Kitty McIlroy: Oral Testimony for U.S. Senate Committee Environment and Public Works Hearing on "Improving Capacity for Critical Mineral Recovery through Electronic Waste Recycling and Reuse."

July 26, 2023

Good morning EPW Committee. Thank you for inviting me here today. My name is Kitty McIlroy and I'm here to speak from my experience as a project manager for electronics recycling contracts at a state agency, the Northeast Maryland Waste Disposal Authority. I'm also here to speak from my experience as President of the Maryland Recycling Network and highlight where our network has identified room for policy improvement. I hope to provide context for what exactly the public sector has been facing over the past 10 years regarding electronics recycling.

Why Electronics Recycling Is Needed:

Solid waste rates are increasing and many local governments in Maryland, for example, are already shipping solid waste out of state due to limited landfill capacity. Recovery of electronics is also a safety priority since electronics (specifically lithium-ion rechargeable batteries) are more likely to cause facility fires if not separately collected and safely stored, due to impacts from compaction vehicles and equipment when transporting and moving waste. Keeping heavy metals from electronics out of landfill leachate is also beneficial, as there are costs to treating it at water treatment plants. There are benefits to recovering precious metals since global demand for these products continues to grow due to the jewelry, electronics and auto industries. Electronics recycling also contributes to local job growth and when funded properly, can eliminate disposal fees to local jurisdictions.

How Programs Are Currently Managed:

In Maryland, and many states, most municipal electronics recycling is managed by local jurisdictions. Their existing infrastructure, drop off sites, staff, historical knowledge, public education, and procurement procedures allow them to run these programs efficiently. Some have even implemented curbside collection for electronics. However, electronics recycling is generally not cost free, especially for bulky TV's and computer monitors, which dominate the municipal stream. Managing hazardous components, such as lead and mercury, and providing infrastructure, transportation, equipment, labor, and recycling certifications contribute to a net cost. Local jurisdictions in Maryland generally fund these programs through local taxes, general funds, enterprise funds, special revenue funds and tipping fees. Certain retailers accept electronics, but many times there is a fee or the electronic type is not accepted at all.

Twenty-five states (plus the District of Columbia) have a variety of electronics laws, Maryland included, to assist jurisdictions, including requiring funding and/or collection to be provided by manufacturers. The remaining states have no electronics laws. As it has been well documented in industry news over the past decade, many state laws fall short. Thus, the bulk of electronics

ends up at municipal drop-offs, with the burden, operational obligation, and cost left to local government. This is especially true in Maryland. Over the past decade, many of these programs have closed in the state (or at least partially), due to a lack of funding, meaning that many local governments are forced to landfill electronics, notably TV's and monitors, as the only alternative. **Beginning CY '14, after the electronics recycling market crashed, only four of eight Authority Members were able to continue their full electronics programs, amounting to over 5,000,000 pounds a year of TV's and monitors landfilled, rather than recycled. For Authority Members, in FY '23 and '22, it has cost over $900,000 a year to run these programs.** Currently, only 7 of 23 Counties in Maryland are able to provide permanent recycling for all electronics, at no cost upon drop off for residents.

Proven, Existing Solutions that Can Function as National Model:

No matter how well this market recovers, it will always be subject to unpredictable commodity markets, recession and inflation. The public sector needs a sustainable source of funding, especially for rural communities that are far away from processors, and for jurisdictions with limited resources to manage full-time programs, including onsite capacity, staffing, equipment, and storage.

Many stakeholders believe we need a national solution. At a minimum, I believe we need a national, Congress-chaired workgroup (with reps from local and state government, non-profit EPR experts, recyclers, producers, retailers, and certification bodies, to review existing best practices). The workgroup should look at replicating what works and provide a streamlined, cohesive set of policy recommendations.

A few laws in states like Connecticut and California could provide this framework. They function exceptionally well, in terms of funding and administration (including manufacturer, retailer and recycler requirements). Some nonprofits already administer statewide programs on behalf of state departments and are experts in doing so, which could be explored for the federal level.

There are certainly many in this field who would be willing to contribute their time and expertise to advise on these matters. Thank you for your interest in taking this first step at improving our electronics recovery on a national level.

Sincerely,

Kitty McIlroy

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Kitty McIlroy: Oral Testimony (Additional Information)

Many state laws do not include detailed program requirements for manufacturers, and these states tend to be among the poorest performers, as measured by pounds of e-scrap collected per capita.

Many states have convened workgroups, updated their laws or attempted to update their laws within the past few years to address this issue.

States that do have detailed manufacturer requirements tend to rely on one of two approaches: Convenience standards and performance targets for manufacturers.

Fully funded EPR recycling programs generally use **convenience standards**, meaning they require manufacturers to operate enough collection sites in the state to meet a specific standard of convenience for consumers. The recycling service is paid for by manufacturers. Convenience standards can be found in Connecticut Maine, Oregon, Washington, Vermont. Other programs are based on **performance targets**, where states provide each manufacturer with a target of how many electronics it must collect or fund collection of, generally determined by the weight of electronics sold annually. A lot of these states have updated their laws or have looked at doing so (Illinois, New Jersey, Pennsylvania, New York, Wisconsin, Minnesota, Michigan) by increasing the weight-based performance targets that manufacturers are required to fund. Some have had a more difficult time achieving full producer funding of programs. This is because manufacturers often pay for the collection and recycling of only the amount of electronics they are required to. Once manufacturers meet their goals, sometimes midway through the year, their financial support for electronics collection dries up, hurting both local governments and the recyclers that service them.

A visible point of purchase consumer fee managed by a state or national governmental department can financially support municipal-run drop-off programs, while allowing local government to control their existing recycling programs. This is the State of California model. The United States Conference of Mayors and manufacturers (specifically the Consumer Technology Association) also supports this type of visible fee to ensure permanent funding for recycling programs.

Additionally, some state laws have a limited scope, including only a few different types of electronics, while others cover a wider range. States also vary by covered generator type, such as only residential, or also schools, businesses, etc.

Maryland's law does not have convenience or performance standards, but requires manufacturers to register with and pay a flat annual registration fee ($500 with an approved takeback program, or $5,000 without a takeback program) to the Maryland Department of the Environment (MDE). In reality, this means there is no actual funding distributed to offset local jurisdiction costs, and there are no physical drop off locations provided by manufacturers to assist at present.

Out of these fees, grants to counties and municipalities have only been provided by MDE three separate times (in 2008, 2009 and 2015-up to $15,000 total that year per jurisdiction), when limited funding was available. Grants are not distributed in the full amount collected from manufacturers, since much of it is used for other MDE operations. Even if all manufacturer fees were to be distributed as grant money on an annual basis, that would still not be enough funding to cover existing recycling programs throughout the entire state. Under the Authority contracts, Authority jurisdictions had paid **almost $800,000** for CY 2017 (that is only for 4 jurisdictions worth of electronics with a few months of service for a fifth

jurisdiction. To put it in perspective, a $15,000 grant does not even cover one month of service for some Authority jurisdictions. Thinking about the total of 23 jurisdictions in the state, it is not hard to understand how the costs to recycle this material would add up—for example 98 registered manufacturers (that year) paying the $10,000 max registration fee only equals $980,000 and would not cover an entire state's worth of programs. So, looking at our other option under the SERP would be to utilize manufacturer takeback programs.

The annual fee can be reduced to $500 if the manufacturer has an approved takeback program (details provided by manufacturer phone number or website). MDE also provides links to the manufacturers with approved programs. For manufacturer take back programs to be used it is up to the Maryland resident to look up their electronic manufacturer's brand information and figure out if they are covered or not by calling or searching online, which is not the most user friendly process. Currently, all of these manufacturer takeback programs are mail-back only programs, which requires the resident to ship the electronic for recycling, which is not convenient for large, bulky items such as TVs and Monitors, the majority of material that is coming through municipal e-cycling programs (especially if the resident is waiting for the covered packaging and pre-paid shipping label to be shipped to their house). This is also inconvenient if the resident is dealing with multiple brands of electronics and must go through this process for each item, or if the item isn't covered under the law, then the resident may or may not have a recycling outlet. There are no physical drop-off locations in the entire state of Maryland that are sponsored by manufacturers. There used to be a few drop-offs run by the Electronic Manufacturers Recycling Management Company (MRM), a group sponsored by various manufacturers, but those locations have since shut down. So, the absence of physical drop offs in the entire state of Maryland is not a realistic option for most residents. Most residents end up using municipal run drop-off sites due to these factors, and the fact that most residents normally think of municipal drop-offs as the first place to take their recycling. It is assumed that most residents may not even know these manufacturer mail back recycling programs exist.

Where does this leave Maryland jurisdictions?

So, the ultimate challenge for some local jurisdictions is to decide if they can keep programs open and if so, how to achieve the necessary funding to do it. Based on a recent check of municipal program websites, only 7 out of 23 Counties (including the City of Baltimore) are able to provide free, permanent, year-round residential recycling for all electronics, including both TVs and monitors, the bulk of material by weight in the municipal electronic material stream. For those seven jurisdictions that have permanent free drop off sites, funding is coming directly from a budgeted amount set aside for electronics recycling under their solid waste programs from either a general fund or some sort of enterprise or special revenue fund. Solid waste budgets that rely on general funds are generally in the toughest position, as they have to compete with all other local government costs such as fire, police and schools, so there is not usually enough funding to go around. Thus, jurisdictions that do not have enough funding are faced with the choice of either disposing of electronics into a landfill or asserting some sort of tipping fee for the electronic at drop-off. Tipping fees at point of drop off can work, but they also can incentivize illegal dumping for those looking to avoid paying a drop off fee. Some jurisdictions refer residents to third party recyclers/retailers if they do not have a municipal program for certain electronic items, which are also limited in what they accept.

Many stakeholders feel there needs to be a national program in place to establish contingency and ensure that electronics recycling programs will always be funded, despite the state of the global commodity market and economy. Rural and otherwise limited/under resourced municipal collection sites will always be at risk. Additionally, if there were to be a National Workgroup, the resulting recommendations do not necessarily need to be consensus based, as all stakeholders may not agree to one specific outcome.

Forecasting the global demand for electronics components for various industries, shows that electronics recovery will continue to be needed, especially to replace virgin mining and distribution of these materials, which is an emissions heavy process and often detrimental to local environments, especially in developing countries.

Other Challenges and Barriers:

- There are still electronic stockpile litigation and settlements occurring to this day, for example in Wisconsin and Pennsylvania.
- Covered structures (capital purchases) are still needed at many sites. Sites with electronics collection exposed to the weather see various issues, with cardboard storage boxes deteriorating and thus increasing their program costs, as well as the exposed electronics likely contributing to contaminated runoff.
- Heat spot detection systems will likely need to be implemented in future collection areas to prevent rapidly increasing facility fires (another capital cost).
- Labor is a continuous operating cost. Onsite employees are needed to direct resident drop off, sort, box, palletize and shrink wrap electronics, and load it as needed onto collection vehicles.
- The dedicated loading equipment is a continuous operating cost (and capital cost if the equipment needs to be first purchased/replaced or maintained). Items like pallet jacks and forklifts are usually needed in order to load material onto box trucks or trailers. Site staff normally have to share one of these for an entire drop off site and for all other onsite operations. Requiring a vendor to bring their own for loading increases costs.
- Staff time performing the electronics recycling procurement, continually auditing, invoicing and performing program management and public education is another cost.
- Economies of scale:
    - Small collection sites that are not able to geographically expand are space limited and thus lose out on efficiencies of scale to load large trailer swaps and instead are forced to use live loading of smaller box truck collections, which reduces transportation efficiencies. Rural areas that are not located near population dense center with recycling facilities or access to ports and major highways lose out on these fuel saving efficiencies. Even though some programs costs have stabilized there are many local jurisdictions that will likely never see cost free collection and recycling programs.
    - Double stacking loaded boxes and pallets of electronics is much more cost efficient for a program compared to single stacking in a collection vehicle, however, this process requires onsite staff and equipment, and needs to be done by experts in order to be safe on the loading and receiving side of transport.

