



Department of  
Environmental  
Conservation

# **NYS E-WASTE RECYCLING & REUSE ACT**

## **Implementation & Results for 2011 and 2012**

Report to the Governor and Legislature – January 2016

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# I. Legislative Charge

The New York State Department of Environmental Conservation (Department) submits this report to the Governor and Legislature in accordance with Section 27-2617(4) of the New York State Electronic Equipment Recycling and Reuse Act (Act), Environmental Conservation Law Article 27, Title 26. That section requires a biennial report on the implementation of the Act that includes an evaluation of the electronic waste stream in the state; recycling and reuse rates in the state for covered electronic equipment; a discussion of compliance and enforcement related to the requirements of the Act; recommendations for any changes to Title 26; and a discussion of opportunities for business development in the state related to the acceptance, collection, handling and recycling or reuse of electronic equipment.

# II. Executive Summary

The Act was signed into law by the Governor on May 28, 2010 and became the Nation's 22nd electronic waste (e-waste) product stewardship law. The passing of this key product stewardship legislation was a major step in moving New York State closer to achieving its goals to maximize waste reduction and recycling, as outlined in the current State Solid Waste Management Plan, "Beyond Waste".

The passing and implementation of the Act have engendered great enthusiasm and, as expected with any new legislation, some uncertainty. Many policy experts consider the Act to be one of the most comprehensive and progressive e-waste laws in the country.

This report is being submitted to the Governor and the Legislature pursuant to ECL §27-2617(4), and is intended to provide an update on the Act's implementation, an evaluation of its progress, an outline of the program's strengths and challenges, and recommendations for future improvements.

Product stewardship laws are intended to ensure that all those involved in the lifecycle of a product (e.g., manufacturers, retailers, recyclers, and consumers), share responsibility for reducing the health and environmental impacts that result from the production, use and end-of-life management of the product. Under product stewardship laws, manufacturers bear the primary financial responsibility for recycling programs, which have historically been managed and paid for by local governments at the expense of taxpayers. Product stewardship laws help reduce the financial burden on municipalities and often internalize end-of-life management costs in the cost of the product.

To assure adequate service to the consumers of the state and improve e-waste collection, recycling and reuse, the Act includes three primary product stewardship elements: convenience requirements; performance standards; and environmental standards. These elements, along with a broad scope of covered products, help divert thousands of pounds of e-waste from landfills and waste combustion facilities; keep toxins such as lead, mercury and other hazardous materials from potentially contaminating the environment; and conserve natural resources by allowing valuable materials to be reclaimed and reused, rather than extracting virgin materials.

The Act, which took full effect on April 1, 2011, requires manufacturers who sell or offer for sale covered electronic equipment (CEE) (i.e., computers, computer peripherals, televisions, cathode ray tubes, small scale servers and small electronic equipment) in the state to register their brands of CEE with the Department, and acting individually or collectively through collective electronic waste acceptance programs (collectives), establish a convenient acceptance program for the collection, handling, and recycling or reuse of e-waste, free of charge to most consumers. Because of the Act, New York consumers now have more convenient opportunities to recycle their unwanted electronic equipment.

In addition to having established convenience requirements, the Act establishes annual Statewide Recycling and Reuse performance goals for e-waste, and requires manufacturers to collect and recycle their fair share of e-waste that is generated, based on their market share of CEE sold in New York State. Manufacturers that do not meet their annual Department-issued recycling acceptance standards are required to pay recycling surcharges for the prior year. This provision of the Act went into effect in program year 2013. Manufacturers that collect and recycle more than their acceptance standards were

allowed to begin accruing recycling credits in 2014, for use beginning in program year 2015. These credits can be banked, sold to other manufacturers, or used by the manufacturer to offset up to a 25 percent shortfall in the subsequent three years.

The Act also establishes a phased-in disposal ban for covered e-waste materials, which began on April 1, 2011 for manufacturers, retailers, operators of collection sites and consolidation and recycling facilities, and a complete disposal ban for all entities, including individuals and households, began on January 1, 2015. Therefore, as of January 1, 2015, individuals and households are no longer able to dispose of any e-waste covered by the law in a landfill or waste-to-energy facility, or place e-waste in any collection that is intended to result in disposal at such facilities.

The Department is tasked with oversight of the Act's implementation and its many requirements. The Department receives, processes and reviews all registrations, fee payments, annual report data and additional information from hundreds of the Act's regulated entities. The Department uses sales and market share data reported by manufacturers to calculate and allocate responsibility for the collection and recycling of e-waste among manufacturers of CEE to meet the Statewide Recycling and Reuse Goal. The Department is also required to provide enforcement, develop data management systems to track sales of CEE and e-waste being collected and recycled, and impose surcharges or award credits when appropriate.

A key element for effective program implementation involves a comprehensive education program that targets not only the public, but the manufacturers, the collection facilities and the communities affected by the Department's e-waste program. To that end, the Department created a website located at: <http://www.dec.ny.gov/chemical/65583.html>, where pertinent information and guidance are provided, including a list of all registered CEE manufacturers' brands and important information for consumers on how to recycle their e-waste easily through the various manufacturers' acceptance programs, with links to interactive lists and maps. Specific stakeholder guidance documents, as well as all registration, fee, and annual reporting forms are also available through this website.

Results reported for the first (partial) program year (9 months, from April 1, 2011 – December 31, 2011) were very encouraging. Manufacturers not only met the 2011 Statewide Recycling and Reuse Goal of e-waste collected for recycling or reuse of nearly 44,000,000 pounds, but exceeded the goal by slightly more than 850,000 pounds. Nearly 75 percent of the manufacturers met or exceeded their individual acceptance standards. By the end of the first program year, the Department received, reviewed and processed registrations and fees from 77 CEE manufacturers (39 individual manufacturers and 38 manufacturers participating in collective organizations), 6 collective organizations, 42 consolidation facilities, 47 recycling facilities and 726 collection sites.

Results reported for the second program year (January 1, 2012 – December 31, 2012) were slightly below the statewide goal, but still a significant improvement over years prior to the Act. Manufacturers were roughly 368,000 pounds short of meeting the 2012 Statewide Recycling and Reuse Goal of approximately 77,861,000 pounds. However, over 80 percent of the manufacturers reported either meeting or exceeding their individual acceptance standards, a slight increase over the prior program year. Beginning in 2014, manufacturers who exceeded their acceptance standards are allowed to accrue credits for over-collection for use beginning in 2015. For the second program year, 11 manufacturers did not meet their individual acceptance standards and were issued recycling surcharges totaling \$786,530.30 for under-collection of 1,579,728 pounds. By the end of the second program year, the Department received, reviewed and processed registrations and fees from a total of 86 CEE manufacturers (42 individual manufacturers and 44 manufacturers participating in collective organizations), 7 collective organizations, 57 consolidation facilities, 62 recycling facilities and 1,105 collection sites.

There were notable accomplishments in the first two program years of this comprehensive product stewardship law. However, several challenges exist. As the program continues to mature, the Department is focused on working with all stakeholders to address these program challenges in order to achieve the most efficient, fair, and sustainable e-waste recycling program possible.

### III. E-waste: A Growing Portion of Our Solid Waste Stream

In recent years, advances in consumer electronics and personal computers have spurred industry growth, changed information technology and improved people's lives in countless ways. But our growing dependence on electronic products both at home and in the workplace has given rise to a new potential environmental hazard: consumer e-waste. With lower prices and rapidly changing technology, computers, phones and TVs, as well as other electronic equipment, now have very short life spans. Accelerating trends in technology, in conjunction with the recent digital conversion, have resulted in a deluge of e-waste, giving it the notorious distinction of being the fastest-growing component of municipal solid waste. In addition, e-waste contains hazardous components that make the end-of-life management of these products complicated and, in some cases, expensive.

E-waste shows a higher growth rate than any other category of municipal solid waste, according to the United States Environmental Protection Agency (EPA). Nationwide, only 13.6 percent of the consumer electronic products entering the municipal solid waste stream were recovered for recycling in 2008. This compares to an overall recovery rate of 33.2 percent for all categories of municipal solid waste in 2008. A total of 430,000 tons of electronics were recovered in 2008. In 2009, the U.S. generated 3.19 million tons of e-waste, but only 600,000 tons or 17.7 percent was recycled, according to the EPA (up from 13.6 percent in 2008). Overall, between 2007 and 2008, total volumes of municipal solid waste decreased, while e-waste volumes continued to increase, putting more and more strain on local municipal budgets trying to handle the increasing volumes of e-waste generated.

The increasing rate of growth of e-waste and the environmental and fiscal problems associated with this growing component of our waste stream prompted 25 states, including New York, to pass e-waste legislation requiring manufacturers to provide programs to take back electronic equipment for reuse and recycling. Due to the states' e-waste legislation and expanded efforts of federal, state and local agencies, the recycling rate for e-waste is steadily increasing as more states are mandating product stewardship programs for selected electronic equipment. New York State's Act also bans disposal of e-waste in a solid waste disposal facility by anyone except an individual, starting January 1, 2012. The Act imposes a complete ban of e-waste disposal in any solid waste disposal facility, starting January 1, 2015.

Many electronic products also contain valuable materials, such as precious metals (e.g., gold, silver, palladium, and copper), and engineered plastics, all of which require considerable energy to process and manufacture. Recycling the products can recover these valuable materials and help to offset demand for natural resources. Therefore, these product stewardship programs have the net beneficial effect of reduced greenhouse gas emissions, reduced pollution and decreased energy demand by extracting fewer raw materials from the Earth. In addition, recycling and reuse of these products saves valuable landfill space and reduces waste-to-energy emissions.

