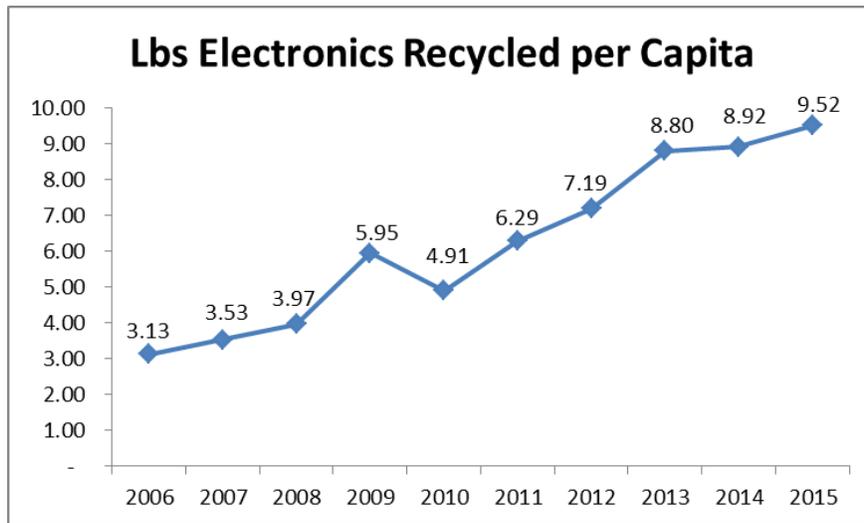
**Figure 3 – Total pounds electronics recycled in Maine 2006 – 2015<sup>11</sup>**



<sup>10</sup> See <http://www.dell.com/learn/us/en/uscorp1/corp-comm/us-goodwill-reconnect?c=us&l=en&s=corp>.

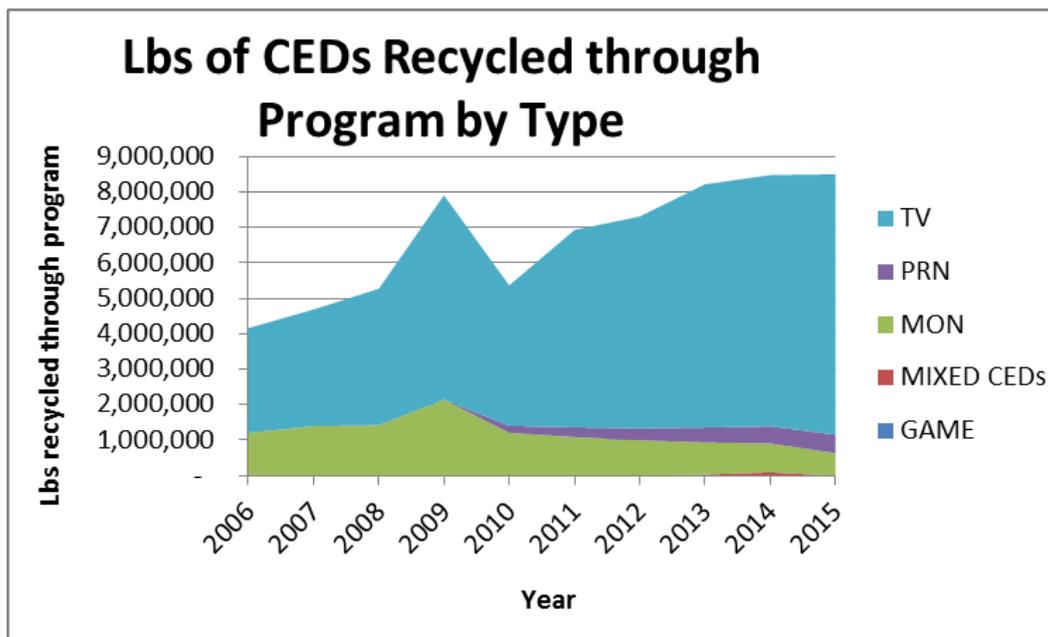
<sup>11</sup> The uptick in 2009 was likely due to consumer replacing old TVs to accommodate the conversion of broadcast TV to digital format.