Lawmakers put another $2M into Wisconsin CRT cleanup

Published: July 12, 2023
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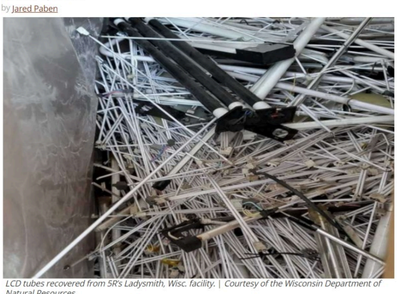
by Jared Paben



LCD tubes recovered from 5R's Ladysmith, Wisc. facility. | Courtesy of the Wisconsin Department of Natural Resources

At his current rate, the former CEO of 5R Processors will fully pay off his $2 million in court-ordered e-scrap abandonment restitution in roughly 1,200 years. Knowing that, Wisconsin lawmakers just approved allocating another $2 million in public funds to clean up the mess.

Since E-Scrap News last reported in March 2021 on Wisconsin's efforts to clean up the e-scrap messes, multiple former 5R sites have been remediated, yielding new details about the myriad hazardous materials that were stored there.

Additionally, the overall estimated cost to taxpayers has increased.

Based in Ladysmith, Wis., 5R had multiple locations in Wisconsin and a facility in Tennessee. Federal processors say the company stockpiled millions of pounds of CRT materials and other e-scrap, concealed those stockpiles and committed tax crimes.

Two former company leaders have served time in prison, and a former CEO is still locked up while he appeals his 33-month sentence.

Meanwhile, the cleanups are progressing. Veolia ES Technical Solutions is currently working under a statewide hazardous waste contract to clean up the sites. In previously completed projects, Veolia found a mix of materials, including CRT glass, toner cartridges, lamps, herbicides, lead-acid batteries and more.

Not all of the material could be recycled, but "we did try to recycle as much as we could," Natasha Gwidt, field operations director for the Waste and Materials Management Program at the Wisconsin Department of Natural Resources (DNR), said in an interview with E-Scrap News.

Dilapidated conditions drive costs

Veolia, which has a four-year statewide hazardous waste service contract with the state of Wisconsin, began cleaning up sites in Rusk County just after the start of the year and finished a couple of months ago, Gwidt said.

The completed sites included one in the village of Glen Flora and three in the city of Ladysmith, with the combined cleanup cost totalling about $800,000, she said. All told, Veolia cleaned up over 800,000 pounds of CRT glass (not including several other drums full of CRT glass), over 124,000 pounds of mixed electronics, and various other materials containing hazardous substances, such as lamps, herbicides, equipment with refrigerants and more.

Much of the CRT glass was recycled by URT in Janesville, Wis., state records show. Veolia sent other materials to other downstream processors, although it brought various end-of-life electronics to its own Veolia e-scrap facility in Port Washington, Wis. for recycling.

Trailer with mixed electronics

Gwidt noted that the condition of the sites helped drive up the costs. For example, when crews went to move semi-truck trailers full of material so they could access them, trailers literally fell apart. Additionally, a warehouse loading dock had to be worked on just so the crews could safely get a forklift in and out.

Other work is ongoing, Gwidt said Veolia is under a second contract to clean up a warehouse and trailers on a property in Catawba, a village in Price County, which is just east of Rusk County. That project began June 12 and will take about four months, she said.

The Catawba site, where 5R was doing some processing, has material that is tightly packed and stacked. As a result, officials won't know exactly what and how much is there until the project progresses, she said.

The sites in Rusk and Price counties are only eligible for the state funding because they're now publicly owned. Price County just foreclosed and took possession of the Catawba property in March, Gwidt said. As a result, the state couldn't execute the cleanup contract with Veolia until after the foreclosure, she noted.

The condition of the Catawba site, which has a leaking roof, wet material and damaged gaylords that aren't fit for transport, will bring additional cleanup costs, she said.

Finally, 5R still owns a site in West Bend, which is in Washington County, in the Milwaukee area. Because it's still owned by 5R, it's not eligible for state-appropriated cleanup dollars, Gwidt said, adding that she doesn't know the status of any efforts by local governments to assume ownership of the property.

That location is large and will cost between $500,000 and $1 million to clean up, Gwidt estimated.

A little restitution money comes in

Former 5R executives have paid some money to help fund the projects, but the bulk of the costs will fall on taxpayers. That's in contrast to 5R's former Tennessee facility, where the private landlord ultimately paid $1.1 million to clean up the materials.

Kevin Shibilski, former CEO of the company, paid $100,000 in restitution to the DNR, Gwidt noted. Shibilski, 62, is currently at a minimum security prison camp in Duluth, Minn. with a release date of July 18, 2025 (he is appealing his 33-month sentence).

Former 5R President James Moss, 64, served time in prison and was released in September 2022. He was also ordered to pay nearly $1.96 million in restitution. Gwidt noted that he has been making monthly payments of about $127 each. She calculated that at that rate, it would take him over 1,200 years to finish paying off restitution.

As a result of the relatively limited money coming in via restitution, state lawmakers have decided to fund the cleanup. In 2022, the legislature unanimously passed a bill providing DNR with $2.5 million to clean up the 5R sites by June 30, 2023. Of that, the DNR has about $1.45 million left, enough to finish the Price County site but possibly not enough for the Washington County one, Gwidt said.

As part of the 2023-25 biennial budget, which was signed by Gov. Tony Evers on July 5, lawmakers gave the DNR another $2 million. That means DNR now has a total of $4.50 million to spend on all 5R sites (that includes the $1 million it has already spent). And the bill extended DNR's deadline for spending the money by a year.

Shibilski, who blames his former 5R business partners for the company's wrongdoing and is appealing his prison sentence, actually has numerous ties to the state government that's now funding the cleanup of the company he helped run. He's a former Democratic state senator, and he was briefly the state's tourism secretary under a previous governor.

Additionally, during sentencing in federal court, Shibilski submitted letters attesting to his character from former Gov. Tommy Thompson (also former U.S. Secretary of Health and Human Services) and from Cathy Stepp, who was secretary of the Wisconsin DNR, which is now leading the cleanup project, the Wisconsin State Journal newspaper reported.

The newspaper noted that Thompson's letter commended his work on education funding and environmental preservation.

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Canadian precious metal recovery company EnviroMetal officially closed its e-scrap facility, completing its transition to simply licensing out its metals recovery technology to gold miners.

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Cascade Asset Management found that selling used electronics through e-commerce marketplaces brought substantially more revenue growth than selling to wholesalers last year. The ITAD company still joined many others in suffering an overall drop in prices.

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Global tech manufacturer HP made progress on its sustainability goals in 2022, using 45% more recycled metals and auditing twice as many recyclers as the previous year.

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Pennsylvania processor works to clear out CRT stockpile

Published: May 24, 2023
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by Jared Paben

The CEO of Pennsylvania-based eLoop attributes the buildup of CRTs to a narrowing downstream and pandemic-related challenges. | Dongseun Yang/Shutterstock

Pandemic-era business conditions and the closure of a CRT outlet contributed to eLoop violating CRT accumulation rules last year, the CEO said. Now, the processor and regulators are working out a mandatory plan to clear out the stockpile.

"We're fighting our way out of it; the end's in sight," Ned Eldridge, CEO of Export, Pa.-based eLoop, told E-Scrap News. "We've already reduced everything by over 50%."

Under the U.S. EPA's CRT rule, which allows CRT materials to avoid being regulated as hazardous waste as long as certain conditions are met, recycling facilities must turn over 75% of their inventory of CRT materials in the course of a year. If they don't, the agency considers the stocks to be speculative accumulation.

Acting on a complaint about accumulated CRT materials, Pennsylvania Department of Environmental Protection (DEP) officials in October 2022 inspected the electronics recycling and reuse company's State College, Pa. facility. They found over 3 million pounds of CRT materials, mostly CRT tubes with some whole TVs, were on-site as of the end of that September, according to an inspection report obtained by E-Scrap News.

Inspectors noted that eLoop had been sending out shipments of both tubes and intact TVs – including a shipment scheduled for the week following the inspection – but the total sent downstream since the beginning of 2022 was about 413,000 pounds, less than what is needed to avoid speculative accumulation and a violation of the company's state general operating permit.

In response, the DEP issued a notice of violation but no financial penalty.

In an interview, Eldridge said the DEP has asked him to put together a schedule for how he'll move all the material downstream to recycling markets between now and 2025. He's expecting to receive a consent order reflecting that plan. He said he does not expect fines.

Downstream drying up

While CRTs are making up a smaller and smaller portion of the end-of-life stream of electronics, the loss of several downstream outlets over the years means that the lead-bearing glass is still dogging the industry.

Over the years, outlets in India, Mexico, Spain, the Netherlands, Canada and the U.S. have closed. That being said, there are still North American companies that will process CRT glass for use by smelters, ceramic tile manufacturers and other industries.

In eLoop's case, the move by Novotec Recycling in Columbus, Ohio to stop accepting CRT glass impacted the company, Eldridge explained. Novotec used to process CRT glass into a feedstock for consumption by smelters, but after the company completed its contract to clean up tens of millions of pounds of CRT materials abandoned in Columbus by Closed Loop Refining and Recovery, Novotec appears to have exited the CRT business.

Novotec's decision to halt acceptance of CRTs came after COVID-related closures resulted in a downturn in business and a reduction in eLoop's cash, he said. As a result of those factors, "we slipped a little bit," Eldridge said, noting that they shipped out 71% of CRT materials in 2020 and 67% in 2021. In 2022, he said, eLoop shipped about a million pounds downstream.

He said eLoop, which worked closely with DEP to gain permit approval for its flat-panel dismantling robot, does not have an adversarial relationship with state regulators. He noted that eLoop has regularly provided the DEP with its CRT mass balance data, even before the complaint and inspection.

The company remains a participant in Pennsylvania's extended producer responsibility (EPR) program for electronics, albeit a smaller one. Reverse Logistics Group – which carries out e-scrap collection and recycling management obligations for several brand owners in Pennsylvania, including big names such as Acer, Apple, Lenovo, Microsoft and others – lists eLoop among its recycling vendors in its 2023 program plan.

"eLoop is one of multiple recyclers we are working with in Pennsylvania and they make up a small fraction of the total volume of covered devices managed by our group plan," said Andriana Kontovrakis, director of compliance services for Reverse Logistics Group. "We are aware of the notice of violation and are in active communication with eLoop regarding the matter. We are currently awaiting the results of the negotiations on the consent order between eLoop and the PADEP."

Evolving the business away from EPR

Eldridge said business in 2023 has bounced back and the company is doing better than during the past couple of years. "We're back financially," he said.

The company has resumed downstream shipments of CRTs this month, he said, noting that eLoop will send material to Dynamic Lifecycle Innovations, Kuusakoski and Des Moines, Iowa-based GKAT Reclamation.

All told, eLoop has cut in half the amount of CRTs it has accumulated since its peak year, 2016, when it had 5 million pounds to process, Eldridge said.

He also noted a shift in how the company handles CRTs – and even a larger evolution in recent years in the focus of eLoop.

In terms of CRT management, eLoop for the most part no longer does CRT TV disassembly, instead moving material to Dynamic or Kuusakoski to break down, he said. The company stopped around the time China stopped accepting e-plastics, which tightened up the plastics market, he said.

> "We're seeing a decrease in the amount of CRT material that's coming through."
> –Ned Eldridge, CEO of eLoop

The e-Stewards-certified processor has also reduced its participation in the state EPR program in recent years, he said, as the OEMs began paying less and less for the recycling work. He said that Reverse Logistics Group, the only manufacturers program eLoop works with now, has been "fair and equitable," but some of the OEMs in the past made promises to pay more as the CRT market changed but never followed through.

As a result, eLoop has pivoted more into the ITAD business and away from residential electronics recycling. Over the last three years, he estimated, 70% of eLoop's business has come from ITAD work.

At the same time, "we're seeing a decrease in the amount of CRT material that's coming through and we're seeing an increase in the amount of flatpanels," he said. His State College facility is the first U.S. e-scrap plant to install the FPD Pro, a robot that removes hazardous substances from flat-panel display devices. That system is almost up and running.

With regard to the CRTs, Eldridge said eLoop will have to do its due diligence over the next two-and-a-half years to move material, but he insisted the company remains strong and "we're not going to go out of business."