**Manufacturers of the following types of covered electronic equipment (CEE) must provide convenient electronic waste acceptance programs to NYS consumers:**

- **Computers** (e.g. desktops, laptops, tablets and e-readers)
- **Televisions**
- **Small scale servers**
- **Computer peripherals** (e.g. monitors, keyboards, mice, fax machines, scanners and small printers)
- **Small electronic equipment** (e.g. VCRs, DVRs, portable digital music players, DVD players, digital converter boxes, cable or satellite receivers, video game consoles)

## IV. Overview of the Act's Regulated Entities and their Responsibilities

### Manufacturers of Covered Electronic Equipment

A manufacturer under the Act is an entity who assembles or substantially assembles CEE under its own brand name or under any other brand name for sale in New York; licenses a brand name to another person for use on CEE sold in the state; or imports CEE for sale into the state. However, entities that assemble or substantially assemble, and sell less than 1,000 units of CEE annually in the state are not considered manufacturers under the Act. Additionally, entities whose primary business is the sale of CEE which is comprised primarily of rebuilt, refurbished or used components, are also not considered manufacturers under the Act.

Manufacturers are responsible for implementing and maintaining an e-waste acceptance program, with oversight by the Department. The Act sets a statewide recycling or reuse goal and requires manufacturers, through their acceptance programs, to recycle or reuse their portion of that statewide recycling or reuse goal. A manufacturer's portion of the statewide goal is referred to as its acceptance standard, and is determined by the Department based on the manufacturer's market share of CEE sold into the state.

#### • Statewide Recycling or Reuse Goal

Each year, manufacturers of CEE who sell into New York State are responsible for recycling or sending for reuse a portion of that program year's statewide recycling or reuse goal ("Statewide Goal"). This goal fluctuates annually based on the current state population, as well as a fixed per capita collection standard (set in statute for program years 2011 through 2013) or the amount of e-waste collected for recycling or reuse in prior years (for program year 2014 and annually thereafter).

In 2011, the Statewide Goal was the product of the latest population estimate for the state, multiplied by three pounds, multiplied by three-quarters (for the abbreviated program period of April 1, 2011 through December 31, 2011), or **43,968,269 lbs.** For 2012, the Statewide Goal was **77,860,788 lbs.** based on 4 pounds per capita, and for 2013, was **97,851,305 lbs.** based on 5 pounds per capita.

For 2014 and annually thereafter, the Statewide Goal is the product of the "base weight" multiplied by the "goal attainment percentage." The base weight is the greater of: (1) The average weight of all electronic waste collected for recycling or reuse during the previous three calendar years reported to the Department by a particular manufacturer; or (2) The three-year statewide average of all electronic waste collected for recycling or reuse during the previous three calendar years based on information reported to the Department by electronic waste collection sites, consolidation facilities and recycling facilities. The goal attainment percentage is 90-110 percent of the statewide recycling or reuse goal for the previous calendar year, depending on how the base weight compares to the Statewide Goal. Beginning in 2014 and each year thereafter, the Statewide Goal is calculated using the data from all registered entities' annual reports, which are due by March 1st each year. The submission of complete and timely annual reports to the Department is critical in order to calculate an accurate and equitable Statewide Goal. The formula for calculating the Statewide Goal for 2014 and beyond is essentially a sliding scale that will fluctuate based on the average weight of e-waste collected for recycling or reuse during the previous three calendar years as reported to the Department.

#### • Acceptance Standards

Beginning with the 2011 program year, and annually thereafter, each manufacturer is required to accept for collection, handling and recycling or reuse, at a minimum, its acceptance standard of e-waste. However, manufacturers or their designee(s) may not stop collection of CEE once their acceptance standards have been met. E-waste acceptance programs must be run continuously throughout the program year.

A manufacturer's acceptance standard is determined by multiplying a program year's statewide recycling or reuse goal, as described above, by the manufacturer's market share of e-waste. A manufacturer's market share of e-waste is calculated by dividing the total weight of the manufacturer's CEE sold in the state (based on its average annual sales provided to the Department during the preceding three calendar years) by the total weight of all registered manufacturers' CEE sold in the state (based on the average annual sales during the preceding three calendar years).

Beginning in calendar year 2013, any manufacturer that fails to meet its acceptance standard for the previous calendar year is subject to a recycling surcharge. Beginning with calendar year 2014, a manufacturer that accepts more than its acceptance standard, may accrue and bank the excess weight as e-waste acceptance credits. These credits may be sold, traded, or banked beginning in calendar year 2015, for a period no longer than three calendar years following the year in which the credits were earned; but no more than 25% of a manufacturer's obligation for any calendar year may be met with recycling credits generated in a prior calendar year.

### Manufacturer Acceptance Standard Example Calculation

$$\begin{array}{l}
 \text{Manufacturer's Market Share of CEE} = \frac{\text{Total weight of manufacturer's CEE sold in the state based on the average annual retail sales during the preceding 3 calendar years}}{\text{Total weight of all manufacturer's CEE sold in the state based on the average annual retail sales during the preceding 3 calendar years}} = \frac{100,000 \text{ lbs.}}{1,000,000 \text{ lbs.}} = 10\%
 \end{array}$$

$$\begin{array}{l}
 \text{Manufacturer's Acceptance Standard} = \text{Statewide Recycling or Reuse Goal} \times \text{Manufacturer's Market Share of CEE} = 100,000,000 \times 10\% = 10 \text{ million lbs.}
 \end{array}$$

Additional important requirements for manufacturers under the Act include:

- **Registration with the Department**

Manufacturers are required to submit a registration form, a one-time \$5,000 registration fee, and a fee form to the Department. A description of the manufacturer's e-waste acceptance program, prior sales data, and manufacturer brands must be included in the registration form, and must be updated within thirty days of any material change to the information provided.

- **Provision of a "Free and Convenient" Acceptance Program**

The manufacturer's e-waste acceptance program must be provided at no cost to most New York State consumers. For purposes of the Act, a consumer is an individual, business, corporation, limited partnership, not-for-profit corporation, the state, a public corporation, public school, school district, private or parochial school or board of cooperative educational services or governmental entity located in the state. While all of these consumers are entitled to convenient recycling, manufacturers are only allowed to charge consumers in the following instances: if a contract for services was in place prior to January 1, 2011; if the consumer is a for-profit entity with 50 or more full-time employees (FTEs) or a not-for-profit entity with 75 or more FTEs; or if a premium service is provided. Premium services are any services above and beyond the reasonably convenient acceptance methods defined in the Act.

Manufacturers must provide at least one reasonably convenient method of collection within each county and within each municipality of the state with a population of 10,000 or greater. A list of such counties and municipalities is available on the Department's website at: [http://www.dec.ny.gov/docs/materials\\_minerals\\_pdf/munipop10k.pdf](http://www.dec.ny.gov/docs/materials_minerals_pdf/munipop10k.pdf). The following collection methods are considered reasonably convenient under the Act: mail or ship back return programs; collection or acceptance events conducted by the manufacturer or the manufacturer's agent or designee, including events conducted through local governments or private parties; fixed acceptance locations such as dedicated acceptance sites operated by the manufacturer or its agent or designee; agreements with local governments, retail stores, sales outlets and not-for-profit organizations which have agreed to provide facilities for the collection of e-waste; community collection events; and any

combination of these or other acceptance methods that effectively provide for the acceptance of e-waste for recycling or reuse through means that are available and reasonably convenient to consumers in the state.

Through its acceptance program, the manufacturer must have the means to continually and conveniently collect, at no charge, not only its own brands of CEE, but also one piece of e-waste of any manufacturer's brand, if offered by a consumer, with the purchase of CEE of the same type by a consumer.

- **Provision of a Public Education Program**

Manufacturers must provide a public education program to inform consumers about the manufacturer's e-waste acceptance program, and must provide sufficient information to enable a consumer to return CEE for recycling or reuse. At a minimum, the public education program must include a public education program website, a toll-free telephone number, and written information provided to consumers on how they may return CEE for recycling or reuse.

- **Retailer Notification**

Each manufacturer must notify retailers that it is registered with the Department. If written information regarding the manufacturer's e-waste acceptance program is not included in the manufacturer's product manual for CEE, then the manufacturer must provide information on its e-waste acceptance program to retailers for distribution to consumers purchasing CEE.

- **Proper Labeling of CEE**

A manufacturer may not offer for sale in the state or deliver to retailers for subsequent sale CEE unless it has a visible, permanent label clearly identifying the manufacturer of that equipment.

- **Annual Report Submission**

Manufacturers are required to submit an annual report, a \$3,000 annual reporting fee, and a fee form to the Department for the preceding program year. Details on the performance of the manufacturer's e-waste acceptance program, collection totals, prior years' sales data, updated manufacturer contact information, and other important facts and figures, are included in the annual report.

- **Records Maintenance**

Manufacturers must maintain records demonstrating compliance with the Act, and make them available for audit and inspection by the Department for a period of three years.

- **Disposal Ban Compliance**

The disposal ban of CEE for manufacturers began April 1, 2011.