Figure 4 – Pounds of electronics recycled per capita in Maine



The total pounds of covered electronic devices recycled appear to be leveling off. At least part of this leveling is likely due to a decrease in the weight of the units being recycled. In 2010, the average piece of computer equipment received by the program weighed 31.8 pounds; in 2015 the average weight was just 21.9 pounds. This change reflects the move away from CRT monitors/TVs to flat panel monitors/TVs, and toward smaller, portable devices.

Figure 5 – Pounds of electronics recycled by device type



TV = television; PRN = desktop printer; MON = monitor, including laptops & tablets; MIXED CEDs = mixed covered electronic devices; GAME = game consoles

Generally, as residents become more aware of the availability of a recycling program, participation increases. However, information evaluating awareness of Maine's e-waste recycling program has not been collected, so the extent to which full program penetration plays a part in the leveling off trend described above cannot be appropriately evaluated.

**Discussion:** As outlined above, in the IT product portion of the program, manufacturers are responsible for covering the recycling costs associated with the management of their own products along with a share of orphan products based on that amount, while the television and game console portion of the program assigns recycling costs using national market share. Initially, the entire program used 'return share'. Television and game console manufacturers asked for a switch to 'market share'. Long-established manufacturers found themselves at a disadvantage in pricing their products in a market with very slim profit margins in comparison with new manufacturers that did not yet have to pay to recycle old products. This imbalance in costs was also exacerbated as some producers of old-style CRT televisions went out of business,<sup>12</sup> leaving heavier orphan shares to be split between the remaining entities.

Currently the Department spends significant time tracking a few, often historic, IT manufacturers that do not realize they still need to register, either because they remain responsible for their historic product in Maine's waste stream or because they are no longer trying to sell products, have no real incentive to do so. Staff also spends time trying to determine responsibility for a brand through a maze of acquisitions, mergers, and sales. Meanwhile, consolidators are required to individually handle every IT product, weighing and recording the brand name of each one. In the market share system, manufacturers with less than one tenth of a percent (0.1%) market share have no recycling costs. With return share, consolidators invoice even the smallest participants, sometimes for the cost of recycling one product at a time. Consolidators have reported that their prices for the standard recycling plan would decrease by between 3 and 9 cents per pound with a switch to market share-based billing of IT manufacturers.

To increase efficiency in the handling of CEDs and decrease the need for Department enforcement actions, the Department recommends the Legislature consider changing the basis on which IT product manufacturers are billed for recycling costs from return share to market share. This change would align Maine's program more closely with other states' programs, eliminating a cause for confusion for manufacturers seeking to comply with multiple differing state laws.

#### **E. MERCURY THERMOSTATS - [38 M.R.S. § 1665-B](#)**

**Program description:** When improperly disposed of and not recycled, mercury thermostats are one of the major contributors to mercury releases to Maine's environment. Maine's *Mercury-added Thermostats* law, 38 M.R.S. § 1665-B, enacted in 2005, established extended producer responsibility for the collection and recycling of mercury-added thermostats. This included payment of a \$5 incentive for each mercury thermostat returned for recycling beginning in 2007.

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<sup>12</sup> EPA, "Current Understanding of the CRT Landscape by the Electronics Recycling Community", September 2014, available at: <https://www.epa.gov/sites/production/files/2016-03/documents/epacrt.doc.pdf>

The EPR program is implemented by the Thermostat Recycling Corporation (TRC), a non-profit established by the National Electrical Manufacturers Association (NEMA) as a service to its member manufacturers. There are two different incentive payment systems. Retailers voluntarily participating as collection sites provide an in-store \$5 coupon for each mercury thermostat turned in by their customers. The retailer then invoices TRC for \$5.00 per thermostat when returning the thermostats to TRC. Heating, ventilating and air conditioning (HVAC) wholesalers are required to participate as collection sites. Until late in 2016, that collection system required individuals utilizing HVAC wholesaler collection sites to fill out and mail a coupon to TRC for each mercury thermostat they turned in. Individuals now can fill in just a single form when turning in multiple thermostats. TRC only mails out the incentive payments once the HVAC wholesaler returned the collected thermostats.