"I have no doubt we're going to be able to succeed," he said.

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DIVE BRIEF

South Carolina governor signs electronics EPR law prioritizing convenience over weight collected

Published July 13, 2022

Megan Quinn
Senior Reporter

Brendan Smialowski via Getty Images

Dive Brief:

- South Carolina will end weight-based collection goals for its electronics takeback program in favor of recycling convenience requirements aimed at making it easier for residents to return old TVs and computers. It's a model that could become more common in states with electronics extended producer responsibility programs as such devices continue to get lighter.
- Gov. Henry McMaster signed the updated law, H4775, in June, and the changes will go into effect in 2023. South Carolina is the second state to move to this model, which is based on changes Illinois made to its program in 2017.
- The new law would require between one and three collection sites, depending on population, for each of South Carolina's counties, or a site could be replaced with four community collection events per year. The requirement is meant to be a more stable way to ensure devices get recycled, said Lelande Rehard, senior associate for policy and programs at the Product Stewardship Institute.

Dive Insight:

South Carolina first passed its EPR law for televisions and computers in 2010. It required device manufacturers to join a stewardship program to help local governments recycle the devices, according to the bill. State law also prohibits residents from knowingly disposing of these devices.

South Carolina recycled about 8,439 tons of electronics last year, with the residential stream constituting about 93% of the total weight collected. The weight of electronics collected in the state has declined since 2016.

Supporters of the updated law say requiring producers to recover a certain weight of electronics doesn't match up with local demand for recycling outlets.The law was scheduled to sunset in 2023, prompting the state to modernize the requirements, Rehard said. "There's less weight involved [in electronics] now, but that doesn't mean less devices to get rid of," he said.

Starting in 2023, producers will still keep track of the weight of covered electronics collected, but the emphasis will shift toward making sure counties that want to opt into takeback programs have adequate locations to meet demand, according to the bill.

Manufacturers in the state must still cover the cost for packaging and transporting devices collected at these locations to recyclers, the bill says. Local governments that opt into the collection programs will cover costs to host the collection sites or takeback events.

PSI is now working with lawmakers in Oregon on an effort to update its electronics EPR bill, one of the older programs in the country. A future bill in the state could also emphasize access over weight, Rehard said.

The Consumer Technology Association, which lobbied in Illinois for changes to its law that follow a similar model, has also pushed for convenience-based standards in other electronics EPR states, including Vermont and Maine, while also advocating for states to add more types of electronics to their programs, Rehard said. However, those states are more interested in keeping their existing models, which include logging weight metrics each year and adjusting the weight requirements based on previous years' progress, he added.

Alaska is currently going through a stakeholder process to consider establishing its first EPR program for electronics. The state is looking for ways to keep electronics out of its landfills and is currently handling some e-scrap through pilot programs. An EPR program could offer more sustainable funding, Rehard said.

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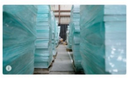
EDITORS' PICKS

Industry veteran launches Waste Industry Historical Society to capture decades of knowledge

Anthony Ricchio, a longtime driver and current equipment specialist, grew up collecting waste phone book ads and toy trucks. Now, he hopes a new museum in Iowa can motivate others to share their own collections.

By Cole Rosengren • June 5, 2023



Q&A

Solarcycle CEO, fresh off $31.5M in public and private funding, discusses solar recycling's future

Solarcycle recently raised series A funding and received a U.S. Department of Energy research grant. CEO and co-founder Suvi Sharma said his company is scaling up as the solar industry begins to seriously contend with circularity.

By Jacob Wallace • April 21, 2023

LATEST IN RECYCLING


Amazon phasing out plastic mailers and working to reduce e-commerce packaging
By Kelsi Pyzyk


Wastequip touts recycled Toter cart, safety and diversity in first ESG report
By Jacob Wallace


Bottle bill report aims to debunk claims that program costs hurt beverage sales
By Megan Quinn


Nova Chemicals, Novolex collaborate on facility for making PE from mechanically recycled film
By Kelsi Pyzyk

FILTER BY:

State

Electronics

Year

Material

Status

Clear

Sept. 16, 2022

California adds battery-embedded products to state e-waste program

SB 1215

Enactment date: Jan. 1, 2026

California's SB 1215 adds battery-embedded products to the state's e-waste program, meaning consumers will pay a disposal fee when they purchase such products starting in 2026. "Battery-embedded" means a product with a battery not designed to be easily removed. Manufacturers of covered electronic devices sold in the state will need to submit a report to CalRecycle and educate consumers on where and how to return, recycle, or dispose of the covered electronic device.

The bill did not receive formal opposition. It exempts some products like prescribed medical devices.

DIVE BRIEF

California legislature advances battery EPR and takeback bills, aiming to avert facility fires

Published Aug. 31, 2022 • Updated Sept. 1, 2022

Morgan Quinn
Senior Reporter

Andrey Danilovich via Getty Images

Listen to the article 5 min

Dive Brief:

- California's legislature has passed two bills to update the state's battery takeback programs to cover more products, improve the collection process and prevent such batteries from causing fires at waste and recycling facilities.
- AB 2440 establishes an extended producer responsibility program for most batteries as early as April 1, 2025. It would require producers to create a stewardship organization to handle collection, transportation and recycling and keep track of how many batteries are recycled.
- SB 1215 would add battery-embedded products to the state's e-waste program, which currently collects items such as TVs and monitors. Starting in 2026, consumers of such products would pay a fee during purchase, meant to fund the item's eventual end-of-life handling.

Dive Insight:

Both bills have passed and supporters expect them to end up on Gov. Gavin Newsom's desk soon. Proponents have attempted to pass versions of these bills in recent years, but supporters say they gained better traction this year partly because of the rise in facility fires.

"Many Californians don't realize that all batteries are hazardous waste" and that throwing batteries in curbside bins can lead to "devastating" fires in collection vehicles and at waste and recycling facilities, said Assemblymember Jacqui Irwin, a sponsor of the bill, in a statement.

California already has a takeback program for some types of rechargeable batteries, but many consumers dropped off numerous other types of batteries because they were not sure which ones applied to the program, bill proponents said.

"AB 2440 makes sure that there's convenience for the consumers, that it's paid for by the manufacturers, and that the batteries are being recycled," said Doug Kobold, executive director of the California Product Stewardship Council, a sponsor of the bill along with Rethink Waste and Californians Against Waste. Supporters also include Republic Services and numerous solid waste management districts.

The bill covers many kinds of batteries, including most rechargeables as well as loose household batteries and others. It also calls for more battery drop-off locations in each county and would require some retailers to have permanent collection sites. The state plans to continue using existing retail collection and recycling infrastructure, according to a bill analysis.

Groups such as the Consumer Technology Association and California Retailers Association said they generally support battery takeback programs, but said most members were already participating in Call2Recycle's recycling drop-off program for rechargeable batteries and adding more kinds of batteries could be burdensome.

AB 2440 originally proposed including battery-embedded products in the EPR program, but it was amended in the Assembly to remove them. Battery-embedded products would now be captured under the state's electronic waste program in a separate bill, SB 1215.

SB 1215 would add many battery-embedded products — meaning products with batteries not designed to be removed by the consumer — to the state's existing electronic waste recycling program. The bill has not received formal opposition and exempts some products like prescribed medical devices. It is sponsored by state Sen. Josh Newman and supported by most of the same entities as AB 2440.

Manufacturers of such products will need to submit reports to CalRecycle starting in July 2027 with how many covered electronic devices they sold in the state and the estimated amount of recycled materials in such products.

Funneling all kinds of batteries into specific takeback programs helps protect curbside collection workers and those who work in MRFs or waste facilities, Kobold said.

California has seen a rise in such fires over the years, with one facility in San Carlos experiencing at least 10 fires almost every year since 2017 and a MRF in Richmond experiencing six fires between 2020 and 2021, according to a bill analysis. Such fires can also impact solid waste facility operators' ability to find insurance, the analysis said. Batteries from cell phones, a drone, a lawnmower and a Prius likely contributed to the recent fires, it said.

Supporters also expect to pass a separate bill to ban single-use, one-pound propane cylinders, which are another source of fires and explosions at waste facilities and can harm people who attempt to refill them, Kobold said. That bill is on Gov. Newsom's desk awaiting signature.

Editor's note: This story has been updated to reflect that the state legislature has passed both bills.

RECOMMENDED READING
California closes another banner year for waste and recycling legislation with numerous bills
By Megan Quinn • Sept. 1, 2022

Filed Under: Collections & Transfer, Recycling

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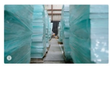
Solarcycle CEO, fresh off $31.5M in public and private funding, discusses solar recycling's future
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By Jacob Wallace • April 21, 2023

LATEST IN COLLECTIONS & TRANSFER

Baltimore hires solid waste head with public, private waste experience
By Jacob Wallace

WIN Waste resets leadership team, elevating Mayo to CEO
By Cole Rosengren

Minnesota looks to reduce Twin Cities' waste fast as disposal capacity tightens
By Jacob Wallace

Waste Connections acquires small hauler in Texas Panhandle
By Cole Rosengren

Attachment 1

Kitty McIlroy Biography

Kitty McIlroy

B.A, Goucher College, Environmental Studies Major, Peace Studies Minor

President, Maryland Recycling Network (MRN), Board of Directors. MRN is comprised of individuals and organizations including county coordinators, agencies, non-profit organizations, businesses, and recycling activists.

Project Manager, Northeast Maryland Waste Disposal Authority. Serves eight member jurisdictions in Maryland: Anne Arundel County, Baltimore City, Baltimore County, Carroll County, Frederick County, Harford County, Howard County and Montgomery County. Work includes municipal solid waste, recycling, reuse and composting procurement, project management, planning, design, permitting and engineering projects, as well as landfill gas to energy. Electronics related work includes:

1) 7 procurements/project management of electronics recycling contracts since 2013 (7 separate recyclers). Currently managing Baltimore City, Baltimore County, Carroll County, Frederick County, Howard County and Montgomery County contracts
2) Co-chairing the MRN Electronics Recycling Legislation Workgroup, to review the current Maryland law and provide recommendations for updated legislation (2021-present)
3) Co-Presented MRN Electronics Recycling Policy Webinar with Sacramento County, CA Waste Management Program Manager (2018), regarding manufacturer and consumer fee funding models.
4) Participated in Municipal Waste Management Association (MWMA) Working Group. Assisted in drafting a Resolution for consideration, amended and adopted by MWMA parent organization, The United States Conference of Mayors at their 2017 Annual Meeting (for consumer fee funding municipal electronics recycling programs)
5) Co-Presented "Optimize RFPs for Electronics Recycling" Webinar, sponsored by U.S. EPA Region 3, Northeast Recycling Council and Electronics Recycling Coordination Clearinghouse (2016)
6) Participated in Maryland Department of the Environment's 2015-2016 Electronics Recycling Workgroup, which facilitated government and industry discussion on and review of electronics recycling under the Maryland law. Submitted recommendations to improve the existing program to provide sustainable electronics recycling funding

Attachment 2

Maryland Department of the Environment 2015-2016 Electronics Recycling Workgroup Final Report and Northeast Maryland Waste Disposal Authority Recommendations

Northeast Maryland Waste Disposal Authority

July 9, 2015

Mr. David Mrgich
Environmental Program Manager
Maryland Department of the Environment
1800 Washington Boulevard, Suite #610
Baltimore, Maryland 21230-1718

Dear Mr. Mrgich:

Thank you for the opportunity for the Northeast Maryland Waste Disposal Authority ("Authority") to participate in the workgroup that is reviewing the Electronics Recycling Workgroup Final Report ("Report"). I have attached our specific comments on the Report.

Additionally, although the purpose of the Report is very specific in accordance with the legislation, we thought it was appropriate to include additional information in our response to MDE regarding the Report to help back up the comments we are providing for the Report. We have prepared a white paper discussing the current electronics recycling system set up in Maryland, inclusive of the SERP, the local jurisdictions collections program and the industry takeback programs and a discussion of legislation in other states. The Authority has been assisting our member counties with recycling electronics for more than eight years and have seen dramatic changes in the market place that were not anticipated when the original SERP legislation was enacted. We feel that this Report to the legislature is an excellent opportunity to further the dialogue and potentially improve the SERP and recycling of electronics in Maryland.