## Collective Electronic Waste Acceptance Programs

The Act enables manufacturers of CEE to meet their obligations through individual or collective electronic waste acceptance programs (collectives). A collective program must fulfill the same requirements as an individual manufacturer's e-waste acceptance program. While not specifically defined in the Act, a collective represents one or more manufacturers, for the purpose of satisfying their e-waste collection requirements. A collective program is often more efficient, and allows for cooperative effort among the manufacturers and their representative organizations to meet their obligations under the Act. Collectives must submit a registration form, and a one-time \$10,000 registration fee and fee form to the Department, which is separate from their participating manufacturers' required submissions. Manufacturers who are a part of a collective still have the responsibility to meet all of their individual obligations, including the submission of an annual report, and a \$3,000 annual reporting fee and fee form. However, manufacturers who register with the Department as participating in a collective from the beginning, are not required to submit an individual \$5,000 registration fee or fee form.

## Electronic Waste Collection Sites

E-waste collection sites (collection sites) are likely to be the first point of contact when consumers return their e-waste for recycling or reuse and, therefore, play an important role in the Act. A collection site is a fixed or temporary site (and may be either private or municipal) at which e-waste is collected from consumers and temporarily stored for more than five days in a calendar year before such waste is transported to an e-waste consolidation facility or e-waste recycling facility. Collection sites include, but are not limited to, dedicated sites and facilities for the acceptance of e-waste, retail stores and outlets, municipal or private e-waste collection sites and not-for-profit donation sites that have agreed to accept e-waste.

All collection sites, including municipal collection locations, are required to submit a one-time registration form to the Department at least thirty days prior to receiving any e-waste at the site. Collection sites must also submit an annual report by March 1st for the previous program year detailing collection totals of CEE accepted at the site. E-waste must be properly stored and removed from the site in a timely manner.

## Electronic Waste Consolidation Facilities

Electronic waste consolidation facilities (consolidation facilities) organize, categorize and/or consolidate e-waste before it is transported to a recycling facility or other consolidation facility. Consolidation facilities include, but are not limited to, facilities of brokers acting as intermediaries between e-waste buyers and sellers, and regional centers at which e-waste is organized, categorized or consolidated after being transported to such centers from consumers, collection sites or other consolidation facilities.

Consolidation facilities must fulfill the same requirements as described above for collection sites. In addition to the registration form, consolidation facilities must also submit a one-time registration fee of \$250 along with a fee form to the Department.

## Electronic Waste Recycling Facilities

The Act defines e-waste recycling facilities (recycling facilities) simply as facilities at which e-waste is recycled. Recycling means to separate, dismantle or process the materials, components or commodities contained in e-waste for the purpose of preparing the materials, components or commodities for use or reuse in new products or components thereof, but not for energy recovery or energy generation by means of combustion, gasification, pyrolysis or other means. Recycling includes the manual and mechanical separation of e-waste to recover materials, components or commodities contained therein for the purpose of reuse or recycling, and changing the physical or chemical composition of e-waste.

The importance of information provided to the Department by recycling facilities is immeasurable. Recycling facilities are often the first point at which e-waste collected for recycling is weighed and quantified, so it is critical that their information is accurate and readily available to those collection sites, consolidation facilities, manufacturers and collectives with which the recycling facility contracts or on behalf of which it operates. Recycling facilities must fulfill the same requirements as described above for a consolidation facility.

## Retailers

Retailers play an important gate-keeping function under the Act as they are only allowed to sell registered manufacturer brands – specifically, brands of those manufacturers that are currently registered and are in compliance with the requirements of the Act. Retailers are prohibited from selling unregistered brands of CEE, as well as CEE that has been improperly labeled by the manufacturer. The Department maintains an updated list of registered brands of CEE on its public website for the retailers' information. At the point of sale, retailers must provide purchasers of CEE with information about opportunities for the convenient return of e-waste if it has been provided to the retailer by the manufacturer for dissemination.

## Waste Management Facilities & Waste Haulers/Transporters

Solid and Hazardous Waste Management Facilities and Waste Haulers and Transporters play an important role in ensuring the success of the Act's disposal ban. The Act's disposal ban prohibits e-waste from being accepted for disposal at a solid or hazardous waste management facility in three phases: April 1, 2011, from any electronic equipment manufacturer, retailer, or owner or operator of an e-waste collection site, consolidation facility, or recycling facility; January 1, 2012, from any person other than an individual, or household consumer; and January 1, 2015, from any person. Owners or operators of solid or hazardous waste management facilities are required to educate users of such facilities on the proper methods for recycling e-waste, providing both written information and posting signage at the facility. The Act also requires persons engaged in the collection of solid waste for delivery (i.e., private or municipal solid waste haulers/transporters), to educate their users in the form of written information, on the proper methods for recycling e-waste.

## Department's Oversight Role

The Department is charged with implementing, administering and enforcing the provisions of the Act. As such, the Department is responsible for overseeing a comprehensive system for managing the rapidly growing amount of e-waste across the state. The Department is required to:

- Collect, process, analyze, track and summarize information required by the Act;
- Calculate and allocate responsibility for the collection of e-waste among manufacturers of CEE;
- Maintain and post on its website a list of registered manufacturers and collective electronic waste acceptance programs, links to their public education program webpages, and all forms necessary for the regulated community to comply with the Act;
- Promulgate rules and regulations necessary to implement, administer and enforce the Act;
- Promulgate rules and regulations on standards for reuse, e-waste acceptance credits, waivers of recycling surcharges, and acceptable alternative methods for determination of sales data;
- Register and maintain a list of manufacturers which are registered and their brands, in addition to publishing such list on the Department's website;
- Register all e-waste collection, consolidation and recycling facilities within New York State;
- Provide technical support and outreach, as well as disseminate information to all interested parties;
- Collect, analyze and evaluate information contained in registrations and annual reports, including manufacturers' sales data and e-waste collection data;
- Maintain a database of annual collections, waste credits and credit transactions;
- Process registration fees, annual reporting fees, and surcharge payments;
- Calculate recycling surcharges and track acceptance credits;
- Evaluate requests for waivers of recycling surcharges;
- Track compliance and enforcement; and,
- Submit a report to the Governor and Legislature biennially, which evaluates the e-waste stream in the state; evaluates the rate of recycling and reuse in the state of CEE; discusses compliance; recommends any changes; and discusses opportunities for business development in the state related to this program.

### Department Website Quick Links:

- NYS E-waste Recycling Program Main Page: <http://www.dec.ny.gov/chemical/65583.html>
- Guidance for Consumers: <http://www.dec.ny.gov/chemical/66872.html>
- Registered Manufacturers & their Brands: <http://www.dec.ny.gov/chemical/82084.html>
- Text of the NYS Electronic Equipment Recycling & Reuse Act: [http://www.dec.ny.gov/docs/materials\\_mine\\_rals\\_pdf/ewastelaw2.pdf](http://www.dec.ny.gov/docs/materials_mine_rals_pdf/ewastelaw2.pdf)

# V. Program Performance and Results

## Overall Collection Results

The NYS Electronic Recycling and Reuse Act has proven to deliver both positive environmental and economic results in 2011 and 2012. The total amount of CEE collected by manufacturers for recycling or reuse during the 2011 reporting period (April 1, 2011 – December 31, 2011) was 44,818,426 lbs., which equates to an approximate 2.3 lbs. per capita statewide collection rate. Manufacturers successfully collected 850,157 lbs. more from NYS consumers than was required by the 2011 Statewide Recycling and Reuse Goal of 43,968,269 lbs.

During calendar year 2012, the total amount of CEE collected by manufacturers for recycling or reuse increased to 77,492,596 lbs., which equates to an approximate 4 lbs. per capita statewide collection rate. However, manufacturers ultimately reported collecting 368,192 lbs. less from NYS consumers than was required by the 2012 Statewide Recycling and Reuse Goal of 77,860,788 lbs.

Significantly more e-waste was collected for recycling or reuse from NYS consumers in 2011 and in 2012 than in any previous year for which records are available. According to the limited historical data available to the Department, approximately 6,481,446 lbs. of e-waste was collected from household hazardous waste (HHW) collection events and permanent HHW sites in 2010. This amount does not account for other potential e-waste collected by any other voluntary methods.