In 2015, TRC education and outreach efforts specific to the Maine program included in-person site visits to 34 collection sites, and phone outreach to 31 collection sites. Other Maine-specific promotions by TRC included:

- Half page ad in *Uncle Henry's* each week during November 2015
- 15-second ad to promote \$5 incentive on *Uncle Henry's Talking Deals* radio station - one per week during November
- Google Adwords campaign
- 221 postcard reminders to collection sites encouraging thermostat recycling bin return
- Letter to all contract, retail, and household hazardous waste (HHW) collection sites offering free full-color thermostat recycling poster
- 300 postcards to HVAC contracting businesses (fewer than 10 employees) promoting \$5 incentive
- Created trifold brochure highlighting \$5 incentive targeting consumers

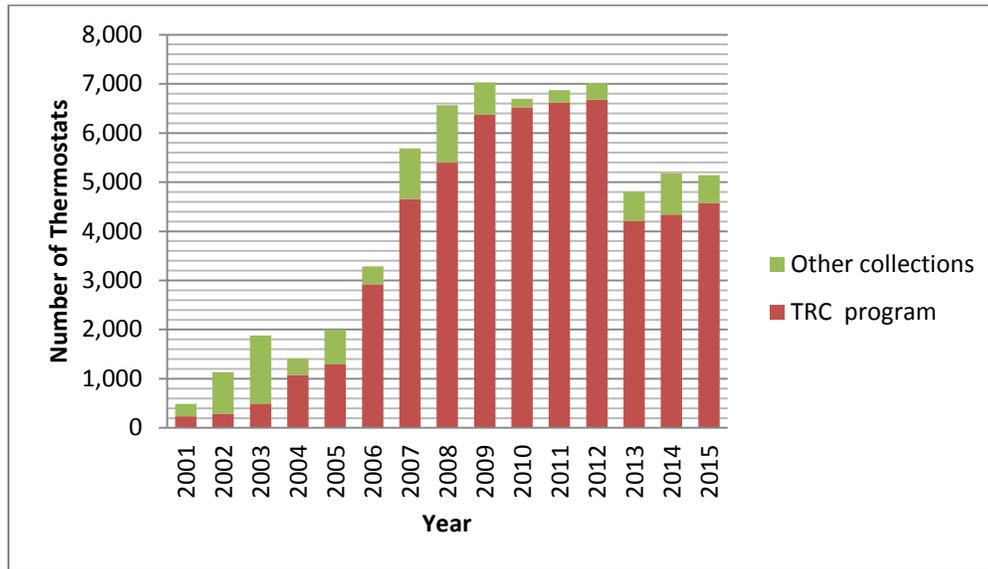
NEMA has identified areas of the state with very low participation, which include Aroostook and Washington Counties.

**Current performance:** On a per capita basis, Maine in 2015 collected more thermostats than any of the other 13 states with thermostat EPR programs. Vermont was a close second, while the remaining 11 states had per capita collections trailing by at least one-third. Only Maine and Vermont provide a \$5 incentive for each thermostat recycled. In 2015 alone, the recycling of thermostats in Maine prevented the release of 35 pounds of mercury to the environment. This compares to 47 pounds collected in 2014. Since 2001, a total of 445 pounds of mercury has been recovered through thermostat recycling efforts in Maine.<sup>13</sup>

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<sup>13</sup> Department staff recently reviewed all historic data provided by TRC. An average of 3.1 grams of mercury per thermostat was found and used in calculations for this year's report. In previous reports, an estimate of 4 grams per thermostat was used to calculate the total amount of mercury collected.