Please let me know if you have any questions and I look forward to participating in the workgroup meeting in August.

Sincerely,

Katherine McIlroy /sw

Katherine McIlroy
Project Assistant

Attachments

REC113943DLU.DOCX

410.333.2730 / 410.333.2721 fax / authority@nmwda.org
nmwda.org / Business-to-Business Recycling: mdrecycles.org
Tower II - Suite 402, 100 S. Charles Street, Baltimore, MD 21201-2705

Comprehensive Waste Management Through Recycling, Reuse, Resource Recovery and Landfill

Attachment 1

Comments from the Northeast Maryland Waste Disposal Authority on MDE's draft "Electronics Recycling Workgroup Final Report" (6/2/2015)

Page 2-3 - There is a discussion about tardy submission of registrations (e.g., "For example, in 2014, 42 out of the 141 total manufacturers registered were registered after mid-May, some as late as December 2014."). It seems as though increased enforcement would help increase the timeliness of registration, but how much does it cost the MDE to take an enforcement action versus the potential to receive $500 if the manufacturer opts into a takeback program. Some discussion from MDE on this point may be helpful for the General Assembly.

Page 6-7 - Fee Revenue and Grants - Between the years of 2010 and 2014, there was approximately $1,900,000 collected from the registration program. In 2015, there was $500,000 in grant money disbursed. A discussion of the disposition of nearly $1,400,000 of registration fees should be added to the text.

Page 6-7 - There should be a short discussion on the relevance of $500,000 worth of grant money spread throughout the state. In today's electronics recycling market, collection and recycling of TVs both Cathode Ray Tubes (CRTs) and Flat panel, costs significant money. For this reason, several local jurisdictions choose to landfill the TVs and monitors. Other jurisdictions that collect TVs and monitors pay for the TVs and monitors while having a slight revenue from the other electronic devices (not necessarily CEDs). Overall, the costs for collecting and recycling all electronic devices is approximately $0.14/pound of material. For a jurisdiction the size of Montgomery County, the annual cost for electronics recycling (not including staff time to run the collection center) is approximately $450,000. Similarly, Howard County's cost is approximately $200,000. Between these two jurisdictions, more money is spent on recycling electronics in one year than the grant money disbursed over a five year period.

Page 6-7 - Under C Fee Revenue and Grants. After the sentence "Grants have been used to establish permanent collection facilities, provide curbside pickup for seniors, purchase equipment, and hold special collection events." MDE should provide a detailed summary of the grant expenditures and efforts by the Counties. MDE should also provide information on expenditures by Counties that go above and beyond what was provided through the MDE grant program.

Page 7 - Under D Recycling Data. After the sentence "Some counties and municipalities collect electronics from residents through permanent collection programs or periodic special collection events." MDE should provide a listing of the Maryland Counties and what type of system they have in place, as well as the cost of their programs.

Page 7 - Figure 5 - There are two shades used on the graph. Although the shading is explained in the text, a key should be added to the graph so it can stand on its own.

Page 8 - The chart at the bottom of the page shows that the 2014 tonnages collected through the manufacturers take-back programs at around 450 tons. This is a dramatic decrease from the 2013 tonnages shown in the chart and discussed in the text above. Does MDE understand why the decrease is so dramatic? If so, a sentence or two would be appropriate. If the reasons for the decrease are not clear, then the text should reflect this and highlight that 2013 seems to be an anomalous year. There is also a

similar, yet less dramatic, difference between 2011 and the other years. Again, MDE should provide insight as to why the data changes so dramatically from year to year.

Page 8 - This section discusses the residential and commercial collection programs and the CEDs captured through the takeback programs. It should be highlighted that the residential and commercial collection programs take additional types of electronics that are not CEDs. A description of what is collected in both types of programs would be helpful. Also, in researching the takeback programs, at least one (Sony) takes back non-CED. Does the data that is collected for the takeback programs include non-CED?

Page 8 – The text in Section D should be expanded to highlight that the residential and commercial collection programs are far more effective at collecting electronic devices than the industry takeback programs. This is pointed out in the conclusion section, but could be bolstered in this section by adding a sentence like "As can be seen in comparing Figures 6 and 7, the majority of the electronic recycling continues to be accomplished through the residential and commercial collection programs with the approved takeback programs accounting for less than 10% of the material in 2013, the takeback programs best year."

Page 8 - In the title for Figure 7, there is an "*" that seems to point to a footnote, but there is no footnote.

Page 9 - Conclusions

1) After the first paragraph, add a sentence similar to "Additionally, the tonnage collected through the takeback programs, although seeing a spike in 2013 remains relatively consistent from 2009 through 2014."

2) A new third paragraph could be added stating "Although the number of takeback programs has increased slightly since 2013, the workgroup questions the effectiveness of the takeback programs as the amount of material collected has not increased (with the exception of 2013). The workgroup also questions the effectiveness of the fee structure as MDE anticipates the revenue from registrations to decrease in 2015 as increased takeback programs have been put in place, while the results of the takeback program do not show improvement. This leads to a decrease in the amount of revenue MDE has available for providing grants to the residential and commercial collection programs that accomplish 90% of the collection of the CED."

3) After the sentence "There was no similar increase in 2013 or 2014, but this may have been because it took manufacturers one or two years to become aware of and adjust to the changes made to the SERP." MDE should note whether they have spoken to vendors who could corroborate the statement.

4) A new sentence should be added at the end of the section similar to "As the grants have been helpful in support of recycling at the local level, the change in fee structure has not helped generate either additional recycling tonnages through the takeback programs or additional funds that MDE can distribute in grants to the local jurisdictions."

Recommendations

1) MDE should lead a larger stakeholder group (inclusive of the stakeholders that participated in review of the SERP) to review and recommend modifications to the SERP.

2) The definition of covered electronic devices (CED), should be expanded to include additional types of electronics, including but not limited to, cameras, stereos, video players, modems, fax machines, etc.

3) The stakeholders should identify improvements to the SERP that would focus on the capture and recycling of additional electronics. Specific areas for study should include, at the minimum, the following general study areas: 1) a review of laws and regulations in other states relating to electronics recycling to determine the best practices; 2) methods to assure improvements in the takeback programs to make them more accessible and user friendly for the public; and 3) methods to increase the amount of grant monies collected and disbursed to local jurisdictions under the SERP.

4) The stakeholders should identify minimum requirements for takeback programs to include such items as location guidelines, required number of locations, advertising of the takeback programs, documentation of materials collected and other requirements to promote the success and usefulness of the takeback programs.

Attachment 2

The Northeast Maryland Waste Disposal Authority ("Authority") Review of the Statewide Electronics Recycling Program[1] (SERP) and the Current Electronic Recycling System in Maryland

The following analysis will provide a background on the electronics waste stream, the current market, the SERP and a review of the impact of the annual registration fees and manufacturer-sponsored takeback programs nationally. The Authority believes the current SERP has shortcomings that were not anticipated when it was created and believes that there are sound alternative solutions that will help to increase electronics recycling in Maryland.

1. Background on the Changing Landscape of Electronics Recycling:

During the mid-2000s, as American consumers transitioned into purchasing flat screen televisions and computers, a large quantity of unwanted Cathode-Ray Tubes (CRTs) began entering the waste stream via municipal drop-off sites.[2] Since then, many companies across the country have offered free or revenue generating recycling services to municipalities for electronics, including CRTs. In recent years, however, many of these recyclers demonstrated themselves to be less than qualified and reliable. Consequently, many ended their contracts prematurely, leaving behind stockpiles of CRTs and have been unable to pay the true recycling costs.[3] Thus, local governments now face transparency challenges and must diligently vet companies throughout the length of a contract. Because CRT televisions and monitors comprise a large portion of the residential electronic waste stream, between 60-80%, they have become the main contributor to high electronic recycling costs facing local municipalities.[4]

As CRT material continues to be discarded, it has created a bottleneck for its downstream recyclers. "Conservative estimates from the Consumer Electronics Association peg remaining U.S. CRT glass tonnages at about 3.5 million tons," [5] while other sources estimate 300,000 tons of CRT glass stockpiled in the United States, in addition to around 232 million CRT screens, "weighing 6.9 million tons… yet to enter the waste stream; most of which are expected to do so… over the next 10 to 15 years."[6] CRT processing has "spread across a small group of firms generally charging between 8 and 15 cents per pound to take on the lead-laden material….Assume you get the best deal out there (8 cents) and take the low-end tonnage estimate (3.5 million tons, or 7 billion pounds), and you're looking at a

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[1] The Statewide Electronics Recycling Program was created under The Environment Article of the Annotated Code of Maryland 9-1727.

[2] http://newsoffice.mit.edu/2010/crt-recycle (Date Accessed 5/11/15)

[3] CRS stockpiling: http://www.bizjournals.com/tampabay/news/2014/09/08/report-names-potential-creative-recycling-buyers.html (Date Accessed 6/29/15)
CRT abandonment issues across the country: http://www.recyclingtoday.com/rt0914-electronics-recycling-focus.aspx (Date Accessed 6/30/2015)

[4] http://c.ymcdn.com/sites/productstewardship.site-ym.com/resource/resmgr/Electronics_Reports_Factsheets/Dimino0315e.pdf (Date Accessed, 5/11/15)

[5] Bobby Elliot, E-Scrap News: Downstream Decisions: http://resource-recycling.com/images/e-newsletterimages/Elliott0315e.pdf (Date Accessed 5/11/15)

[6] http://www.waste-management-world.com/articles/print/volume-14/issue-6/features/leading-the-way-to-clean-crt-recycling.html (Date Accessed 5/11/15)

bill of at least $500 million."[7] Because of the high cost of recycling CRT material, there are limited affordable outlets other than a landfill.

The cost of CRT recycling has become high for a few reasons. One reason is that the waste stream continues to grow as mentioned above. Another reason can be attributed to the fact that the largest recycler of old CRTs into new CRTs, India's Videocon, will be phasing out its CRT production over the next few years.[8] Videocon no longer needs to refurbish and sell CRTs because flat screens have become increasingly popular products to citizens worldwide.[9] Since Videocon's CRT capacity is already being met and North American recyclers are receiving excessive amounts of material,[10] the domestic recyclers are facing a cost challenge to export this material, seeing rates of $0.05-$0.10/pound or more from Videocon.[11] Furthermore, no systems exist to cost-effectively separate lead from the CRT glass and recycle the products separately.[12] Certain smelters have been investing in technology to separate lead from glass and may provide a significant outlet in the future.[13] However, future costs of this technology remain unknown, since the separation of lead from glass is such an energy intensive process.[14] For example, a new company in New York that separates CRT glass from lead charges $0.10/pound, maintaining the same pricing as Videocon, thus reinforcing the high cost of recycling.[15] Other leaded glass recycling operations, such as traditional lead smelting, also charge for material, or have yet to be utilized on a large enough scale.[16] These recyclers are already at their capacity for accepting glass, while other emerging technologies for leaded glass applications have yet to provide very many additional outlets.[17] Additionally, electronics recycling has become increasingly expensive for all materials,

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[7] Bobby Elliot, E-Scrap News: Downstream Decisions: http://resource-recycling.com/images/e-newsletterimages/Elliott0315e.pdf (Date Accessed 5/11/15)

[8] http://www.sunnking.com/crt-recycling-its-complicated/ (Date Accessed 6/23/15)

[9] CRT sales peaked worldwide in 2005 to 130 million units and declined to 90 million in 2009: http://newsoffice.mit.edu/2010/crt-recycle (Date Accessed 5/11/15)
"Previous markets for recovered CRT glass have dried up as manufacturers have shifted to LCD and other technologies": http://c.ymcdn.com/sites/productstewardship.site-ym.com/resource/resmgr/Electronics_Reports_Factsheets/Dimino0315e.pdf (Date Accessed, 5/11/15)
"After a sharp ascent in annual sales between 1980 and the late 1990s, sales of CRT monitors began to free-fall as the public turned to lead-free, but mercury-rich, flat panel display (FPD) televisions for a sleeker, leaner design and a better picture": http://www.sunnking.com/crt-recycling-its-complicated/ (Date Accessed 6/23/15)