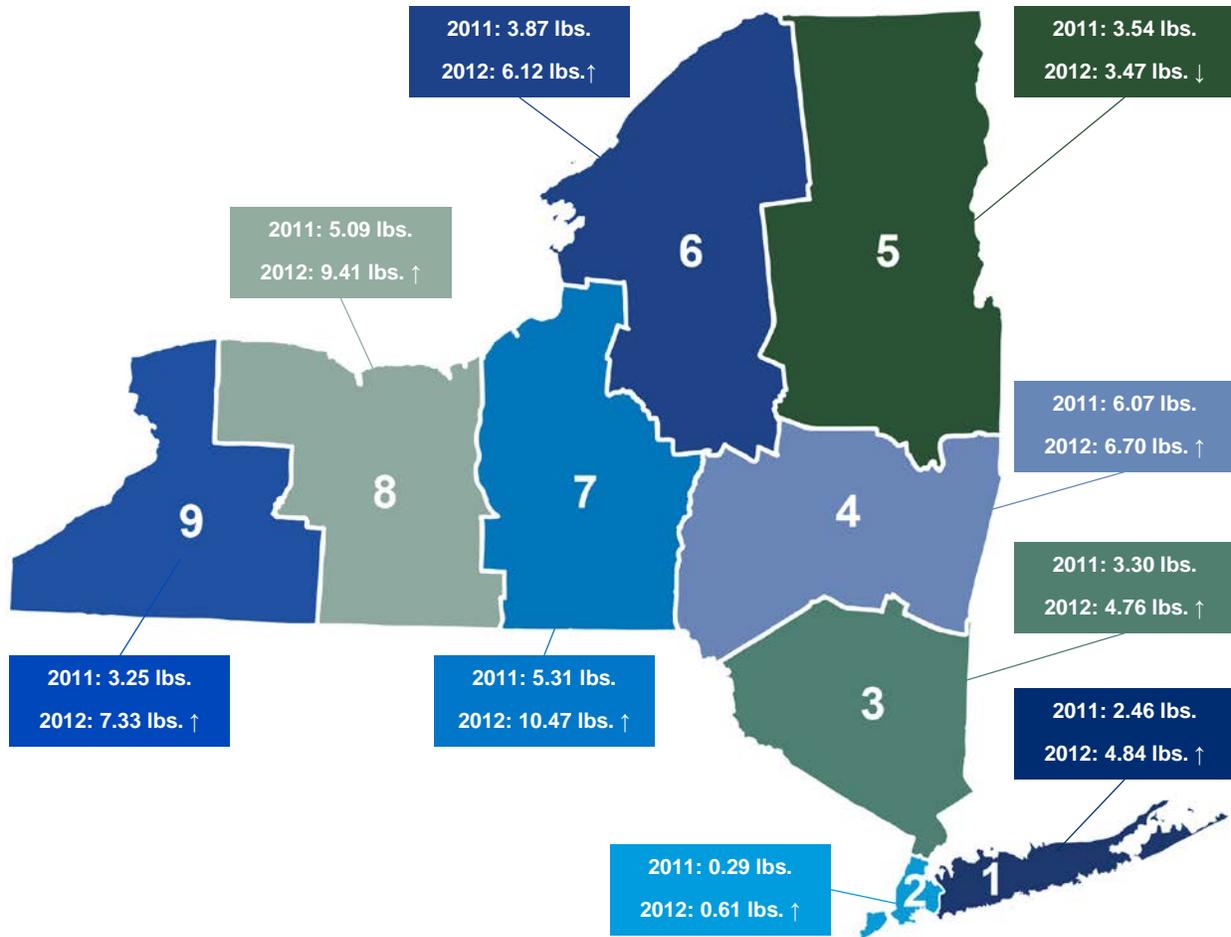


## Results by DEC Region

For the 2011 program year, only 40 percent of the e-waste collection sites that were registered submitted their required annual reports. Accordingly, the Department was only able to determine the origin of 29,482,416 lbs. of e-waste collected. Each county's percentage of the total weight that could be accounted for was then extrapolated to estimate the approximate per capita collection rates for the various DEC Regions for the 2011 program year based on the actual collection total of 44,818,426 lbs. (see diagram below). All regions of the state, aside from New York City (Region 2), met the 2.25 lbs. (3 lbs. multiplied by ¾ of a year) per capita statewide recycling or reuse goal for the 2011 program year. The New York City rate was far below the rate for the other Regions.

For the 2012 program year, approximately 75 percent of the e-waste collection sites reported. In addition, more detailed information was received from recycling facilities regarding the origin of e-waste collected via premium services such as on-site pickup. The Department was able to determine the origin of 61,134,927 lbs. of e-waste collected. Again, each county's percentage of the total weight that could be accounted for was then extrapolated to estimate the approximate per capita collection rates for the various DEC Regions for the 2012 program year based on the actual collection total of 77,492,596 lbs. (see diagram below). All regions of the state, aside from New York City and rural Region 5 met the 4 lbs. per capita statewide recycling or reuse goal for the 2012 program year. Every region, except Region 5, increased its per capita collection rate for 2012 over the prior program year. The New York City rate continued to be far below the rate for the other Regions.

## Per Capita Collection by DEC Region



Region 1: Nassau and Suffolk Counties

Region 2: Kings, Bronx, New York, Queens and Richmond Counties

Region 3: Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester Counties

Region 4: Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie Counties

Region 5: Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington Counties

Region 6: Herkimer, Jefferson, Lewis, Oneida and St. Lawrence Counties

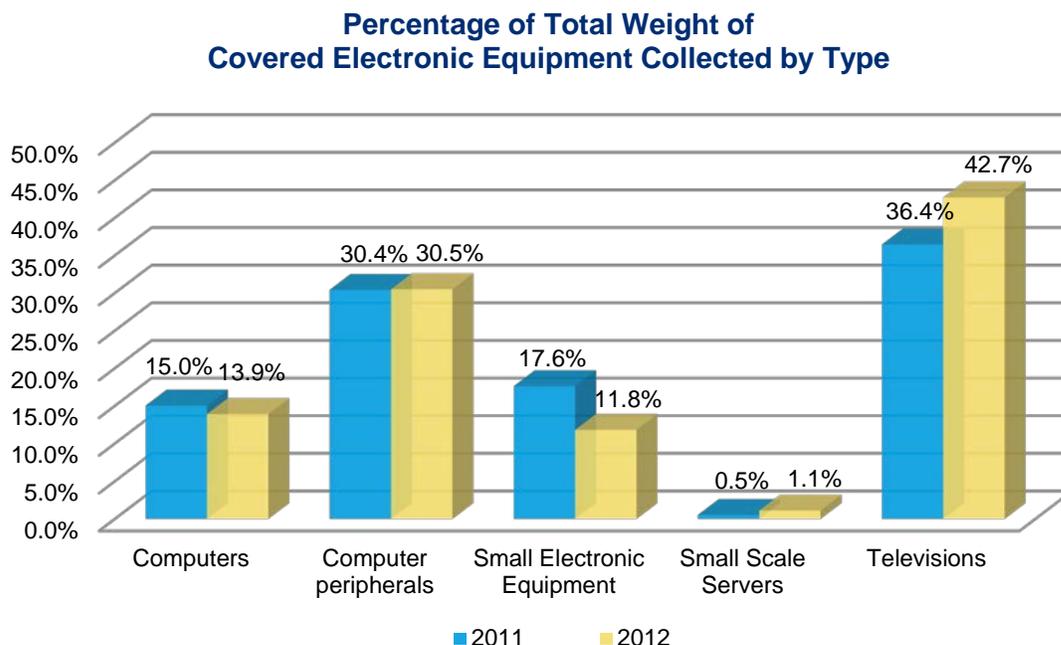
Region 7: Broome, Cayuga, Chenango, Cortland, Madison, Onondaga, Oswego, Tioga and Tompkins Counties

Region 8: Chemung, Genesee, Livingston, Monroe, Ontario, Orleans, Schuyler, Seneca, Steuben, Wayne and Yates Counties

Region 9: Allegany, Chautauqua, Cattaraugus, Erie, Niagara and Wyoming Counties

## Results by Type of Covered Electronic Equipment

Television and computer peripheral categories of CEE, which include both bulky Cathode Ray Tube (CRT) televisions and CRT monitors, comprised over two-thirds of the weight collected from consumers for the 2011 and 2012 reporting periods. There was a significant drop in the weight percentage accepted from consumers in the small electronic equipment category from 2011 to 2012, suggesting that either consumers are recycling less of this type of equipment or that the equipment itself is becoming lighter. The weight percentage accepted from consumers in the television category from 2011 to 2012, however, increased significantly, likely due to increased consumer demand for recycling or disposal of the more obsolete CRT televisions. For a full results breakdown by CEE category, see the graph below.



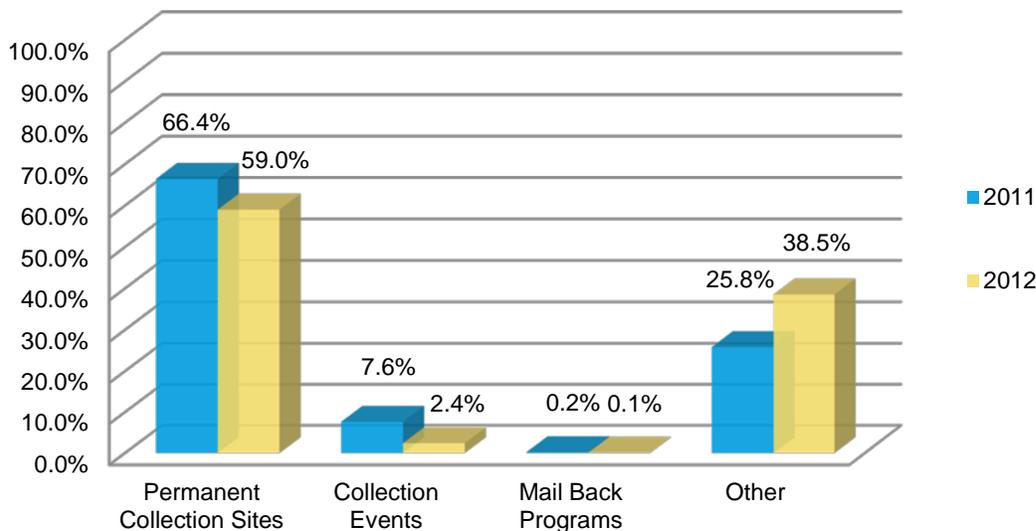
## Results by Acceptance Method

The Act allows manufacturers of CEE to employ a variety of acceptance methods to meet the convenience requirements of the law. The following acceptance methods are considered reasonably convenient:

- **Mail or ship back return programs** that are free to the consumer and that do not exclude material based on weight limits (unless another reasonably convenient acceptance method has been provided);
- **Collection or acceptance events** conducted by the manufacturer or the manufacturer's agent or designee, including single and multiple-day events conducted by local governments, community groups or private parties;
- **Fixed acceptance locations** at dedicated acceptance sites operated by the manufacturer or its agent or designee, including local governments, retail stores, and not-for-profit organizations which have agreed to provide facilities for the collection of e-waste;
- **Other methods** which effectively provide for the acceptance of e-waste for recycling or reuse through means that are reasonably convenient to consumers in the state. Examples of "other methods" include premium services, such as reverse distribution/pick-ups of obsolete equipment at businesses, schools and government locations. In the program's first and second year annual reports, several manufacturers reported purchasing significant quantities of e-waste from recycling facilities in an attempt to meet their acceptance standards. For these transactions, manufacturers failed to report the acceptance method used in the original collection. The weight of e-waste purchased from recycling facilities without further breakdown of origin, has been included in the "other" category for the 2011 and 2012 reporting periods.

