

2018 Status Report on Connecticut's State-wide Consumer Electronics Recycling Program (CGS 22a-629 through 22a-640)



**Over 122 Million Pounds of Unwanted Electronics Gets Recycled
85 Recycling Jobs Created and
Over \$5.5 Million Dollars Saved By Municipalities!**

Pursuant to Section 22a-639(a)&(b) of the Connecticut General Statutes (“CGS”), the [Connecticut Department of Energy and Environmental Protection](#) (“DEEP”) presents its status report (“report”) on Connecticut’s state-wide electronics recycling program (“program”). This report is required to evaluate the effectiveness of the program, and to provide information about any national program if such federal law substantially meets or exceeds the requirements of Connecticut’s program. This report also sets forth DEEP’s plan to achieve its on-going program implementation goals and actions to achieve such goals. In short, this report finds Connecticut’s program is being effectively implemented, and that the federal government has not established a national program for the collection and recycling of electronic devices at this time.

Connecticut’s electronics recycling law ([CGS Section 22a-629 thru Section 22a-640](#)) is one of 25 state laws requiring electronics manufacturers to pay for the recycling of their products based on an Extended Producer Responsibility (“EPR”) model. Specifically in Connecticut, the electronics manufacturers pay for the collection, transportation and recycling of residentially generated Covered Electronic Devices (“CEDs”) which means computers, computer monitors, printers, and televisions sold to consumers. This program has no direct cost to consumers or municipalities. Recyclers are approved by DEEP to ensure responsible recycling practices are being used. Towns are only responsible to provide for the convenient and accessible collection of CEDs for their residents. Most towns have chosen to use an existing transfer station or regional waste collection as their collection points, while other towns use special collection events, or designate specific businesses as a drop off location. This report depicts the success of the EPR framework for electronics recycling in Connecticut.

The State Fiscal Year (“SFY”) 2018 data analyzed by DEEP was derived from the semi-annual reports required to be submitted by the four (4) approved Covered Electronics Recyclers (“CERs”), and supplemental information and data from registered manufacturers of CEDs. Census population data was used to determine the state-wide pound per capita rates for unwanted electronics collected under the program.

Since collection of CEDs started under Connecticut’s program in February 2011, Connecticut’s electronics recycling program has transformed the collection and recycling of unwanted CEDs in Connecticut. The result is thousands of tons annually of unwanted electronics getting recycled into new products, creating new jobs, keeping toxic materials out of the environment, and to date over \$5.5 million dollars saved in avoided disposal fees by Connecticut’s municipalities. It’s an equitable

system since the manufacturers that make the products are financing the system that recycles them. Connecticut was the fourth state in the U.S. to have an electronics recycling program financed by electronics manufacturers.

A summary of some specific program benefits, successes, challenges and future considerations since the start of the program are presented below.

On-going Benefits:

No fees for consumers and no recycling/disposal costs for municipalities. Before the establishment of Connecticut's program, most household electronics were discarded in the trash, or consumers often were charged for recycling with limited availability to recycle even if they wanted to. For residential electronics thrown in the trash, most Connecticut municipalities would be charged for collection and disposal [up to \$90 per ton]. Some towns and regions collected waste electronics separately for recycling, but had to pay for those services from their own funds. Now manufacturers pay the cost for 100% of the electronics collected for recycling by towns from residents.

Convenience and Accessibility. Before Connecticut's program, there were some regional collections held seasonally, and a few permanent collection locations. There are now over 165 approved collection locations statewide, one of the most comprehensive collection networks in the country. Currently, there is state-wide collection coverage, including 150 municipal transfer stations, most of which are open year-round, and 15 regional collection locations. Other approved collection locations include some thrift stores like "Savers" and Red, White and Blue and businesses specializing in electronics collection and recycling (Green Monster e-Cycling LTD located in West Hartford and Take 2 Inc. located in Waterbury).

Each municipality must have a collection plan approved by DEEP, so residents should check with their local recycling coordinator for locations and drop off times. In addition to any of the approved collection sites noted above, electronics manufacturers have established private (collection) programs for their products that are considered CEDs in Connecticut.