[10] http://www.sunnking.com/crt-recycling-its-complicated/ (Date Accessed 6/23/15)

[11] http://www.waste-management-world.com/articles/print/volume-14/issue-6/features/leading-the-way-to-clean-crt-recycling.html (Date Accessed 5/11/15)

[12] http://www.dep.state.fl.us/waste/categories/electronics/pages/lead.htm (Date Accessed 6/23/15)

[13] Page 24 lists current and future processors: Bobby Elliot, E-Scrap News: Downstream Decisions: http://resource-recycling.com/images/e-newsletterimages/Elliott0315e.pdf (Date Accessed 5/11/15)
Discusses Nulife, ECS Refining, and Closed Loop: http://www.themunicipal.com/2014/01/pressure-builds-on-crt-disposal/ (Date Accessed 5/11/15)
Discusses Nulife: http://www.waste-management-world.com/articles/2013/06/nulife-opens-crt-leaded-glass-recycling-plant-new-york.html (Date Accessed 5/11/15)
Discusses Nulife: http://www.waste-management-world.com/articles/print/volume-14/issue-6/features/leading-the-way-to-clean-crt-recycling.html (Date Accessed 5/11/15)

[14] http://wasteadvantagemag.com/analysis-u-s-crt-glass-tsunami-recycling-challenge/ (Date Accessed 6/23/15)

[15] Correspondence on phone with Nulife confirmed $0.10/pound pricing, 7/1/2015
New York facility is currently operating while Virginia facility is undergoing permitting and construction phase: http://www.heraldcourier.com/news/nulife-glass-cuts-ribbon-on-bristol-plant-but-recycling-won/article_57293f18-df26-11e4-9879-e7e4d37bf5aa.html (Date Accessed 6/22/15)

[16] http://www.sunnking.com/crt-recycling-its-complicated/ (Date Accessed 6/23/15)

[17] "Biggest issue in recycling CRTs is the imbalance in centers of supply and demand…because glass is a low-value commodity, the farther you have to move it [e.g. to Asia], the less likely it is that the market drives the transaction": http://newsoffice.mit.edu/2010/crt-recycle (Date Accessed 5/11/15)

including traditional moneymakers such as computers and office equipment, due to a drop in the commodity market for materials such as metals and plastics.[18] "The problems of recycling in America are both global and local. A storm of falling oil prices, a strong dollar and a weakened economy in China have sent prices for American recyclables plummeting worldwide."[19] LCD and plasma televisions even cost money to recycle, due to the mercury encapsulated in the screen and other hazardous materials that need to be handled properly.[20] Thus, even as the technologies to recycle electronics have improved and continue to expand, they have arrived at a dramatic and unexpected cost to municipalities, who were previously seeing revenue from this material.[21] Many Solid Waste departments are not financially capable of maximizing recovery in the current electronics recycling market.[22]

2. Overall Quality and Performance of Manufacturer Takeback Programs in Maryland:

The Maryland electronics recycling law first required manufacturers to pay a registration fee in 2008, before there was a significant cost, or any at all, associated with electronic and specifically CRT recycling.[23] The law was not crafted to detail many program requirements for manufacturers and it leaves manufacturers to establish their own takeback programs. These programs tend to be advertised only online; hence they are neither widely known, nor utilized by many residents.[24] This online information

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CRT glass as ADC yet to be widely utilized: Bobby Elliot, E-Scrap News: Editorial Perspective: See Attachment (Date Accessed 5/11/15)
Discusses Nulife, ECS Refining, Closed Loop and Kuusakoski discussed as new solutions, not widely utilized or at all: http://www.themunicipal.com/2014/01/pressure-builds-on-crt-disposal/ (Date Accessed 5/11/15)
Nulife technology not yet widely utilized in U.S: http://www.waste-management-world.com/articles/print/volume-14/issue-6/features/leading-the-way-to-clean-crt-recycling.html (Date Accessed 5/11/15)
"Patch-work of smelting operations and innovative solutions will have to slowly take on the tonnages," currently three times more than processors can handle: http://www.sunnking.com/crt-recycling-its-complicated/ (Date Accessed 6/23/15)
Nulife NY facility already at capacity: http://www.heraldcourier.com/news/nulife-glass-cuts-ribbon-on-bristol-plant-but-recycling-won/article_57293f18-df26-11e4-9879-e7e4d37bf5aa.html (Date Accessed 6/19/2015)
[18] "Problems of recycling in America are both global and local. A storm of falling oil prices, a strong dollar and a weakened economy in China have sent prices for American recyclables plummeting worldwide": http://www.washingtonpost.com/local/dc-politics/american-recycling-is-stalling-and-the-big-blue-bin-is-one-reason-why/2015/06/20/914735e4-1610-11e5-9ddc-e3353542100c_story.html (Date Accessed 6/23/2015)
Global economy for recycling has changed: http://www.npr.org/sections/money/2015/03/27/395815221/episode-613-trash (Date Accessed 6/23/15)
"Market Closes Lower as Bond Yields and Commodity Prices Fall": http://www.nytimes.com/2015/01/15/business/daily-stock-market-activity.html?_r=0 (Date Accessed 6/23/2015)
[19] http://www.washingtonpost.com/local/dc-politics/american-recycling-is-stalling-and-the-big-blue-bin-is-one-reason-why/2015/06/20/914735e4-1610-11e5-9ddc-e3353542100c_story.html (Date Accessed 6/23/2015)
[20] Flat screens are not manufactured to be recycled easily and contain hazardous materials such as mercury, lead, cadmium, chromium, antimony, beryllium, brominated flame retardants and liquid crystals:.http://www.startribune.com/disposal-will-still-be-a-problem-with-new-tvs/16897731/ (Date Accessed 6/23/2015)
Flat screens are showing up in waste stream before their end of life, before there is market to recycle them cost effectively: http://www.rdmag.com/news/2012/10/new-tools-aid-recycling-flat-screen-monitors-televisions (Date Accessed 6/23/2015)
[21] http://c.ymcdn.com/sites/productstewardship.site-ym.com/resource/resmgr/Electronics_Reports_Factsheets/Dimino0315e.pdf (Date Accessed, 5/11/15)
[22] *Ibid.*
[23]http://www.mde.state.md.us/programs/Land/RecyclingandOperationsprogram/SpecialProjects/Pages/programs/landprograms/recycling/specialprojects/ecycling.aspx (Date Accessed 6/30/2015)
[24]List of registered electronic manufacturers, MDE: http://www.mde.state.md.us/programs/Land/RecyclingandOperationsprogram/SpecialProjects/Pages/Programs/LandPrograms/Recycling/specialprojects/registeredmanu.aspx (Date Accessed 6/30/15)
Other electronic take back and recycling programs, MDE: http://www.mde.state.md.us/programs/Land/RecyclingandOperationsprogram/SpecialProjects/Pages/programs/landprograms/recycling/specialprojects/ecycling.aspx (Date Accessed 6/30/2015)

is not easily accessible and is, at times, incomplete in its description of acceptable material, which list also may not be honored by each individual location.[25] Additionally, these physical takeback programs are remote and not required to exist in every jurisdiction.[26] Some manufacturers promote mail-back programs[27], if physical locations are not within 25 miles or so.[28] These mail-back programs tend to have weight and size restrictions and do not incentivize residents to use them due to the general inconvenience of mailing a bulky item.[29] Other manufacturers only provide jurisdiction-run drop-off sites as options on their websites, allowing manufacturers to bypass the cost and responsibility of recycling.[30] Manufacturers also tend to promote recycling for only their own brand, making electronic recycling inconvenient and costly for a resident with multiple devices of different brands.[31] A number of manufacturers have turned to the Electronic Manufacturers Recycling Management Company (MRM), owned by Panasonic, to handle their electronics recycling programs. Though MRM only runs four drop-off locations in the entire state, with online mail-back options, it is an approved program of the Maryland Department of the Environment (MDE).[32] Additionally, as referenced on page three of the Draft Workgroup Report, enforcement at the retailer level of this program only began in 2014.[33] There has not been enough enforcement throughout the state to ensure the takeback programs are even established or functioning as intended.[34] Certain retailers, like Best Buy and Staples, have initiated physical locations for retailer run takeback programs.[35] This trend boosts recycling, however, certain items like televisions are prohibited for takeback at Staples[36] and have size limitations for cost-free recycling at Best Buy,

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Manufacturer takeback programs in the U.S: http://www.electronicstakeback.com/how-to-recycle-electronics/manufacturer-takeback-programs/ (Date Accessed 6/30/2015)

[25] Needed to navigate through website to find recycling page: http://store.sony.com/-cms-page.sony.tradein.faq (Date Accessed 5/11/15)
Needed to open separate search engine to find location: http://store.sony.com/-cms-page.sony.recycle.locator (Date Accessed 5/11/15)
Stores may not comply with corporate policies: http://hdguru.com/how-and-why-you-need-to-get-you-old-tv-recycled/ (Date Accessed 6/23/2015)

[26] http://www.mrmrecycling.com/locator_md.htm (Date Accessed 6/30/2015)

[27] http://www.dell.com/learn/us/en/uscorp1/corp-comm/getfreeat-homepickup?c=us&l=en&s=corp (Date Accessed 6/30/2015)

[28] Mail-back information: http://store.sony.com/-cms-page.sony.tradein.faq (Date Accessed 5/11/15)
Store locator information: http://store.sony.com/-cms-page.sony.recycle.locator (Date Accessed 5/11/15)

[29] Only offers free mail-back for Sony product as long as it weighs less than 25lbs and box dimensions are 20(l) x 20 (w) x10 (h) or less. http://store.sony.com/-cms-page.sony.tradein.faq (Date Accessed 5/11/15)

[30] http://www.lgrecyclingprogram.com/ (Date Accessed 6/30/2015)

[31]Need to contact each location to see if non-Sony item will be accepted, with fee: http://store.sony.com/-cms-page.sony.tradein.faq (Date Accessed 6/30/2015)

[32] MRM services: http://www.mrmrecycling.com/services.htm (Date Accessed 6/30/2015)
MRM drop-off site locator: http://www.mrmrecycling.com/locator_md.htm (Date Accessed 6/30/2015)
List of registered electronic manufacturers, MDE, many link to MRM website: http://www.mde.state.md.us/programs/Land/RecyclingandOperationsprogram/SpecialProjects/Pages/Programs/LandPrograms/Recycling/specialprojects/registeredmanu.aspx (Date Accessed 6/30/2015)

[33] Electronics Recycling Draft Workgroup Report (Page 3), MDE: See Attached

[34] *Ibid.*

[35] Article discussing retailer takeback programs: http://c.ymcdn.com/sites/productstewardship.site-ym.com/resource/resmgr/Electronics_Reports_Factsheets/Dimino0315e.pdf (Date Accessed, 5/11/15)
Best Buy hauling service program: http://www.bestbuy.com/site/Global-Promotions/TV-Appliances-Haul-away/pcmcat174900050009.c?id=pcmcat174900050009 (Date Accessed 5/11/15)
Best Buy takeback program: http://www.bestbuy.com/site/global-promotions/recycling-electronics/pcmcat149900050025.c?id=pcmcat149900050025 (Date Accessed 5/11/15)

[36] http://www.staples.com/sbd/cre/marketing/easy-on-the-planet/recycling-and-eco-services.html (Date Accessed 6/30/2015)

which discourages residents from participating.[37] Furthermore, residents typically think of jurisdiction drop-off sites for trash disposal and recycling, not retailer or manufacturer run locations. The takeback model works against already established, successful municipal programs. The electronics recycling law should instead attempt to support these municipal programs, through funding, since the bulk of electronics end up at jurisdiction drop-off sites and leave the burden and cost of recycling left to the jurisdictions.[38] This can be seen on page eight of the Draft Workgroup Report, where in 2013 (a peak year, not duplicated in 2014), almost 1,400 tons from takeback programs represent only 13% of total material recycled when added to total weight going through municipal programs.[39] Eliminating the mandate for manufacturer takeback programs would also assist retailers that are not equipped to handle the takeback of electronics and significantly reduce MDE's needed allocation for enforcement activities.