Approximately two-thirds of the weight collected from consumers during the 2011 and 2012 reporting periods was collected at permanent collection sites. The results also show that the weight collected from permanent collection sites and collection events decreased from 2011 to 2012. Collection by mail back programs, which manufacturers used primarily to meet the Act's convenience requirements, represented less than a quarter of one percent of the total weight collected for both program years. It is important to note that a significant amount of e-waste in 2011 and 2012 fell into the "other" acceptance category, which accounts for weight that may have been simply collected directly from various business entities, outside the collection site infrastructure. For the full results breakdown by acceptance method, see the table below.

**Percentage of Total Weight of Covered Electronic Equipment Collected by Acceptance Method**



## Registration & Annual Reporting Process

During the first two program years, the Department received numerous registrations and annual reports from the Act's regulated entities, as detailed in the chart below. By the end of 2011, the NYS E-waste Program had a total of 851 registered entities, due to registrant category adjustments and program drop-outs. By the end of 2012, there were 1,255 registered entities, after similar category adjustments and program drop-outs. Overall, compliance with the registered entities' annual reporting increased significantly from 2011 to 2012.

Registrant Type	Total Registrants		% Annual Reports Received	
	2011	2012	2011	2012
Collectives	6	7	100%	100%
Manufacturers	77	86	100%	94%
Individual	39	42		
Collective	38	44		
Collection Sites	726	1,105	40%	75%
Consolidation Facilities	42	57	70%	100%
Recycling Facilities	47	62	78%	94%

Many of the Act's regulated entities are required to pay a one-time registration fee depending upon the type of operations they perform. Collective electronic waste acceptance programs are required to pay \$10,000 at the time of registration; manufacturers running individual e-waste acceptance programs are required to pay \$5,000; and e-waste recycling and consolidation facilities are required to pay \$250. All manufacturers are required to pay an annual reporting fee of \$3,000 with their March 1st annual reports. Revenue from the first two program years, which was deposited into the Environmental Protection Fund, totaled **\$800,000**, and broke down as follows:

	2011	2012
<b>Registration Fees</b>	<b>\$297,000</b>	<b>\$29,000</b>
Collectives	\$60,000	\$10,000
Manufacturers	\$215,000	\$10,000
Recyclers	\$11,000	\$4,000
Consolidators	\$11,000	\$5,000
<b>Annual Report Fees</b>	<b>\$240,000</b>	<b>\$234,000</b>
<b>TOTAL</b>	<b>\$537,000</b>	<b>\$263,000</b>

## Collective Electronic Waste Acceptance Programs

Six collective programs operated in NYS during the first program year, and seven in the second. These collectives have proven to be an efficient and cost-effective option for many manufacturers, especially the smaller manufacturers, who may not have the resources available to implement and maintain their own statewide e-waste acceptance and public education programs. While about half of manufacturers who registered in 2011 joined collective programs, many manufacturers who originally opted to run their own individual acceptance programs have now switched to collectives in order to meet their increased acceptance standards. In fact, over 70 percent of manufacturers now report participating in collective programs. Collectives have some of the largest recycling infrastructure in the state, providing consumers with numerous physical collection locations in addition to the rarely used mail back programs.

## Manufacturer Performance

While all annual reports for the 2011 program year were eventually received from manufacturers, many were submitted well into May, significantly beyond the March 1, 2012 reporting deadline. For program year 2012, manufacturers' annual reporting compliance decreased, as annual reports from five manufacturers were never received despite several reminders. In addition, many of the 2012 program year annual reports did not arrive until several months after the reporting submission deadline. This resulted in a delay in manufacturers' acceptance standard calculations and distribution of that information to manufacturers.

For program year 2011, 73.5 percent of manufacturers reported either having met or exceeded their manufacturer acceptance standards, while 26.5 percent reported having not met their acceptance standards. Of the manufacturers who reported for program year 2012, 80.2 percent reported either having met or exceeded their manufacturer acceptance standards, while 19.8 percent reported having not met their acceptance standards. The increased compliance of manufacturers with their acceptance standards for the second program year was likely due, at least in part, to the onset of recycling surcharges beginning in 2013 for shortfalls occurring in program year 2012. Recycling surcharge results are described in the following section.

In their initial registration forms and/or subsequent updates, all manufacturers listed a mail back program as one of their free and convenient acceptance methods to be provided to NYS consumers. However, for program year 2011, only about half of those who reported claimed to have collected any weight via this acceptance method, and for program year 2012, the number of those who reported accepting any weight via mail back dropped dramatically to less than 14 percent. In both program years, of those who reported receiving e-waste via a mail back program, only an exceptionally small fraction (less than 0.25 percent) of their total weight of CEE collected actually resulted from their mail back program. This is likely due to ineffective manufacturer public education programs and low consumer usage because of the inconvenience of mailing back large CEE. The majority of consumers use mail back for small CEE, and not bulky televisions and computers. It is usually preferable to a consumer to bring a large item to a drop-off location, which may or may not be conveniently located to them, than to have to prepare and package a large item and schedule a pick-up or bring the item to a mailing location. Mail back programs, in the first few program years, have been ineffective and are mostly used by manufacturers to meet the Act's convenience requirements. These programs may improve for smaller CEE with more outreach efforts on the part of manufacturers.

## Manufacturer Recycling Surcharges

Beginning in 2013, and annually thereafter, a manufacturer that fails to meet its manufacturer's acceptance standard of e-waste for the previous calendar year is subject to a recycling surcharge of \$0.30, \$0.40 or \$0.50 per pound, depending on how far a manufacturer is from meeting its acceptance standard.

In rare cases, the Department may waive the recycling surcharge payable by a manufacturer when the manufacturer demonstrates in an application to the Department that it was unable to

accept its acceptance standard of e-waste despite the manufacturer's best efforts. A waiver does not relieve a manufacturer of the obligation to comply with all other provisions of the Act. Waiver applications are to accompany the manufacturer's annual report and annual reporting fee due March 1st annually. For program year 2012 the Department received no waiver applications.

For program year 2012, recycling surcharges totaling \$41,922.30 for under-collection of 90,512 lbs. were collected from 10 manufacturers. Going forward, the Department anticipates increased compliance by manufacturers in meeting and exceeding their acceptance standard performance goals.

## Electronic Waste Collection Sites

At the end of 2011, there were approximately 726 e-waste collection sites operating across the state. Approximately 54 percent of collection sites that operated in New York State during the first program years were located at retail outlets or other privately run locations (e.g., Best Buy, Good Will and Salvation Army). Municipally-run collection sites made up approximately 46 percent, with about half of those being located at solid waste transfer stations.

Both private and municipal collection site locations significantly increased in number after the first program year to a total of 1,105 by the end of 2012. As the statewide recycling and reuse goal and manufacturer's acceptance standards increased in the first two program years, so did the number of pounds of e-waste required for collection and recycling. Collection site locations are proving to be one of the most convenient and frequently-used methods for consumers to dispose of their e-waste, and therefore, play a critical role in New York's e-waste recycling infrastructure.

### Recycling Surcharge Calculation

A manufacturer's surcharge is calculated by multiplying the following rate by the number of additional lbs. the manufacturer should have collected/recycled towards its acceptance standard:

#### Rate, if manufacturer collected:

< 50% of acceptance standard = **\$0.50 per lb.**

50% to <90% of acceptance standard = **\$0.40 per lb.**

90% to <100% of acceptance standard = **\$0.30 per lb.**

### Municipal Cost Savings Example

#### Westchester County

- Municipality benefits from savings of over \$75,000 per month after the April 1, 2011 implementation of the Act
- Westchester County now has minimal operational expenses related to the management of residential e-waste

Municipalities have no responsibility to collect e-waste under the Act. In fact, a key purpose of the Act was to remove the burden and expense of managing costly e-waste acceptance programs from municipalities, and introduce a producer responsibility approach to managing this expanding waste stream. Still, many municipalities chose to offer e-waste collection opportunities in their community and, in many cases, partnered with recyclers, manufacturers and/or collectives in offering such programs.

In the fall of 2012, the Department surveyed state municipal contacts asking them about their experiences before and during the Act's first program year. According to those 280 municipal contacts surveyed, the Act's first program year proved to be successful. In fact, 70 percent of those surveyed indicated their municipality faced no obstacles as a result of the Act. Of those who experienced difficulties during the Act's first program year, most cited a lack of public awareness of the Act and/or that the municipalities lacked guidance regarding the Act's implementation. The Department, along with municipal solid waste management facilities and waste haulers, plays an important role in ensuring the success of the Act, and it is clear that additional education and outreach activities to consumers are necessary.