**Figure 6 - Number of mercury thermostats collected annually in Maine**



Prior to the implementation of 38 M.R.S. § 1665-B, annual thermostat collections from 2001-2005 ranged from 3.8 to 15.6 per 10,000 residents. After the Maine EPR law was implemented, collections increased slowly at first, with a more significant increase in annual collections occurring in 2007-2015 when the incentive was added into the program, with a range of 36.1 to 52.9 thermostats collected per 10,000 residents. Although there has been a slight decline over the past three years, average annual collections remain at around 5,000 thermostats per year, consistently at least 40 % higher than the rates achieved before the \$5 incentive was implemented.

Despite this, annual thermostat collections in Maine are well below the statutory goal. 38 M.R.S. § 1665-B sets collection and recycling goals by weight, of at least 125 pounds of mercury within two years of implementation of a collection program at HVAC locations, and 160 pounds per year within three years of implementation of the collection program at retail locations. The collection goals at 38 M.R.S. § 1665-B.5 were established based on the best available information at the time the law was passed. i.e., 27,000 mercury thermostats would be available annually for recycling, with an average of 4 grams of mercury per thermostat. More recent information indicates the assumptions used in the original calculations are high, suggesting that the statutory goal should be reevaluated.

The Legislature may want to consider revising the collection goals in 38 M.R.S. § 1665-B.5 to more realistic goals based on the best available data.

**Discussion:** In June of 2015, the Skumatz Economic Research Associates (SERA - [www.serainc.com](http://www.serainc.com)) published a report, *Estimated Annual Outflow of Mercury-Containing Thermostats in the State of Maine*, describing their research and methodology to develop an estimate of the projected number of mercury-containing thermostats that annually will become waste in Maine over the next several decades. Prior to doing the Maine study, SERA performed similar studies for California, Illinois, and Rhode Island, and refined their study approach in Maine to address any identified weaknesses in methodology. For the years 2015 – 2024, the SERA report predicts 16,000 mercury thermostats will be removed annually in Maine. Although the report has not been subject to a

formal peer review, the results provide a good indication that the collection goals established in statute should be revised.

Actual annual collections, shown in Table 3, have varied significantly. Using the SERA estimate of 16,000 thermostats available for recycling, all collections achieved a 32.14% recycling rate in 2015. This prevented the release of an estimated 35.1 pounds of mercury to Maine's environment.

**Table 3**  
**Number of Mercury Thermostats and Amount Mercury Collected, 2001 - 2015**

Year	TRC program	Other collections	Total thermostats collected	Total pounds of mercury
2001	233	253	486	3.3
2002	280	856	1,136	7.8
2003	482	1398	1,880	12.8
2004	1,079	335	1,414	9.7
2005	1,290	701	1,991	13.6
2006	2,924	361	3,285	22.5
2007	4,656	1,030	5,686	38.9
2008	5,393	1,176	6,569	44.9
2009	6,374	655	7,029	48.0
2010	6,523	170	6,693	45.7
2011	6,616	256	6,872	47.0
2012	6,679	333	7,012	47.9
2013	4,213	589	4,802	32.8
2014	4,341	841	5,182	35.4
2015	4,571	571	5,142	35.1
<b>Grand Totals</b>	<b>55,654</b>	<b>9,525</b>	<b>65,179</b>	<b>445</b>

As was recommended in the 2016 Product Stewardship report, the manufacturers' simplified their financial incentive payment system for wholesaler and contractor locations. Implementation of these changes began in October of 2016, with the changes anticipated to be fully in place by February of 2017.

**F. MERCURY LAMPS - [38 M.R.S. § 1672](#)**

**Program description:** Manufacturers of mercury-added (fluorescent & HID) lamps utilize the National Electrical Manufacturers Association (NEMA) to implement their product stewardship responsibilities for mercury-added lamps generated as waste by households. This manufacturer

supported recycling program provides free containers, shipping and recycling services to voluntarily participating retail and municipal collection sites.