3. Cost Comparison between the State Recycling Trust Fund and Expenditures by Jurisdiction for Electronics Recycling:

As previously discussed, the Maryland electronics law should utilize existing resources (i.e. jurisdiction drop-off sites) and shape the program around municipalities rather than encourage manufacturer takeback programs. The priority of manufacturers should be to instead increase the annual funding provided to the MDE Recycling Trust Fund. The primary reason for this necessity can be seen in a comparison of real costs faced by Maryland jurisdictions to recycle municipal electronics versus actual funding received through the Recycling Trust Fund. For example, page three of the Draft Workgroup Report discusses the anticipated 159 registered manufactures for 2015. Applying the $10,000 maximum annual fee (in a best case scenario, assuming none implement a takeback program and also all sell a minimum of 1,000 units) to the 159 manufacturers there would be a total revenue stream of $1,590,000. When looking at the 19,033,550 residential pounds of electronics recycled in MD in CY 2012[40] and multiplying that weight by the Authority's contracted rate for recycling electronic material at $0.145/pound, there would be $2,759,864.75 needed to fund statewide electronics residential recycling. Additionally, it is likely there are more electronics not factored into this comparison because certain jurisdictions, like Harford County, were not recycling CRTs in CY 2012 due to lack of funds, so we can expect the actual residential electronics total to be higher than 19,033,550 pounds.[41] This total cost of $2,759,864.75 also assumes all jurisdictions would be operating under the low recycling rate of $0.145/pound; most electronic recyclers charge $0.175-$0.50/pound or higher according to the Authority's electronics recycling Request for Proposals in 2013. Based on this conservative estimate, if MDE annually distributed funds statewide, the funding would be short $1,169,864.75.

Furthermore, jurisdictions do not receive funding from the MDE grants on an annual basis, and when funds are distributed, the total is not the full amount that could be paid into the MDE electronics fund for that year. Based on Table 2 of the Draft Workgroup Report, funds have only been distributed in 2008, 2009 and 2015, and at much lower rates than the potential revenue from manufacturers. There are 24 jurisdictions in Maryland, and based on $1,590,000, the amount that could be collected in 2015, each jurisdiction would receive $66,250 on an equally distributed basis. However, Montgomery County,

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[37]Hauling service has fee: http://www.bestbuy.com/site/Global-Promotions/TV-Appliances-Haul-away/pcmcat174900050009.c?id=pcmcat174900050009 (Date Accessed 5/11/15)
Discusses which materials have fee: http://www.bestbuy.com/site/global-promotions/recycling-electronics/pcmcat149900050025.c?id=pcmcat149900050025 (Date Accessed 5/11/15)
[38] Electronics Recycling Draft Workgroup Report (Page 8), MDE: See Attached (Date Accessed 6/16/15)
[39] *Ibid.*
[40]http://mde.maryland.gov/programs/Land/RecyclingandOperationsprogram/CountyCoordinatorResources/Documents/%2713%20MSWMR.pdf (Date Accessed 5/11/15)
[41] http://www.harfordcountymd.gov/dpw/envaffairs/index.cfm?ID=431 (Date Accessed 6/22/15)

which has the largest municipal electronic waste stream in Maryland, received only $27,200 in 2015, not even enough to cover one month of service.[42] More specifically, in 2014, Montgomery County paid $448,836.35 for 3,095,423 pounds and Howard County paid $211,797.44 for 1,460,672 pounds for electronics recycling.

The Authority finds this trend especially problematic because of that 19,033,550 total residential pounds from 2012, the Authority jurisdictions' share represents 15,105,746 pounds or 79% of total material in the state. Thus, attempting to procure long-term recycling contracts for electronics has become increasingly difficult and has caused some jurisdictions to turn to landfilling because of the lack of funds to cover recycling programs. Furthermore, going forward, if all 159 manufacturers paid only the $500 annual fee (by establishing a takeback program, without guarantee of any increase in material accepted at manufacturer sites) there would be a total annual contribution of only $79,500 into the MDE electronics fund. Based on the $2,759,864.75 needed to fund annual statewide electronics residential recycling, funds would be short $2,680,364.75. Even in the best case scenario, when applying the total estimate subject to the registration requirement, 224 manufacturers, with the $10,000 annual fee, there would be a total of only $2,240,000 on an annual basis, still short $519,864.75 of the $2,759,864.75 needed to fund statewide electronics recycling.[43] It is clear that if the manufacturer takeback programs were functioning as intended by law, by collecting meaningful amounts of electronics in the state, it would be more cost-effective for a manufacturer to pay the $10,000 fee than to set-up an effective takeback program. Therefore, there is currently no incentive for a manufacturer to run an effective takeback program, evident in that the programs are not generating high volumes of electronics recycling, nor does there seem to be any effort on behalf of manufacturers to enhance these programs.

4. Revamping the Maryland Electronics Recycling Law:

Unless Maryland's electronics recycling law is restructured, more and more electronics in the state may become landfilled. Beginning calendar year 2014, only four out of the eight jurisdictions in the Authority were able to continue their full electronics recycling programs and recycle CRTs and flat screens (Harford County recycles flat screens but cannot afford to recycle CRTs). Looking at the Authority data, the CRTs and flat screens recycled by jurisdictions no longer able to recycle them today amounted to 5,029,014 pounds in CY 2012 and 5,101,565 pounds in CY 2013 or 35% of the total material stream, not including Harford County data.[44] There are growing concerns that as the cost of recycling goes up for all commodities, jurisdictions will be unable to maintain the same level of service.

During 2003-2010, 25 states passed electronics recycling laws, with 23 of them relying on various forms of extended producer responsibility (manufacturer funded models), Maryland being one of them.[45] It is important to consider that not all extender producer responsibility models are equal. The true effectiveness of a program, in terms of funding all electronic recycling and ensuring that all material is recycled, relies on the presence of convenience or performance standards.[46] The Maryland electronics

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[42] http://mde.maryland.gov/programs/Land/RecyclingandOperationsprogram/CountyCoordinatorResources/Documents/%2713%20MSWMR.pdf (Date Accessed 5/11/15)

[43] Electronics Recycling Draft Workgroup Report (Page 3), MDE: See Attachment (Date Accessed 6/16/15)

[44] See Attached Authority Data (Date Created 6/19/2015)

[45] Discusses standards in different state laws: http://c.ymcdn.com/sites/productstewardship.site-ym.com/resource/resmgr/Electronics_Reports_Factsheets/Dimino0315e.pdf (Date Accessed, 5/11/15)
How Much E-waste is Collected in States with Electronics Recycling Laws, Electronics TakeBack Coalition: See Attachment (Date Accessed 5/11/15)

[46] http://c.ymcdn.com/sites/productstewardship.site-ym.com/resource/resmgr/Electronics_Reports_Factsheets/Dimino0315e.pdf (Date Accessed, 5/11/15)

recycling law has neither, and instead relies on the manufacturer takeback program with a small annual fee. As noted earlier, the small annual fee does not provide much assistance in funding the recycling programs, nor do the manufacturer takeback programs capture much material. Thus the manufacturer in Maryland makes only a small contribution in assisting recycling in the state. This is primarily because the annual fee neither correlates to current recycling costs, nor ties to a market share based system, which exists within the performance standards of the stronger state laws.[47] Adopting performance standards within the Maryland law would greatly enhance manufacturer responsibility and more fairly distribute costs of recycling between manufacturer and government. Manufacturers would then be responsible for funding the recycling of a certain percentage of electronics, based on amounts sold or products expired.[48] However, to ensure that the full costs of recycling be borne by manufactures, Maryland would need to adopt convenience standards or a return based share seen in states such as Oregon, Vermont, Washington and Connecticut.[49] These standards have proven to be the most stable and effective when implementing full cost accounting programs.[50] Convenience standards generally require a minimum number of drop-off sites per jurisdiction to meet a standard of convenience for consumers to drop-off their electronics (e.g., one site per jurisdiction).[51] Jurisdictions then contract a recycler whose services are paid for by manufacturers selling devices in those states.[52] For example, residents in Connecticut dispose of electronics at existing municipal drop-off sites, similar to Maryland.[53] Recyclers then collect and sort electronics by brand and commodity type, billing each manufacturer for total material present of only its own brand.[54] Market share is then used to determine how current manufacturers will split and pay for orphan product recycling, that is, electronics with no label or whose manufacturer has gone out of business.[55] Thus, these standards "tend to support a robust infrastructure with year-round financial support, regardless of the volumes."[56] The Authority recommends remodeling the current Maryland electronics recycling law after Connecticut's, because unlike Oregon, Vermont, Washington, it only requires manufacturers to be responsible for residential material, and not businesses, non-profits or schools.[57]

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[47] *Ibid.*

[48] Minnesota bill, based on return share of electronics in recycling stream in previous years: https://www.revisor.mn.gov/bills/text.php?number=HF1412&version=0&session=ls89&session_year=2015&session_number=0 (Date Accessed 5/11/15)
Discusses standards in different state laws: http://c.ymcdn.com/sites/productstewardship.site-ym.com/resource/resmgr/Electronics_Reports_Factsheets/Dimino0315e.pdf (Date Accessed, 5/11/15)
Brief Comparison of State Laws on Electronics Recycling, Electronics TakeBack Coalition
http://www.electronicstakeback.com/wp-content/uploads/Compare_state_laws_chart.pdf (Date Accessed 5/12/15)

[49] http://c.ymcdn.com/sites/productstewardship.site-ym.com/resource/resmgr/Electronics_Reports_Factsheets/Dimino0315e.pdf (Date Accessed, 5/11/15)

[50] http://c.ymcdn.com/sites/productstewardship.site-ym.com/resource/resmgr/Electronics_Reports_Factsheets/Dimino0315e.pdf (Date Accessed, 5/11/15)

[51] *Ibid.*

[52] *Ibid.*

[53] http://www.ct.gov/deep/cwp/view.asp?A=2714&Q=397852#Label (Date Accessed 5/11/15)

[54] *Ibid.*

[55] *Ibid.*

[56] http://c.ymcdn.com/sites/productstewardship.site-ym.com/resource/resmgr/Electronics_Reports_Factsheets/Dimino0315e.pdf (Date Accessed, 5/11/15)

[57] Connecticut program: http://www.ct.gov/deep/cwp/view.asp?A=2714&Q=397852#Label (Date Accessed 5/11/15)
Vermont program: http://cswd.net/recycling/electronics/ (Date Accessed 5/12/15)
Washington program: http://www.ecy.wa.gov/programs/swfa/eproductrecycle/ (Date Accessed 5/12/15)
Oregon program: http://www.deq.state.or.us/lq/ecycle/moreabout.htm (Date Accessed 5/12/15)

5. Conclusions:

Although there will be concerns from manufacturers regarding an anticipated increase in costs to purchasers (to cover their increased funding) and thus a perceived loss of business to neighboring states, it is important to consider that other states surrounding Maryland already have more successful extended producer responsibility laws, currently recycling more electronics per pound per capita than Maryland.[58] These states include Virginia, West Virginia and Pennsylvania.[59] Manufacturers in some of these states most likely have already adjusted their sale prices to account for the higher funding that is required to meet the recycling standards. Therefore, it is fair to conclude that Maryland will not likely become less competitive in the electronic sales market and will not lose business to accommodate a stronger electronics recycling law. Furthermore, it should become a priority to reverse Maryland's standing as the poorest national performer in manufacturer sponsored electronics recycling, as measured by pounds of electronics collected per capita.[60]

The various benefits of strengthening the Maryland electronics recycling law would include increasing overall waste diversion and recycling rates for jurisdictions, which is important as Maryland transitions to adopting zero waste targets. This will also assist jurisdictions as they look to cut costs associated with landfilling. Additionally, increased recycling could expand the electronics recycling job market and support economic growth in the state.[61] A stronger electronics recycling law would also provide stronger environmental protection. The United States Environmental Protection Agency has identified some "toxic substances with known adverse health effects, such as lead," to potentially endanger environmental and human health when "exported to countries without modern landfills or…regulations."[62] Furthermore, a revised electronics law could increase transparency of national and international shipments of electronics waste by requiring the use of only certified recyclers, those that maintain R2 or e-Stewards standards. This would support stronger environmental protection and prevent unauthorized exports.[63] Revising the Maryland SERP will offer a more sustainable and environmentally responsible recycling system for Maryland's future.