The Department was also able to conclude from this survey that the Act has resulted in fewer fees to residents for the acceptance of their e-waste for recycling/reuse and in some cases provided for a small revenue stream for municipalities. Several municipalities noted significant savings for the management of e-waste after the adoption of the Act. Westchester County, for example, was able to save over \$75,000 per month after the Act went into effect. In addition, the municipal e-waste collection infrastructure in the state has expanded and there are now more collection opportunities available to residents than before the Act's implementation date. The Department plans to perform a follow-up survey of municipal contacts in the near future to assess how the Act has affected municipalities beyond the first two program years.

## Electronic Waste Recycling Facilities

By the end of 2011, there were 47 NYS-based e-waste recycling facilities operating across the state. By the end of 2012, the number had increased to 62. These recycling facilities play a critical role in the implementation and overall performance of the Act. Recycling facilities act as a very important bridge between the collection of e-waste for recycling through collection sites, and the distribution of the weight recycled to manufacturer and collective acceptance programs, helping them to meet their convenience and performance goals. The recycling community's assistance to manufacturers was critical in the establishment of programs able to meet manufacturers' convenience requirements and performance standards imposed by the Act. Many manufacturers partnered with recycling facilities that were well established and had attained, or were in the process of attaining, third-party certification (e.g., R2 and e-Stewards). It is important to note that the Act does not require third-party certification of its registered e-waste recycling facilities.

Recycling facilities have been very active in implementing various aspects of the Act, including:

- Disseminating information to collection sites and, in the process, providing educational opportunities on the Act's requirements;
- Logistics planning around the state in anticipation of increased e-waste flow;
- Greatly expanding the state's e-waste collection infrastructure by contracting with municipalities and private collection sites, as well as through direct collection from business consumers;
- Working extensively with manufacturers and collectives to secure agreements for participation in their acceptance programs; and
- Changing the way they traditionally track and report collection data to reflect the Act's explicit reporting requirements (e.g., weight by type of CEE and by location of origin).

Recycling facilities continue to implement successful operations despite facing significant challenges, including, but not limited to:

- Competition to gain contracts with manufacturers who not only dictate low reimbursement rates but also delay payments;

- Low overall consumer awareness regarding the state’s e-waste recycling program, the Act itself, and available options for recycling or reuse of their equipment;
- Managing complex materials, which are labor intensive to responsibly handle and process;
- High cost of materials transportation;
- Limited outlets for CRT recycling;
- Difficult collection logistics, especially in the state’s urban centers;
- Fluctuating commodity prices; and
- Competition to gain contracts with municipalities, schools, large businesses and other collection site locations who demand increasingly high prices for their e-waste.

## E-waste Job Creation Survey for Recyclers

In the fall of 2012, the Department surveyed the state’s registered e-waste recyclers to obtain important feedback and gauge overall economic impact of the Act during the first program year. The E-waste Job Creation Survey for Recyclers (survey), included questions regarding jobs, economic impact and recycler satisfaction. Results were as follows:

- 72 percent of the recyclers that responded reported positive impacts on their business.
- The majority of recyclers had positive overall views regarding the Act, calling it positive for consumers and the environment.
- 42 percent of the recyclers surveyed felt that the program favors large recyclers and tends to keep smaller recyclers and start-ups from benefiting from the economic opportunity.
- 42 percent also indicated paperwork, data and tracking requirements imposed by the Act were difficult to handle.
- Two thirds of the recyclers indicated that the new opportunities presented by the passing of the Act were the main reason for their entry into the e-waste recycling business.
- Prior to the Act’s implementation, 50 percent of the recyclers reported hiring up to three new employees in anticipation of the demand created by the implementation of the Act.
- A third of the respondents indicated a slight increase in their workforce, while about six percent forecasted significant increases in hiring by the end of year 2012.

## Department Activities Performed

The Department played an active role in developing and advocating for e-waste product stewardship legislation in New York before the Act’s passage in May of 2010. Since the Act’s passage, the Department has taken the lead role in the implementation and administration of the state’s E-waste Recycling/Reuse Program. The following are examples of program activities that were performed by the Department before and during the Act’s first two program years. In many cases these activities are ongoing:

- Registration, annual reporting and fee form development and revision for all regulated entities;
- Short-term data management system development and implementation;
- Registration and annual report data entry and verification;
- Registration and reporting fee payment processing;
- Manufacturer acceptance standard calculation and distribution via certified mail;
- Manufacturer surcharge calculation;
- Long-term data management system development with contractor;

- Providing technical support and determinations to regulated entities via telephone and e-mail;
- Targeting and contacting unregistered manufacturers of CEE as well as other regulated entities;
- Notifying retailers about unregistered manufacturers' brands;
- Performance of enforcement and compliance activities;
- Creation and maintenance of guidance information on the public website, including, but not limited to, lists of registered entities;
- Development of outreach and education materials for publication;
- Development and delivery of presentations on the Act;
- Development of draft rules;
- Acquisition of membership with, and participation in, various stakeholder organizations such as the Electronics Recycling and Coordination Clearinghouse, the State Electronics Challenge, the New York Product Stewardship Council (NYPSC), and the Product Stewardship Institute (PSI);
- Survey creation, distribution and analysis;
- Verification and manipulation of collection data for trend determination and reporting; and
- Development of this report to the Governor and Legislature.

## VI. Program Strengths

### Broad Scope of Covered Electronic Equipment

New York passed an e-waste recycling law with a very broad scope of covered electronic equipment, as compared to states with earlier e-waste laws. Most other states have a limited variety of affected products, typically only computers, monitors, laptops and sometimes televisions and printers. In general, the Department believes, consumers are more likely to participate in collection programs that allow them to bring back all of the e-waste they have for recycling, especially the larger items, including televisions and printers. Department staff continually evaluate emerging electronic products in order to make technical determinations for inclusion as CEE under the Act and add these products when appropriate. For example, the Act's general definition of "computer" has allowed for the addition of tablets and e-readers to be included as CEE in New York's program.

### Increased Recycling/Reuse and the Resulting Benefits

As a result of the Act, approximately 123 million pounds of e-waste that might not have otherwise been removed from the municipal solid waste stream was properly recycled or reused during New York's first two program years. This proper management of e-waste, including the recycling and reuse of unwanted equipment pursuant to the Act resulted in an energy savings equivalent to powering approximately 102,432 U.S. households a year, and a greenhouse gas reduction equivalent to removing approximately 26,786 passenger cars from the road per year (Source: The Federal Electronics Challenge's "Electronics Environmental Benefits Calculator (EEBC)"). The increases in the statewide recycling or reuse goal, combined with increased consumer awareness and the continued expansion of manufacturers' recycling infrastructures over the next few years, will likely continue to increase the amount of e-waste collected. Increased collection of e-waste for recycling or reuse will save additional valuable landfill space, further protect human health and the environment from potentially toxic materials, and result in fewer natural resources used, among numerous other benefits.

## Convenient Collection Available to All Consumers

In several states with existing e-waste recycling legislation, e-waste collection opportunities are only available to household consumers. In New York State, however, the Act expands its free and convenient acceptance requirements to small businesses, corporations, limited partnerships, not-for-profit corporations, the state, public corporations, public schools, school districts, private or parochial schools, boards of cooperative educational services (BOCES), and governmental entities. These non-household consumers are significant contributors of e-waste, and it was essential to include them in the broad scope of entities covered by the Act. It's important to note that while free acceptance methods are available to non-household consumers in the state, many choose more convenient "premium service" options provided by manufacturer programs, such as at-business pick-up, equipment and data security services, or specialized packaging. Charging a fee for these "premium service" options is allowed under the Act.

## Year-Round Collection

New York State consumers have access to free and convenient recycling year round. Even after manufacturers meet their acceptance standard goals, CEE collection may not be halted by manufacturers. Through its acceptance program, a manufacturer must collect not only its own brands of e-waste, but also one piece of e-waste of any manufacturer's brand if offered by a consumer, with the purchase of CEE of the same type by a consumer. Such collection must continue all year long, allowing consumers the flexibility to offer their e-waste for recycling or reuse at a time that is most convenient for them.

## Adjusting Statewide Goals

Statewide recycling and reuse goals are prescribed in the Act for the first three program years; however, in program years 2014 and beyond, the Act uses a specified formula by which the statewide recycling and reuse goal will fluctuate. Year-to-year statewide collection goals will increase or decrease based on actual collection in the three preceding calendar years as reported to the Department. This will ultimately result in manufacturers' acceptance standards more closely following changing market conditions and collection activities.

### Statewide Recycling & Reuse Goals:

- 2011: 43,968,269 lbs.
- 2012: 77,860,788 lbs.
- 2013: 5.0 lbs./capita
- 2014 & beyond: formula used\*

\* For 2014 and beyond, the statewide goal will fluctuate based on market conditions and takes into account the average weight of e-waste collected for recycling during the previous three years.

## Manufacturer Flexibility in Establishing Unique Collection Infrastructure

Under New York's Act, manufacturers have been given the flexibility to decide how they will reach their acceptance standard goals. They can utilize a number of acceptance methods deemed "reasonably convenient" under the Act, such as mail back, collection at permanent sites, and collection events. This flexibility has been well-received by regulated manufacturers and has led to improved cooperation on the part of manufacturers.