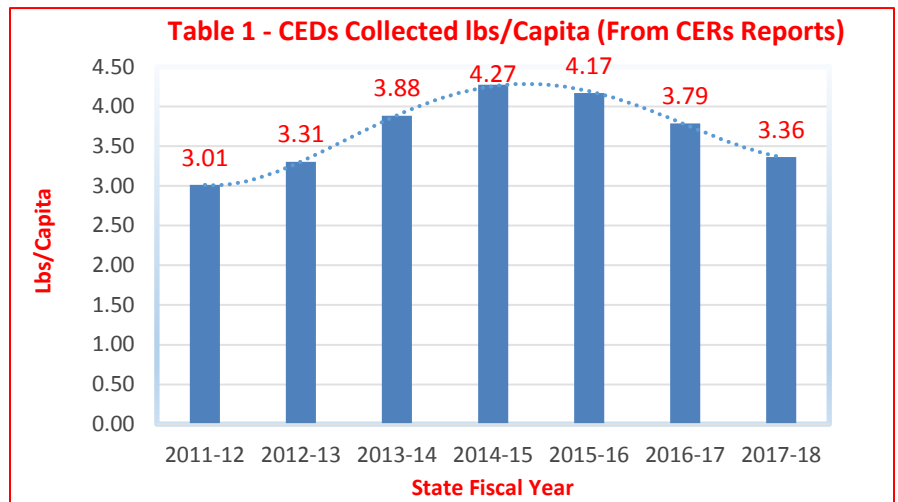
Responsible Recycling and Disposal. Before the Connecticut program, towns were on their own to vet recyclers. Now, CERs are approved by DEEP to ensure that CEDs are recycled in a responsible manner. Connecticut is one of only a few states that evaluate recyclers to ensure electronics are actually recycled and not abandoned or dumped into questionable international markets. Connecticut's regulations require recyclers and their downstream partners to have safeguards including: facility and data security, insurance coverage for pollution releases, closure plans and financial assurance to protect taxpayers from paying for cleaning up illegally dumped or abandoned materials. CERs are also required to track and report to DEEP the movement of electronics downstream until the material is used as an industrial feedstock or recycled into a new product.

No Weight or Dollar Limits on CEDs Collected in Connecticut. All CEDs collected by CERs at approved collections sites that are responsibly recycled are eligible for reimbursements by electronics manufacturers on a price per pound basis that is pre-approved by DEEP. Other states have limits on collection which often have left recyclers with e-waste collected for which they cannot be reimbursed.

Cumulative Program Successes:

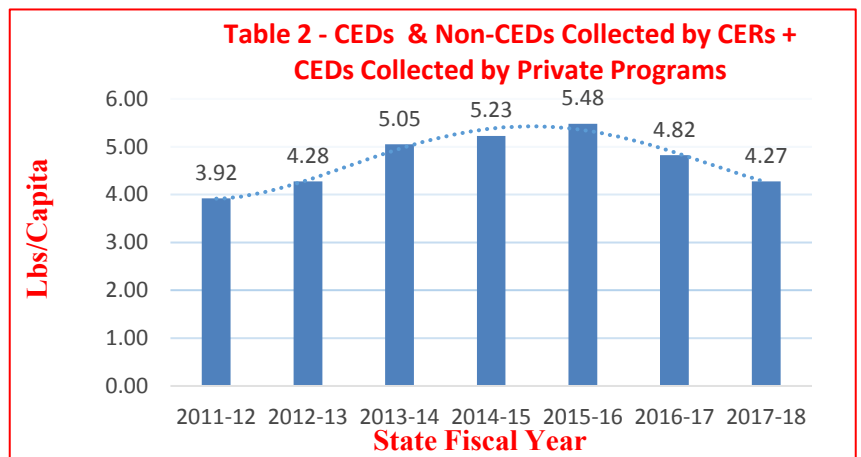
- Since Connecticut’s program started in February 2011, over 122 million pounds of unwanted electronics have been collected cumulatively. The breakdown is as follows:
 - 95 million pounds of CEDs collected by CERs;
 - 9 million pounds of CEDs collected by electronics manufacturers’ private programs; and
 - 18.5 million pounds of other unwanted electronics (Non-CEDs such as computer keyboards, VCRs, DVD players, etc.) by CERs.

- In SFY 2018, over 12 million pounds of CEDs were collected by CERs, yielding a state per capita rate of 3.36 lbs/capita (11% decrease from SFY 2017). See trend depicted on Table 1 on right.



- If DEEP includes the total weight of CEDs reportedly collected by electronics manufacturers in private programs and all other non-CEDs reported by CERs, the total amount of unwanted electronics collected in SFY 2018 exceeds 15 million pounds, which equates to a state per capita rate of 4.27 lbs/capita. See trend depicted in Table 2 below.