[58] http://c.ymcdn.com/sites/productstewardship.site-ym.com/resource/resmgr/Electronics_Reports_Factsheets/Dimino0315e.pdf (Date Accessed, 5/11/15)
[59] *Ibid.*
[60] http://c.ymcdn.com/sites/productstewardship.site-ym.com/resource/resmgr/Electronics_Reports_Factsheets/Dimino0315e.pdf (Date Accessed, 5/11/15)
[61] http://www.heraldcourier.com/news/nulife-glass-to-bring-jobs-m-investment-to-bristol-virginia/article_f84334dc-981b-11e4-ae33-7bcc956daef7.html (Date Accessed 6/22/15)
[62] http://www.gao.gov/products/A43057 (Date Accessed, 6/30/15)
[63] *Ibid.*

Northeast Maryland Waste Disposal Authority

September 17, 2015

Mr. David Mrgich
Environmental Program Manager
Maryland Department of the Environment
1800 Washington Boulevard, Suite #610
Baltimore, Maryland 21230-1718

Dear Mr. Mrgich:

Thank you for the opportunity for the Northeast Maryland Waste Disposal Authority ("Authority") to have participated in the workgroup that reviewed the Electronics Recycling Workgroup Final Report ("Report"). I have attached our final recommendations on the Report, most of which were referenced at the workgroup meeting in August. We appreciate you incorporating many of the Authority's comments throughout the entirety of the Report.

Please let me know if you have any questions. I look forward to viewing the final Report at the end of the calendar year.

Sincerely,

Katherine McIlroy

Katherine McIlroy
Project Assistant

Attachment

REC113965DLU.DOCX

410.333.2730 / 410.333.2721 fax / authority@nmwda.org
nmwda.org / Business-to-Business Recycling: mdrecycles.org
Tower II - Suite 402, 100 S. Charles Street, Baltimore, MD 21201-2705

Comprehensive Waste Management Through Recycling, Reuse, Resource Recovery and Landfill

Attachment 1

Recommendations from the Northeast Maryland Waste Disposal Authority on MDE's "Electronics Recycling Workgroup Final Report" (9/17/2015)

1. Page 3: Please provide the number of inspections, how long and when these inspections occurred as well as the number of inspectors involved. Ongoing enforcement should be detailed in MDE's annual Management and Diversion Report. Enforcement activities should be tied to a specific amount of money diverted from annual grant revenues to establish how much funding is needed to manage this program on an annual basis. Moving forward, no more than 10% of electronics recycling grant funds from manufacturers should be retained by MDE on annual basis.

2. Page 7: Footnote regarding the Maryland Department of the Environment (MDE) annual Management and Diversion Report and the local government electronics recycling activities and eCycling grants: Please provide an appended summary table of the government programs that have received the grant money. If available, please detail the length of time and the amount of electronics (in pounds) that municipalities are able to recycle from the funding. The MDE report/website that is referenced does not provide this information (only gross funds distributed in 2008, 2009, 2010), which is provided in Table 2 on page 8. Currently, it is unknown the amount of material that has been recycled, the amount of time these programs have lasted and the amount of money distributed to each jurisdiction by the grants. Moving forward, this information should be recorded and provided in the MDE Management and Diversion Report on an annual basis.

3. Page 8: Please provide a description (percentage based) that highlights the considerable difference between materials collected through manufacturer takeback programs compared to residential programs. Please include the italicized font "For example, Figure 7 shows that 500 tons of CEDs were recycled through MDE-approved takeback programs. *During this peak year, (not duplicated in 2014) the 500 tons represent only 5% of total material recycled when added to the total weight going through residential programs, approximately 9,500 tons, seen in Figure 6."*

4. Page 11: Please include the italicized font "In addition, according to the U.S. EPA, recycling of consumer electronics in the U.S. as a whole has showed a strong upward trend, increasing from 30.6% in 2012 to 40.4% in 2013, the most recent year available. *In Maryland, government programs are the main contributor to increases in recycling rates for electronics, not takeback programs which, in their peak year, only captured 5% of the total material stream compared to municipal programs. Furthermore, this upward trend will decrease without adequate funding, which has become a recent development in Maryland beginning CY 2014, as many municipalities can no longer afford to recycle TVs and monitors, the bulk of the electronic material stream."* The specifics of this occurrence are detailed below. Additionally, without the mandated extended producer responsibility law it would be reasonable to assume that the manufacturer capture rate would fall far below 5%, since it is apparent there has been minimal effort by manufacturers to create successful takeback programs.

5. Page 11: Please include the italicized font "recently, these costs have led several counties to discontinue recycling of televisions and monitors, including Anne Arundel, Baltimore and Carroll Counties, *while Harford County and others have not been able to afford these programs for some time.*"

6. Page 11: Please replace this statement "NMWDA estimates that these devices constitute 35% of the total electronics recycling stream formerly collected in those jurisdictions" with the following statement, "NMWDA estimates that these devices constitute 71% of the total electronics recycling stream formerly collected in those jurisdictions and 35% of the total Authority electronics stream, not including Harford County data. This equates to over 5,000,000 pounds of TV/monitor material no longer being recycled each year, beginning CY 2014." [67% for CY 2012 data and 71% for CY 2013 data of the TV/monitor material stream for Anne Arundel County, Baltimore County and Carroll County. 5,029,014 pounds of TV/monitor material were recycled for CY 2012 and 5,101,565 pounds of TV/monitor material were recycled for CY 2013 in Anne Arundel, Baltimore County and Carroll County].

7. Page 11: Please insert the italicized font "in comparison total fee revenue under the Statewide Electronics Recycling Program (SERP) ranges from $300,000 to $500,000 annually, *however, this amount is not distributed to jurisdictions on an annual basis, and never in the full amount collected, since much of it is diverted to other MDE operations. From 2010-2014 only $500,000 was distributed as grant money when there was approximately $1,900,000 collected from the registration program.* Based on this, some workgroup members believe that the fee levels are inadequate and should be increased..."

8. Page 11: Please include the italicized font "or at least maintained without the automatic reversion scheduled to occur after 2016, *with a minimum of 90% of funds to be redistributed annually for municipal electronics recycling programs. Current collection programs are already extremely underfunded. Based on the 19,033,550 total residential pounds in Maryland, derived from MDE's Management and Diversion CY 2012 Report, jurisdictions would need approximately $2,759,864.75 to fund the recycling on an annual basis, using a low figure of $0.145 per pound for all electronics. MDE has only distributed a total of $1,306,552 since 2008, less than half of the amount now needed annually."*

9. Page 11: Please insert the italicized font "the Department notes that the SERP is a shared responsibility system, meaning that manufacturers, retailers, consumers, and local governments all have roles in electronics recycling in Maryland, *however, local governments contribute to the vast majority of funding and collection of electronics for recycling. Manufacturers contribute little funding and participation in the programs, comparatively, while retailers and consumers are obligated to contribute nothing to the programs under the SERP."* The Authority notes how the SERP has not acted as a shared responsibility system, mainly because manufacturers have captured 5% or less of the electronics stream through their takeback programs on an annual basis and many jurisdictions have received little to no funding to support their own programs on an annual basis (e.g., Montgomery County, the largest municipal electronic waste stream, only received a $27,200 grant in 2015, 5.4% of its average annual need to fund recycling of electronics at $500,000).

10. Page 11: Please insert the following italicized comment, "Some manufacturers choose to supplement local recycling programs by providing statewide mail-in or drop-off return programs for their products. *More specifically, there are only four existing manufacturer sponsored drop-off locations in the entire state under the SERP, while the effectiveness of the mailback program, the majority of manufacturer sponsored programs, has not been measured in its ability to capture the most common, most bulky and most expensive item to recycle in the electronics stream, televisions and monitors. For these reasons it is easy to identify why most consumers return electronics through the more accessible, local government sponsored drop-off locations.* The Electronic Manufacturers Recycling Management Company (MRM)'s website states that its drop-off locations are "convenient," when in reality there are only four provided in the entire state, ranging 24-60 minutes travel time by car to the nearest location for residents in Authority jurisdictions, and up to hours in travel time by car for jurisdictions outside the Authority. Additionally, since a variety of manufacturers utilize MRM, such as Barnes and Noble, Hitachi America Ltd, JVC Kenwood USA, LF Products, Panasonic Corporation of North Americas, Philips Consumer Lifestyle, PLR IP Holding, LLC, TCT Mobile (USA), Inc., Toshiba America Information Systems, Inc., Voxx International Corporation and Zingarr Sales & Marketing, LLC., this inhibits additional physical takeback locations from being created in the state. Allowing mailback programs to substitute for physical takeback locations seems counterintuitive as a way to promote recycling, since these programs seem to be inconvenient for residents and thus underutilized for television and monitor material. Mailback program tonnages should be provided in the MDE annual Management and Diversion Report and detail the weight collected by each manufacturer to determine the effectiveness of mailback programs under television and monitor manufacturers.

11. Page 12: Please include the italicized font: "It is not intended to fully fund local government electronics recycling programs, *however, the SERP should aim to more equally distribute responsibility and fund at least 50% of electronics recycling operations occurring under local government programs, if it is to be called a shared responsibility system.*" As referenced above in Section Two, this could occur by tracking the amount of electronics recycled by grant monies compared to electronics recycled without grant monies within local government programs. MDE could then adjust the funding allocation accordingly. For jurisdictions that are not funding electronics recycling programs, grants should still be provided through MDE's application process, to fund various collection events that jurisdictions are not able to afford throughout the remaining portion of the year.

12. Page 13: Please include the italicized font, "consumers now have more manufacturer takeback programs available to them than ever before, *however, this has not led to a significant increase in the actual usage of manufacturer takeback programs, based on total weight collected in these programs."*

13. Page 13: Please include the italicized font "These programs continue to capture significant quantities of electronics, including *over 70% of CED material, with less than 30%* beyond the subset of CEDs." There are significant quantities of CEDS being captured by local governments, while less than 30% of the electronics stream is non CED material (based on Anne Arundel,

Baltimore County and Carroll County CY 2013 data provided in Section 6). Thus, the recycling of CEDs contributes to the majority of material captured and thus expensed by jurisdictions.

14. Page 13: Please include the italicized font, "However, the SERP was not intended as a mechanism for fully funding local programs. Instead, it seeks to increase recycling options through a combination of manufacturer takeback programs and supplemental funding for local programs. *The SERP will aim to provide more funding to local government programs and better promote manufacturer takeback programs through various marketing opportunities to increase the shared responsibility between manufacturer and local government."*

15. Page 24: Please delete and include the following italicized font, "The increasing cost of electronics recycling given continuing entry of CRTs into the waste stream was an issue raised by several workgroup members. The Department agrees that this is a challenge that will be ongoing ~~*in the near future*~~ as obsolete CRTs are phased out of the ~~*market*~~ *waste stream. This trend has been projected to occur 10-15 years from now."* CRTs are not widely marketed in the United States, however, the remaining CRTs that have yet to be disposed (most likely stored in households) are believed to continue entering the waste stream at a continuous pace for the next 10-15 years.

16. Page 25: Please delete and include the following italicized font, "When residents contact ~~*the county*~~ *a municipality or MDE* looking for a place to recycle electronics, it would be preferable to have information on manufacturer takeback programs readily available, *such as a full list and map of all manufacturer and retailer sponsored takeback locations prominently displayed on MDE's e-cycling webpage."* The Authority will be providing a full list and maps to MDE.

17. Page 25: Please delete and include the following italicized font, "This would allow the residents to return electronics to the manufacturer for free rather than bringing the electronics to ~~*the county*~~ *a municipal* landfill *or burdening a municipality with the cost of recycling these items.*

18. Page 25: Please include the italicized font "A locator for recycling opportunities by zip code *(please note this locator only provides four takeback locations under the SERP)."* More specifically, the Greener Gadgets website does not list any registered physical manufacturer takeback programs approved by MDE in this search engine other than the four MRM locations because no other registered takeback locations exist. Thus, listing the Greener Gadget search engine on MDE's main e-cycling webpage would not be very effective. MDE can instead advertise the four MRM locations in addition to all Best Buy locations on the main MDE e-cycling webpage since they accept TVs/monitors at no charge, as well as Staples locations, which accept monitors at no charge. The Authority will be providing this information, in addition to a summary of the Greener Gadgets zip code search engine to MDE in a separate document.