**Current performance:** NEMA collected and recycled 135,314 mercury-added lamps through its product stewardship program in Maine in 2015, which equates to approximately 12% of available lamps. Since 2011, the National Electrical Manufacturers Association (NEMA) program has continued its trend of increasing annual collections of mercury-added lamps each year, although the percentage of lamps collected remains very low. Seven new collection sites, including six municipal sites, joined the NEMA program in 2015. A survey of consumers showed that 41% of Maine residents are aware that bulbs they replace can be recycled.<sup>14</sup>

**Table 4 – Household Mercury-added Lamp Recycling Rates**

	# NEMA collection sites	# lamps recycled by NEMA	# lamps recycled by others	# lamps available for recycling	household lamp recycling rate	NEMA recycling rate
2011	149	6,634	163,196	688,000	24.68%	1%
2012	263	50,492	155,159	708,889	29.01%	7%
2013	293	97,743	149,191	844,576	29.24%	12%
2014	300	109,337	128,859	1,042,750	22.84%	10%
2015	307	135,314	244,791	1,127,500	33.71%	12%

NEMA utilized both print and web-based advertising in its education and outreach efforts to consumers in 2015. This included a targeted outreach campaign in Southern Maine utilizing print ads in *Uncle Henry's*, *Downeast Magazine*, the Bangor Daily News, Portland Press Herald and some local weekly papers; distribution of a radio public service announcement (PSA) to 95 area-specific radio stations; internet search purchases; and, print and signage advertising at University of Maine Black Bear athletic events. NEMA also maintained a [Maine program page](#) on their [www.lamprecycle.org](http://www.lamprecycle.org) web site, and provided 6 collection sites with in-person technical assistance visits.

**Discussion:** NEMA estimates the number of lamps available to be recycled based on historic sales through retail locations. Small businesses as well as households purchase their mercury-added lamps from these retailers. Because access to this program is limited to households, small businesses must individually contract with a universal waste management company to ensure appropriate recycling of their waste mercury-added lamps. Providing small businesses which generate waste mercury-added lamps originally purchased through retail locations with the option of delivering their mercury-added lamps to the EPR program collection sites would significantly reduce the barriers to recycling for the small businesses by increasing availability of collection locations and decreasing costs. It would also provide the small businesses with the same recycling opportunities currently available to other individuals who purchase mercury-added lamps at retail locations. Allowing small businesses to utilize the program would result in a more accurate measure of program performance, and address concerns of collection sites when confronted with a small business seeking to recycle mercury-added

<sup>14</sup> Data on program performance comes from NEMA's annual report on calendar year 2015 activities, and from universal waste transportation manifests submitted to DEP.

lamps. The Legislature may want to consider expanding the program to allow acceptance of mercury-added lamps from small businesses.

#### **G. ARCHITECTURAL PAINT - [38 M.R.S. § 2144](#)**

**Program description:** PaintCare is a non-profit third-party organization established by the paint manufacturers to fulfill their responsibilities under the EPR laws. Currently these laws are in effect in 8 states and the District of Columbia. Enactment of these laws has been supported by the paint manufacturers. This has resulted in consistency in the laws across these jurisdictions, enabling PaintCare and the manufacturers to take advantage of efficiencies provided by multi-state contracts for transportation and recycling. The costs of operating the PaintCare program are funded by a fee levied at the point of sale on paint, with revenue from those fees collected in Maine covering the direct expenses of the PaintCare program in Maine.

Consumers can return unwanted architectural paint to participating retail and municipal collection sites, and to municipally-offered household hazardous waste (HHW) collection events that partner with PaintCare. PaintCare provides the collection sites with gaylords (boxes that are approximately one cubic yard in size) for collection and shipping of the paint. Collection sites are responsible for limiting access to the gaylords so that only covered products are collected, and for calling PaintCare's contracted hauler (Clean Harbors) for pick-up. The paint is then transported to a facility where it is sorted and shipped on for recycling, fuel blending or disposal depending on the paint type and condition. PaintCare provides each collection site with in-person training, a training manual, education & outreach materials for customers, and readily-available technical assistance for any questions or issues that may arise.