## Less Financial Burden on Local Government

Prior to the Act's implementation, many local governments across the state that provided e-waste collection programs for their residents were forced to pay excessively high prices. In many cases, the prohibitive cost of managing e-waste collection programs deterred local governments from offering such programs. During the first two program years, participating municipalities reported that not only had the Act removed the heavy financial burden of providing e-waste collection programs from local governments, but it had also helped defray program costs and, in some cases, provided a modest revenue stream. It should be noted that the Department is not involved in the actual contract negotiations between regulated entities and that these costs will continue to fluctuate based on market conditions beyond the Department's control.

## Job Growth in Recycling Industry

The majority of recyclers that staff surveyed had positive overall views regarding the Act's first two program years, calling it beneficial for consumers and the environment. Initial qualitative and quantitative data suggests that the Act has positively affected growth in the e-waste recycling industry, as mentioned in the discussion regarding the E-waste Job Creation Survey for Recyclers. Business expansion and job creation occurred in the first two program years and can be expected to continue in future years.

## VII. Program Challenges

### Stakeholder Awareness

Many of the Act's regulated entities were slow in learning the details and requirements of the Act, and, therefore, did not submit the required registration or annual reporting forms, incorrectly registered, provided incorrect, incomplete or inconsistent data, and/or did not submit required information in a timely manner. This, in turn, made it difficult for the Department to pass along timely information to appropriate stakeholders.

Adequate public education and outreach is a critical component in the success of any new recycling program. Educating all consumers across the state with a clear, concise message and arming them with easy-to-use information regarding the free and convenient recycling/reuse opportunities available to them is key to increasing e-waste recycling in the state.

### Data Management, Tracking and Verification

The absence of an effective database management system has limited the Department's ability to accomplish some of the objectives of the program. With the large amount of data and information generated from program registrations, annual reports and stakeholder correspondence, the use of desktop spreadsheets has been quickly outgrown. The time and effort required to manually enter and verify quantities of e-waste moving through a system involving over 1,200 regulated entities has been difficult and has strained the Department's ability to adequately track e-waste. The need for a comprehensive database management system has become even more crucial to the success of the program now that the Department is required to track e-waste acceptance credits (see below, "IX. Looking Forward").

### Out-of-State Entities

The Department has difficulty tracking and accounting for e-waste collected and processed by out-of-state entities that are not required to register in New York. Presently, only the collectors, consolidators and recyclers located in New York are required to register in the program. There are sizable amounts of e-waste pick-ups from businesses and private entities that escape the Department's out-of-state tracking capabilities. If this e-waste is not being claimed by manufacturers or collectives participating and reporting in New York's e-waste recycling program, there is currently no other mechanism by which the Department can account for this weight. This missing weight can make a difference in calculating the annual Statewide Recycling and Reuse Goal, using the prescribed formula beginning in the 2014 program year.

### Delayed Acceptance Standard Allocation for Manufacturers

Annual reports from all registered manufacturers of CEE were due March 1, 2012 for the first program year (April 1, 2011 – December 31, 2011). The Department could not accurately calculate and fairly assign 2012 acceptance standards for e-waste to manufacturers until annual reports from all registered manufacturers of CEE, with updated sales information, were received, processed and reviewed. The Department was still receiving manufacturer reports for the 2011 program year well into May of 2012. For the second program year (January 1, 2012 – December 31, 2012), the Department again received late manufacturer annual reports well past the March 1, 2013 deadline, despite multiple reminder attempts.

The untimely submission of complete annual reports by manufacturers and collectives in both program years led to a significant delay in the allocation of acceptance standards, which were not officially sent out until June. The Department anticipates more prompt submission of annual reports in future program years, but enforcement actions may be necessary to ensure compliance.

## Program Implementation and Effectiveness in New York City

E-waste collection and recycling in New York City poses a unique challenge. Approximately 40 percent of the state's population lives in New York City. Due to the nature of housing and transportation within New York City, it is a daunting task to make e-waste collection and recycling conveniently available to over eight million residents through a small number of permanent collection centers and a few collection events held each year. In the first two program years, there was a significant under-collection of e-waste as reported by the various program stakeholders, despite the City's best efforts to disseminate information regarding e-waste collection opportunities and sponsoring one collection event in each of its five boroughs annually. Despite this not being the specific responsibility of New York City under the Act, the New York City Department of Sanitation (DSNY) recognized the need to develop an enhanced e-waste collection for City residents and began the development of a much more expansive and comprehensive program that will provide more convenient options for e-waste recycling/reuse within the City.

## Recycling Cathode Ray Tubes (CRTs)

Consumers in New York State, like every other state in the country, have embraced new technologies that are shifting away from CRT display units. This has resulted in a glut of these older, heavy units available for collection, recycling and processing. CRTs contain significant quantities of lead and properly managing the resultant contaminated glass has become a challenging task, especially when adequate end markets to use this material continue to dwindle. Because of the abundance of CRT recyclers, who previously earned \$200 per ton recycling CRT glass only a few years ago, they now typically pay \$200 or more per ton to process the same glass. This can prove costly for recyclers who claim that they are not being adequately compensated by electronic equipment manufacturers, who are responsible under the law for the cost of collecting and recycling CRTs. For many recyclers, any revenue generated from the recovered material on the back-end and discretionary added premium services, such as a home pick up or assisted data removal that they may offer along with mandated free collection, are not enough to offset losses resulting from inadequate payments from the manufacturers and high CRT recycling costs. As a result, there is a net cost to recyclers. Besides these dynamic market forces, there are limited disposal options and increased transportation costs for CRTs, making recycling of CRTs financially burdensome to manufacturers and not viable for some recyclers.

On August 7, 2013, the Department issued an enforcement discretion policy to allow regulated parties, such as CRT collectors and processors, to store used CRTs and CRT glass removed from CRTs prior to legitimate recycling in compliance with federal regulations, while the Department completes the promulgation of those requirements into State regulations. This discretion policy provides a protective but streamlined approach to managing these materials and thereby significantly encourages the recycling of this glass. Specifically, regulated parties will be allowed to comply with the requirements of the "CRT Rule" promulgated by the United States Environmental Protection Agency (USEPA) at 40 Code of Federal Regulation (CFR) §261.39 (71 Federal Register (FR) 42928-42949, July 28, 2006).

More regulatory guidance and flexibility, both at the federal and state levels, will likely help to ensure strong end markets for processed CRT glass, help facilitate the creation of new opportunities for innovative recycling business and encourage job creation across the state.

## Definition Clarifications

There is no definition for “collective electronic waste acceptance program” under the Act. Such a definition is needed, considering that collectives play such a large role in the implementation of New York’s e-waste program. More than 50 percent of manufacturers currently belong to a collective organization. While the “collective electronic waste acceptance program” was provided in the Act as an option for manufacturers to use, their responsibilities need to be more clearly defined.

The Department also believes a clear definition is needed for an “electronic waste collection event”. There is currently no language describing what constitutes such a collection event. The Department cannot always track and account for e-waste collected at in-state collection events and processed by out-of-state entities if the e-waste collected is not claimed as part of a registered manufacturer’s program. The Department will work to close this gap and require electronic waste collection event organizers to report e-waste collected at all these events.

## VIII. Department Recommendations

### Acceptance Standard Distribution Date

The Department will continue to evaluate and pursue options that will allow manufacturers’ acceptance standards to be provided to them well in advance of the program year for which the standard is distributed. Currently, acceptance standards are provided to manufacturers nearly halfway through the program year in which they apply. In order for manufacturers to receive an acceptance standard in advance of an upcoming program year, the calendar years of sales data to be used in the acceptance standard calculation would likely need to be altered. This would allow manufacturers to better plan for their electronic waste collection, recycling and reuse programs.

### Data Management System Development and Online Reporting

The Department is working to secure a comprehensive system for the management of the large amount of data received from the Act’s regulated entities. To date, Department staff have used a short-term desktop spreadsheet solution for managing the e-waste program’s registration and annual reporting data. Paper submittal of registration, reporting and fee forms is still used. Online reporting would streamline the submittal and review of collection data for both regulated entities and the Department.

### Manufacturer/Collective Program Improvement

The Department has found that many manufacturer and collective electronic waste acceptance programs are deficient and fail to comply with one or more provisions of the Act. The Department has made numerous attempts to bring each program into compliance by notifying manufacturers and collectives of shortfalls existing within their programs, as well as providing guidance on how to correct any such violations. Staff will continue to expand its outreach to manufacturers and collective organizations, encouraging them to enhance their electronic waste acceptance programs to meet all of the requirements of the Act. Emphasis will be placed on the provision of a continuous, convenient and effective acceptance program; the improvement of consumer education and outreach programs; and the importance of timely submittal of complete and accurate annual reports and associated fee payments. If the Department’s various outreach and education efforts to manufacturers and collectives continue to prove ineffective in addressing these issues, the Department plans to move toward taking stronger enforcement actions to ensure compliance with the Act.