Televisions accounted for the majority of the weight of CEDs with an average of 74% of the reported weight collected. Printers were the next highest product category with 9.5% of the reported weight collected. The remaining weight was computers (8.5%) and monitors (8%). See table below for total pounds collected cumulatively by CED category. It appears that

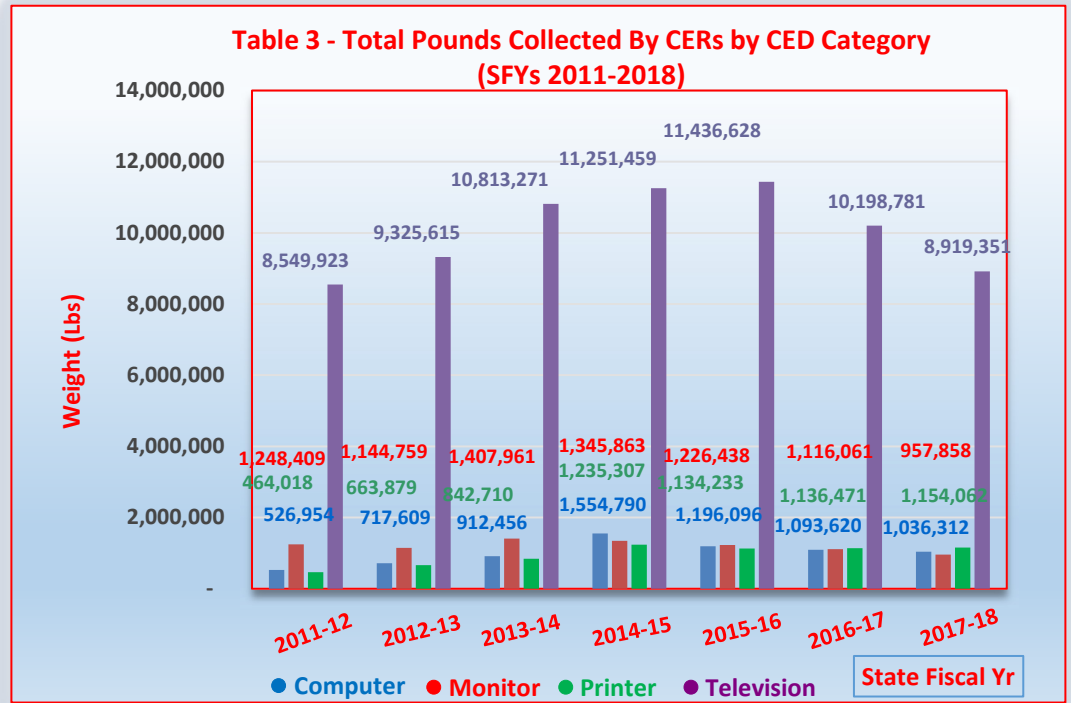


Connecticut’s program may have peaked in SFY 2016. See “decline of CRTs and light-weighting” discussion under Program Challenges / Next Steps Section.

- Table 3, shown on the next page, also depicts a decrease in total weight of CEDs collected by CERs, including the televisions collected. Data from SFY’s 2017 and 2018 suggests a 32% reduction of older, heavier cathode ray tubes (“CRTs”) being collected in the waste stream and newer, lighter technology flat screens recycling through the program. Data from SFY 2018 also suggests that 1.9 million pounds, of the total televisions being collected are flat screens. This is a 22% increase from

the previous SFY. Light weighting is also contributing to the decreases in weight of other CEDs collected.

- Since the last report, 4 additional jobs have been created in Connecticut. Of the 85 direct jobs, 72 of these jobs are located in Connecticut, and another 13 jobs are located within New England, improving the local and regional economy with direct and indirect jobs.
- Since February 2011, over \$5.5 million dollars have been saved by Connecticut’s municipalities in avoided disposal fees by diverting unwanted electronics. In SFY 2018, municipalities collectively saved over \$685,000 in avoided disposal costs.



SFY 2018 Program Successes:

- CERs reported the following electronic waste components were recycled into new products, placing valuable materials back into the stream of commerce.
 - 5.19 million pounds of CRT glass containing lead (estimated over 350,000 pounds of lead recycled) (21% decrease from SFY 2017)
 - 2.66 million pounds scrap metal (24% increase from SFY 2017)
 - 985,000 pounds of plastic (10% decrease from SFY 2017)
 - 290,000 pounds of circuit boards (16% decrease from SFY 2017)
 - 4,000 pounds mercury containing materials (12% decrease from SFY 2017)
 - 3,100 pounds of glycol (41% decrease from SFY 2017)
 - 8,700 pounds of batteries (21% decrease from SFY 2017)