**Current performance:** PaintCare collected and processed 88,712 gallons of postconsumer paint in the first nine months of the Maine program (October 1, 2015 – June 30, 2016). 100% of the oil-based paint was used as fuel. 83% of the collected latex was made into recycle-content paint; 17% was unrecyclable and sent to landfill. Additionally, 71 tons of consumer packaging, i.e., metal and plastic containers, were recycled. PaintCare held 1 one-day special collection event, collected paint from 18 one-day municipal HHW collection days, and provided bulk pick-ups at 6 contractors with more than 300 gallons of waste paint on site.

In the first 9 months of the program, PaintCare, representing 120 manufacturers, established 96 permanent year-round paint drop-off sites throughout the state for its program. These sites include 73 retail locations, 21 transfer stations, one building reuse store, and one hazardous waste management company. PaintCare's analysis shows that its collection network provides a permanent collection site within 15 miles of 93.5% of Maine's population, exceeding the 90% goal set in statute.

**Discussion:** The PaintCare program has been in place for a little more than one year and appears to be operating very successfully. Department staff has observed pick-ups of paint by PaintCare's contractor at collection sites, and discussed program operations with many retail and municipal collection site staff. Very few problems have been mentioned, and the overwhelming majority of program participants are pleased with the program. In 2017, Department and PaintCare staff will work together to identify and encourage retailers and municipalities in the few underserved areas to recruit additional permanent collection sites.

## IV. Candidate products for new EPR programs

38 M.R.S. § 1772.2 sets out criteria for identifying products and product categories that when generated as waste may be appropriately managed under a product stewardship program:

**2. Recommendations.** *The report submitted under subsection 1 may include recommendations for establishing new product stewardship programs and changes to existing product stewardship programs. The department may identify a product or product category as a candidate for a product stewardship program if the department determines one or more of the following criteria are met:*

- A. *The product or product category is found to contain toxics that pose the risk of an adverse impact to the environment or public health and safety;*
- B. *A product stewardship program for the product will increase the recovery of materials for reuse and recycling;*
- C. *A product stewardship program will reduce the costs of waste management to local governments and taxpayers;*
- D. *There is success in collecting and processing similar products in programs in other states or countries; and*
- E. *Existing voluntary product stewardship programs for the product in the State are not effective in achieving the policy of this chapter.*

Several states, local jurisdictions, and Canadian provinces have enacted EPR laws for products not currently addressed by Maine's product stewardship laws.

**Table 5**  
**Summary of State, Local and Provincial EPR Laws**  
**for Products Not Subject to Maine Product Stewardship Laws**

Key: √= state /provincial law; += local jurisdictions have ordinances

State / Province	CT	RI	MA	VT	CA	IL	WA	PEI	NS	QC	ON	MB	SK	AL	BC	Other
<b>Products</b>																
Primary batteries*				√				√	√	√	√	√	√	√	√	
Mattresses	√	√			√											
Carpet					√											
Packaging & Printed Materials										√		√				
Pharmaceuticals			√	√	+	+	+	√	√			√	√	√	√	
Pesticides & containers*					√			√	√	√	√	√	√	√	√	
Household Hazardous Waste											√					
Sharps									√							
Solvents/ Flammable Liquids															√	
Automotive (used oil and/or tires)								√	√	√	√	√	√	√	√	√

\*Canada has national all-battery and pesticides/pesticide container EPR laws

Of these programs, those that have been most recently implemented in the northeast with at least one-year of operations to demonstrate effectiveness include the primary battery law in Vermont, and the mattress product stewardship laws in Connecticut and Rhode Island. The initial strong performance and geographic proximity of these programs make these two products possible candidates for consideration by the Legislature for new product stewardship programs.

## **V. Conclusion**

Depending on the costs of recycling and the value of reclaimed materials, product stewardship programs may impose costs on manufacturers that are ultimately passed on to consumers. Some may view assigning end-of-life management responsibilities to manufacturers as a way to internalize some of the externalities created by manufactured goods. While new product stewardship programs may make sense in the future, Maine should move forward deliberately. When determining whether new programs make sense for our State, one must consider Maine's vast geography and lack of population density which limit economies of scale and complicate the logistics. At this time, our best course of action is to continue monitoring emerging programs in other states, and to adjust existing program requirements to improve efficiencies.