### Require Registration from All Manufacturers

Registration and annual reporting should be required of all manufacturers of CEE selling into the state irrespective of the current threshold. The department would still advocate that only those manufacturers crossing the sales threshold of 1,000 units/year continue to be required to pay registration and annual reporting fees and set up an e-waste acceptance program. This additional reporting would help keep

track of all compliant manufacturers and their branded electronic equipment being sold in New York State. Presently, only manufacturers who meet the 1,000 unit/year sales threshold are required to be registered and listed on the Department's website. It would be helpful for retailers of CEE who are allowed only to sell compliant brands to see all manufacturers' brands that may be sold into the state, rather than just those that are currently required to be registered. Without registration of those falling under the sales threshold, the Department has no way of knowing all brands that may be legitimately sold into the state and, therefore, cannot adequately inform retailers.

## Regulation Development

The Department anticipates promulgating rules and regulations on standards for reuse, e-waste acceptance credits, waivers of recycling surcharges, and acceptable alternative methods for determination of sales data, among other areas in the Act that may require further clarification or guidance. The rulemaking process has begun and will be developed to reflect many of the challenges and lessons learned during the earlier implementation of the program.

## Add Definitions

Definitions should be added for "collective electronic waste acceptance program" and "electronic waste collection events." These definitions would help to clarify participation in the program for those manufacturers considering using a collective to meet their acceptance standard and provide guidance for entities who arrange e-waste collection events in New York State. Reporting requirements should be clearly defined for both collective organizations and for collection event coordinators to ensure this valuable collection information is not lost.

## Consolidation Facility Elimination

The Department recommends eliminating the entity referred to as a "consolidation facility". This term has become a source of confusion to the regulated community. After two program years it has proven unnecessary to the e-waste program and the Department recommends its elimination. Current e-waste consolidators who limit their activity to simple collection and sorting could be reclassified as collection sites while those consolidators who test and process collected e-waste for reuse could be considered recyclers.

## Recycling of Cathode Ray Tubes (CRT's)

While large quantities of CRTs have already been collected, a large number of these CRT units (computer monitors and televisions) are still expected to be returned for recycling over the next 5 to 10 years. A combination of market factors, such as the lack of needed new capacity and decreased value for the processed glass, increased transportation and processing costs, and possibly mismanagement, has led to increases in the cost to recycle these wastes. These factors have made recycling CRTs increasingly burdensome to businesses and not financially viable for recyclers, and have ultimately provided fewer opportunities for consumers to recycle these units.

Options should be considered to help reduce the costs of transporting and processing of CRTs. Additional requirements for the manufacturers to pay certain minimum amounts towards this recycling effort may also help to alleviate the CRT management situation. The following recommendations could help mitigate these problems:

1. Storage flexibility should be considered, as well as removing inconsistencies with federal regulations concerning the management of CRTs.
2. Require manufacturers to reimburse the recycler, at minimum, the actual cost of transport and processing the CRT glass. This amount could be determined by the lowest of three bids obtained by the recycler. The manufacturer could have an option to suggest a vendor for bidding or contract directly with the processors for transport and processing of the CRT glass.
3. Provide grants and other incentives to CRT processors to locate in New York State.

## IX. Looking Forward

### Manufacturer E-waste Acceptance Credit Tracking

Beginning in the 2014 program year, if a manufacturer accepts more than its manufacturer's acceptance standard of e-waste, the excess weight may be used as e-waste acceptance credits. Starting in 2015 these e-waste acceptance credits may be sold, traded, or banked for a period of no longer than three calendar years following the year in which the credits were earned. No more than 25 percent of a manufacturer's obligation for any calendar year may be met with credits generated in a prior year. In addition, manufacturers may not buy, sell or trade credits in the year in which they are earned. The Department is working to develop and implement a system for tracking such credit transactions.

### Disposal Ban for Everyone

Beginning January 1, 2015, the Act prohibits anyone, including individuals and households, from disposing of e-waste or placing it for disposal or for collection that is intended for disposal. As this disposal ban applies to the largest group disposing of e-waste, all program stakeholders will need to increase outreach and education efforts regarding the disposal ban to ensure consumer compliance with this prohibition. Both the Department and CEE manufacturers will need to continue and enhance educational efforts, especially for consumers, through their channels and on their websites. Additionally, waste transporters and solid and hazardous waste management facilities will need to conduct education and outreach activities to communicate this important last phase of the disposal ban to their customers.

### Data Management System Development and Online Reporting

Staff are working toward the development of a long-term data management solution that will merge existing data with a comprehensive data management system, and that will provide for more streamlined and useful data output. Online reporting for regulated entities and an e-waste collection site geo-mapping feature as well as verification and cross-checking of reported data from the various stakeholders are just some of the features the Department is seeking to provide stakeholders through this new solution. Program staff have been granted approval to move forward and pursue a commercial software purchase, which appears to be the most cost-effective alternative to fulfill most of the program's critical e-waste business requirements in the timeliest fashion. Efforts to finalize the contract to begin development of the data management system with a selected contractor are continuing.

### Fluctuating Market Trends

Market forces are slowly at work doing what the law intended, providing municipalities a free or minimal cost option to recycle their e-waste. Prior to the Act, municipalities had to bear the entire cost of collecting and recycling e-waste if they chose to operate programs for their residents. With the passage of the Act in 2010, many manufacturers chose to negotiate agreements with municipalities, whereby the manufacturer provides free recycling to a municipality's residents (through arrangements with recyclers) in return for the ownership of the weight collected, which would be applied to meet the manufacturer's collection goal.

A shift occurred in the 2013 program year when competing recyclers began bidding up the price per pound of e-waste considerably, thereby providing a small, yet welcome, revenue stream for many municipalities. With municipalities expecting higher prices for their e-waste, and manufacturers offering minimum reimbursements to recyclers, incentives for recyclers to aggressively collect began to disappear. By the end of 2013, at least one recycler had terminated all its municipal contracts and another decided to charge for the collection and recycling of CRTs from collectors, thus limiting the collection opportunities available to consumers. Other recyclers appear to be slowly adjusting their practices by no longer paying municipalities for their less valuable e-waste. While the Department has no control over agreements between municipalities and recyclers, it will continue to closely monitor the delicate balance of these fluctuating market trends and their effects on consumer convenience and overall program performance.

## Recycling Facility Visits and Inspections

As the program has expanded and the number of e-waste recycling facilities increased, the need for oversight of these facilities has grown. Recent reports of abandoned warehouses containing hazardous CRT materials in other states support the need for closer monitoring of facilities collecting e-waste, especially downstream processors and recyclers. Department staff have conducted site visits at a number of electronic waste recycling facilities based upon reports of collected electronic waste remaining on-site at year end. A total of 19 electronic waste recycling facilities were recently visited to determine compliance with New York State's e-waste law and to ascertain the presence of any CRT or CRT material stockpiles. With the exception of one relatively small facility that was issued a Notice of Violation for having CRT materials on site exceeding the one-year storage limit, all visited facilities were found to be in compliance with no evidence of CRT stockpiling taking place at this time. The Department intends to visit the remaining e-waste recycling facilities in the near future and conduct such visits on an ongoing basis to ensure compliance with the Act.

## Recycling of Cathode Ray Tubes (CRTs)

A Commissioner's Policy (CP-57), "Use of Enforcement Discretion for Cathode Ray Tube (CRT) Glass" was issued in August 2013 that partially adopts EPA CRT rules to help relax CRT management requirements, and is available on the Department's website at:

<http://www.dec.ny.gov/regulations/89804.html>. The Department has also helped to fast track the siting of a new CRT glass processing facility in western New York.

## Program Implementation in New York City

The City of New York Department of Sanitation (DSNY) has begun to implement a comprehensive and innovative collection program called "e-cycleNYC", as of September 18, 2013. More information on this program is available on DSNY's website at: <http://www1.nyc.gov/site/dsny/resources/initiatives/e-cyclenyc.page>. The program involves a combination of e-waste pickups from high rise buildings and collection events involving high rise buildings located in close vicinity. According to recent DSNY reports, the City has signed up about 119 high rise structures which provide an opportunity for the residents for the collection, recycling and reuse of their electronic waste. Three types of collection services are being offered by DSNY's contractor, Electronic Recyclers International, Inc., that include locked bins, storage rooms that are street accessible and collection events that can be organized at the request of the building owners. DSNY has developed an extensive public education campaign with multi-lingual informational material provided to City residents and potential participants. This program is expected to help improve consumer convenience for a large number of apartment dwellers and significantly improve the collection of e-waste throughout the City. The Department will be closely monitoring this new program and assessing its performance to ensure compliance with the Act.

## Continued Stakeholder Dialogue

The Department will continue to interact with all stakeholder groups to address critical concerns and identified challenges aimed at improving overall program performance. The New York Product Stewardship Council (NYPSC), with assistance from the Product Stewardship Institute, sponsored a day-long Summit on the Implementation of the Act on January 23, 2014 in Albany. The goal of the Summit was to begin a multi-stakeholder dialogue with municipal and state representatives, e-waste collectors/consolidators/recyclers, electronic equipment manufacturers, collective organizations and environmental groups to discuss ways to better implement the law and achieve its goals. Over 65 key individuals were invited by the NYPSC to participate in the Summit to express their position and perspectives on what they see as the challenges to the implementation of the program. The forum provided stakeholders an excellent opportunity to discuss those elements of the State's e-waste program that are working well, which areas need improvement and potential actions or steps that can be taken or considered to help fulfill the goals of this very comprehensive extended producer responsibility law. This information will also assist the Department in identifying critical issues that could be addressed in the upcoming rulemaking activities. The critical dialogue begun at this Summit is continuing and will help address the short and long-term challenges that have been identified. This will result in a stronger and more sustainable New York State e-waste management program for all participating entities.

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