- Electronics manufacturers reported 520,760 pounds of CEDs collected for recycling (33% decrease from SFY 2017) under established private programs. Under such programs, manufacturers generally partner with recyclers or retail stores of their choice to collect and recycle their own products based on descriptions submitted to DEEP. With the addition of 1 new private program established in SFY 2018 (NVIDIA Corporation) and withdrawal of another, electronics manufacturers have established 15 total private programs available to CT residents. Private programs create additional collection opportunities for Connecticut residents including retailer drop off points such as Best Buy, Verizon, and Goodwill, or through mail-back programs. One reason for the continued decrease in CEDs collected through private programs is that most Connecticut retail stores no longer accept the return of CRT-based televisions and monitors at their Connecticut retail locations (dating back to 2016). Note: Staples stores in Connecticut continue to be drop off points for CEDs, although they are not considered to be part of a private program.
- With over 12 million pounds of CEDs collected by CERs in SFY 2018, it is estimated that manufacturers paid \$4.4 million dollars to CERs collectively based on their national market share or return share data and the average price per pound of \$0.365. Not only does this price include recycling and transportation costs, but also storage of CEDs being collected.
- This and other EPR programs (paint, mattresses, etc.) will continue to play an important role in achieving the state’s diversion goal of 60% by 2024 as established by P.A. 14-94 (codified in CGS Section 22a-241(a)) and the [Comprehensive Materials Management Strategy](#) adopted in July, 2016. EPR reduces costs for municipalities, ensures materials are recycled instead of disposed, creates jobs, and incentivizes manufacturers to reduce the use of toxic materials in products.



Program Challenges / Next Steps:

Program Measures / Goals

- Connecticut’s program collected a rate of 3.36 pounds per capita in SFY 2018, which equates to an 11% decrease in weight comparing SFY 2017 based on the CERs reports. Given the trend of product light-weighting, this rate is expectedly lower than in past years and does not meet DEEP’s state-wide goal¹ of 4.0 pounds per capita. DEEP continues to assess the suitability of this measure and will decide whether to use it, expand it or recommend replacing it in out years. Important factors to consider include the decline of CRTs and device weight discussed in the next paragraph.
- “Decline of CRTs and Light-Weighting”: The sale of consumer electronics containing CRTs declined to virtually zero in the early 2010s. CRTs are by far the heaviest component in the consumer electronics waste stream, so a peak and decline in the weight CRTs collected was expected. As the CRT weight alone had been about 80-85% of the total CED weight, the trend in total CED weight collected is expected to follow the trends with CRTs. Indeed, the weight of CRTs peaked in 2016 and has been declining annually, along with the total weight of CEDs collected. Virtually all other state programs have recorded similar collection trends in their e-waste recycling programs. Another aspect of declining CRT weight is the increasing number of private programs that no

¹ In 2007, DEEP set a convenience and accessibility goal of 4.0 lbs./capita on a state-wide basis on an expectation that each town/region meet that goal. This goal may no longer be the best measure of program performance with newer, smaller and lighter products entering the waste stream.

longer accept CRTs. In addition, electronics are generally being manufactured to be lighter, smaller and more mobile. Consequently, future collection rates based on weight are expected to decline. This decline will present an opportunity to reassess how to properly evaluate success of Connecticut's program. DEEP plans to assess more closely the quantity of material that is disposed over time especially wood and plastic. Based on the CERs' reports, 2.32% of the total weight of CEDs recycled is disposed as waste or residue that cannot be recovered from the recycling activities, which is an 8.4% increase from SFY 2017.

- According to [Connecticut's 2015 Waste Characterization Study](#), the quantity of "electronics" disposed in the trash was 11,906 tons, which equated to 0.5% of the municipal solid waste disposed in Connecticut. This is a 76% drop from a similar study performed in 2010 – before the implementation of Connecticut's EPR program. DEEP plans to continue to monitor this trend in residents' disposal habits.
- DEEP plans to assess the development of new or additional program measures like consumer awareness, carbon footprint and greenhouse gas emissions avoided as a result of Connecticut's recycling program.

Outreach and Education

- In SFY 2016, DEEP has surveyed, on an informal basis, program awareness levels amongst Connecticut residents. The results suggested that 55% of Connecticut residents are unaware of Connecticut's free recycling program. DEEP will continue to develop innovative ways to improve public awareness. DEEP anticipates that with new and innovative public education and outreach, consumer participation rates will increase.

Policy and Coordination

- DEEP continues to evaluate whether certain electronic devices may be considered to meet the law's definition of a CED, including certain hand held devices, game consoles, external data storage devices, satellite or cable boxes, virtual reality handsets and certain printers, including certain 3-D printers that may also print on paper.
- DEEP continues to work with [Northeast Recycling Council](#) (NERC) and [Electronics Recycling Coordination Clearinghouse](#) (ERCC) to seek market share data directly from manufacturers to reduce costs and facilitate assigning national market share to each manufacturer covered by Connecticut's program.
- DEEP continues to work closely with NERC/ERCC to assist manufacturers to register in Connecticut using [ERCC's online e-cycle registration system](#). This system is more cost effective and a solution for electronic registration submissions. This year, DEEP allowed the submission of electronic registrations by manufacturers using the NERC/ERCC system. 78 of a total of 87 manufacturers submitted electronic submissions to-date (90% rate).



- DEEP continues to work closely with stakeholders to assess increasing recycling rates by possibly expanding the scope of collection by including schools (K-12), municipal CEDs, colleges and universities, small businesses and non-profits. Such expansion would be consistent with numerous other states' EPR programs.
- DEEP seeks to further reduce recycling costs by going to a market share billing approach for computers, monitors and printers like most other state programs have done. A market share approach is already in place for billing televisions in Connecticut. DEEP plans to seek input from various stakeholders on this issue.

Compliance Assurance

- DEEP issued two Notices of Violation (“NOVs”) in SFY 2018. DEEP issued one NOV to a Covered Electronic Recycler (“CER”) for utilizing a downstream partner without prior approval by DEEP. CERs are required to obtain prior written approval from the Commissioner of any change to any information, activity, facility or procedure described or contained in a CER’s approval. DEEP worked with the CER to submit a modification to add downstream facilities to their process flow. DEEP, in turn, approved the modification to help the CER to return to compliance.

DEEP issued the other NOV to another CER for issuing invoices to manufacturers without the proper information contained on the invoice. DEEP again worked with the CER for a quick return to compliance.

- CRT glass recycling options are declining and becoming more expensive. This is an international problem, and Connecticut is not immune. It is the main reason why some private programs no longer accept CRT devices. Recyclers are under pressure to store more of this glass to reduce their costs. As a result, DEEP has created an electronic, monthly CRT glass report to track the movement of CRT glass. Since June, 2016, CERs report to DEEP the total quantity of CRT glass stored on site at the end of each month. DEEP staff track the trends of CRT glass stored on site, by each CER, and take necessary actions to address excessive stockpiling. DEEP is also considering the use of a similar tool to track and monitor other materials of concern, such as mercury.



- Improved accessibility to recycling drop-off points is an on-going need. While every town has an approved collection plan, some towns have reported very little CEDs collected, and DEEP continues to receive calls and emails from some residents expressing concern over the limited options for drop-off/collection of CEDs. DEEP plans to review these situations with the towns to improve free, convenient and accessible recycling opportunities for all of Connecticut’s residents.
- In addition to a comprehensive selection process of approving CERs and their partners, a major program goal has been to verify that materials are going to the approved, responsible recycling destinations. DEEP reviews the accuracy of reported data by CERs including evaluating mass

balance accounting of billable weights, and collaborates with other state electronics recycling law contacts to verify out of state references. DEEP may audit the CERs in out years, and may contract again with an independent 3rd party.

- Manufacturers may audit CERs and seek records from CERs and their downstream partners for CED shipments to verify collection, billing and recycling data. DEEP will work with manufacturers and CERs to facilitate successful audits and findings. With any manufacturer performed audit, DEEP may take independent actions if violations of applicable environmental laws are identified. To-date, one manufacturer has audited at least one of the CERs.

Interstate Program Coordination

While there is no federal electronics recycling program in place at this time, DEEP continues to engage in interstate collaboration to harmonize Connecticut's program with other states to help streamline, reduce costs and improve the recycling infrastructure/system. DEEP advocates that any proposed federal law should substantially meet or exceed Connecticut's requirements, including collections, recycling standards and environmental protections, as carried out by Connecticut's current program.

Conclusion

Based on the findings and assessment detailed in this report, DEEP concludes Connecticut's program is working effectively and is well positioned to continue to protect public health and the environment by diverting CEDs into recycling markets, creating green jobs and saving municipalities the cost of disposal for CEDs in accordance with CGS Sections 22a-639(a)&(b).



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*For information on how/where to
recycle your unwanted*
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Monitors, &
Printers**

*go to the CT DEEP's website at
www.ct.gov/deep/e-waste
or call toll free 1.888.424.4193*