19. Page 25: Please insert the italicized font "MDE should lead a larger stakeholder group to review and recommend broader modifications to the SERP. *This stakeholder group should include more representatives than were present in the workgroup, such as electronic recyclers, additional municipalities as well as non-profit entities such as the National Center for Electronics Recycling (NCER) as a way to increase diversity and expertise on the panel."*

20. Page 25: Please include the italicized font, "public service announcements for televisions and radio *to advertise CEA sponsored collection events.*" It would be helpful if the CEA would sponsor various collection events throughout the year to uphold its shared responsibility under the SERP. MDE and other agencies should become more active in requesting this type of involvement. Public service announcements should avoid directing electronics to underfunded municipal programs.

21. Page 26: Please insert the italicized font "methods to increase the amount of grant monies collected and disbursed to the local jurisdictions under the SERP, *to reduce the financial burden placed on taxpayer funded government programs to manage the recycling of electronics.*"

Maryland
Department of the Environment

Larry Hogan, Governor
Boyd K. Rutherford, Lt. Governor

Ben Grumbles, Secretary
Horacio Tablada, Deputy Secretary

February 16, 2018

The Honorable Mike V. Miller, Jr., President
Senate of Maryland
State House, H-107
Annapolis MD 21401-1991

The Honorable Michael E. Busch, Speaker
House of Delegates
State House, H-101
Annapolis MD 21401-1991

The Honorable Joan Carter Conway, Chair
Senate Education, Health and
Environmental Affairs Committee
Miller Senate Office Building
2 West Wing
11 Bladen Street
Annapolis MD 21401-1991

The Honorable Kumar P. Barve, Chair
Environment and Transportation Committee
House of Delegates
House Office Building, Room 251
6 Bladen Street
Annapolis MD 21401-1991

Dear President Miller, Speaker Busch, Chairs Conway and Barve:

As required in Chapter 400, Acts of 2012, Annotated Code of Maryland, I am enclosing a copy of the Electronics Recycling Workgroup Final Report.

If the Department can provide you with any additional information, please contact me or Ms. Hilary Miller, Director of the Land and Materials Administration, at 410-537-3304 or via email at *hilary.miller@maryland.gov*.

Sincerely,

Ben Grumbles
Secretary

Enclosures

cc: Sarah Albert, Department of Legislative Services, Mandated Report Specialist
Hilary Miller, Director, Land and Materials Administration

MARYLAND

Department of the Environment

ELECTRONICS RECYCLING WORKGROUP FINAL REPORT

Prepared by:

Resource Management Program

Land & Materials Administration

Prepared for:

Legislative Policy Committee

House Environment and Transportation Committee

Senate Finance Committee

Senate Education, Health, and Environmental Affairs Committee

September 2016

MARYLAND DEPARTMENT OF THE ENVIRONMENT
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Larry Hogan, Governor | Boyd K. Rutherford, Lt. Governor | Ben Grumbles, Secretary

I. Introduction

On May 2, 2012, Chapter 400, entitled *Environment – Statewide Electronics Recycling Program* was enacted into law. This legislation amended certain manufacturer registration and fee provisions of the Statewide Electronics Recycling Program (SERP) under §9-1727 et seq. of the Environment Article, *Annotated Code of Maryland.* In addition to those changes, the legislation required the Secretary of the Environment to:

- On or before October 1, 2015, convene a workgroup consisting of representatives of the various sectors of the electronics industry and representatives from appropriate public and private entities to review and assess the impact of the $10,000 annual registration fee collected under §9-1728(c)(3) of the Environment Article on the number of covered electronic device takeback programs implemented by manufacturers; and
- On or before December 31, 2015, report the findings and recommendations of the workgroup to the Legislative Policy Committee, House Environment and Transportation Committee, Senate Finance Committee, and Senate Education Health, and Environmental Affairs Committee.

The Maryland Department of the Environment ("MDE" or "the Department") established a workgroup in June 2015, including representatives of electronics manufacturers and retailers and public and private recycling organizations. Appendix A contains a list of the workgroup members. In addition to providing input via e-mail, the workgroup met once in person in August 2015. The Department respectfully submits this final report containing the findings and recommendations of the workgroup.

II. Background

Maryland's first electronics recycling law, enacted in 2005, established the Pilot Statewide Computer Recycling Program (Pilot Program).[1] The Pilot Program required certain computer manufacturers to register with MDE and pay initial registration and annual renewal fees. Manufacturers were prohibited from selling computers in the State unless they complied with these requirements. The law had two purposes. First, by charging lower annual renewal fees for manufacturers that implemented MDE-approved takeback programs, it encouraged manufacturers to provide consumers with recycling opportunities for their products. Second, it required fee revenue to be deposited into the State Recycling Trust Fund and allowed the Fund to be used for local government electronics recycling grants.

The Pilot Program was scheduled to expire in 2010. However, in 2007 the law was amended to create the permanent SERP that exists today.[2] The SERP is similar to the Pilot Program, but instead of addressing only computers, it applies to covered electronic devices (CEDs). CEDs include computers and video display devices with screens larger than 4 inches measured diagonally.[3] The 2007 law also added a prohibition against retail sale of a CED unless the CED's manufacturer is in compliance with the SERP.

In 2012, legislation was passed amending certain aspects of the SERP, effective beginning in calendar year 2013.[4] First, the scope of the manufacturer registration requirement was changed. Prior to 2013,

[1] Ch. 384, Acts of 2005.
[2] Ch. 239, Acts of 2007.
[3] The definition of CED excludes a video display device that is part of a motor vehicle or that is contained within a household appliance or commercial, industrial, or medical equipment. Environment Article, §9-1701(f).
[4] Ch. 400, Acts of 2012.

manufacturers that manufactured an average of more than 1,000 CEDs annually over the preceding three years were required to register with the Department. Beginning in 2013, manufacturers that sell or offer to sell any number of CEDs in Maryland, including online, are required to register. Second, the legislation added a requirement for MDE-approved takeback programs to provide customers with educational materials on the destruction or sanitization of data from CEDs. Third, the legislation transferred responsibility for accepting fees and enforcing the law from the Comptroller to the Department and increased the penalties for noncompliance.

Finally, the 2012 legislation revised the fee structure. Prior to March 1, 2013, all manufacturers were subject to an initial registration fee of $10,000 and an annual renewal fee of either $5,000 with no MDE-approved takeback program or $500 with a MDE-approved takeback program. On and after March 1, 2013, the fees are based on the number of CEDs the manufacturer sold in Maryland in the previous year.[5] Manufacturers that sold fewer than 100 CEDs in Maryland in the previous year (small manufacturers) are exempt from fees. Manufacturers that sold between 100 and 999 CEDs in Maryland in the previous year (medium manufacturers) are subject to an initial registration fee of $5,000 and an annual renewal fee of either $5,000 without a MDE-approved takeback program or $500 with a MDE-approved takeback program. Manufacturers that sold at least 1,000 CEDs in Maryland in the previous year (large manufacturers) are subject to an initial registration fee of $10,000, the same as under the 2007 law. The annual renewal fee for large manufacturers with MDE-approved takeback programs also remains at $500. However, the 2012 legislation temporarily increased the annual renewal fee for large manufacturers without MDE-approved takeback programs from $5,000 to $10,000, effective on March 1, 2013 and before March 1, 2016. Beginning on March 1, 2016, this fee reverts to $5,000. Table 1 summarizes the initial registration and annual renewal fees under the SERP.

Table 1: Initial Registration and Annual Renewal Fees under the SERP

	Years				
	Before March 1, 2013*	March 1, 2013 to before March 1, 2016		March 1, 2016 and After	
Initial Registration	$10,000	<100 CEDs Sold	$0	<100 CEDs Sold	$0
		100-999 CEDs Sold	$5,000	100-999 CEDs Sold	$5,000
		≥ 1,000 CEDs Sold	$10,000	≥ 1,000 CEDs Sold	$10,000
Annual Renewal	$5,000/$500^	<100 CEDs Sold	$0	<100 CEDs Sold	$0
		100-999 CEDs Sold	$5,000/$500^	100-999 CEDs Sold	$5,000/$500^
		≥ 1,000 CEDs Sold	$10,000/$500^	≥ 1,000 CEDs Sold	$5,000/$500^

* In 2012 and prior years, the registration and fee requirements applied to manufacturers that manufactured an average of more than 1,000 CEDs annually over the previous 3 years.

^ The $500 annual renewal fee applies only to manufacturers with MDE-approved takeback programs.

The 2012 legislation authorized the Department to enforce the requirements of the SERP and provided for civil and administrative penalties under §9-1730 of the Environment Article. While the Department

[5] Manufacturers are required to report the number of CEDs sold in Maryland in the previous year on their annual registration forms. Env. Art. §9-1728(a)(4). MDE also uses data from the Electronics Recycling Coordination Clearinghouse (ERCC), which calculates estimated sales in each state based on national sales data and the population share of each state. The ERCC data is used to verify manufacturer-reported data when necessary.

conducts inspections of electronics retailers for compliance with the SERP, compliance issues identified during those inspections have so far been remedied without the need to impose penalties. Additional information on enforcement issues can be found in Appendix C.

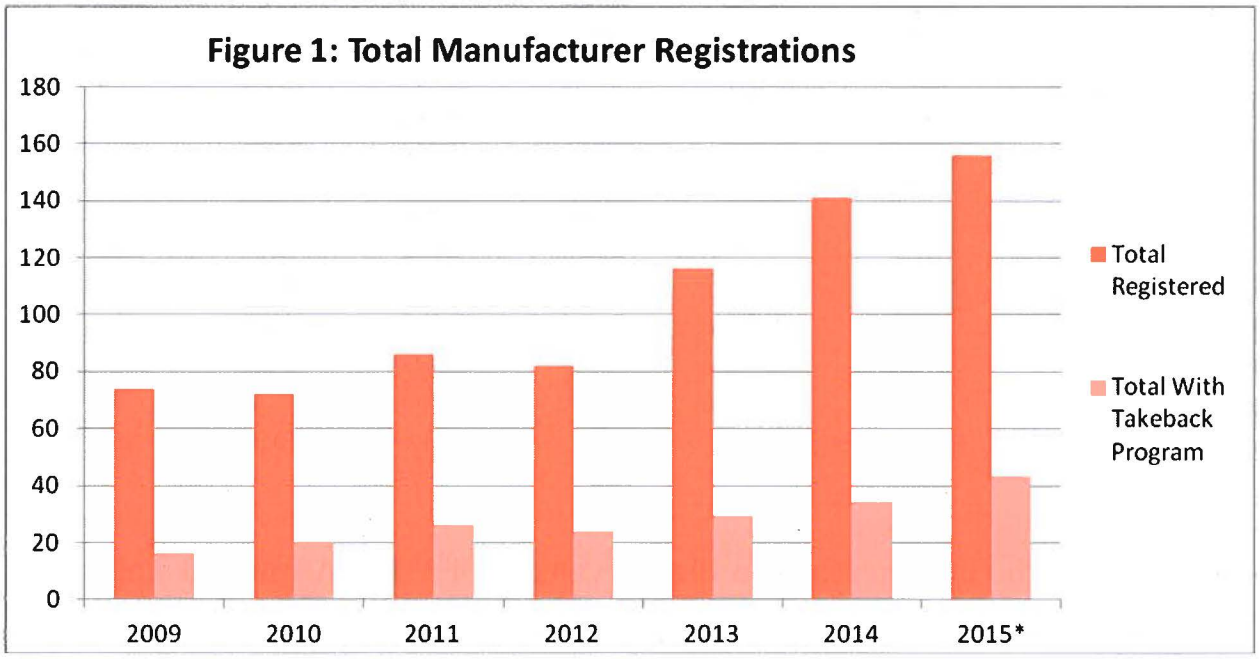
III. Data

The full table of registration data discussed in this section is provided in Appendix B.

A. Overall Program Performance

Figure 1 shows the total number of manufacturers registered under the SERP and the total number of manufacturers with MDE-approved takeback programs for each calendar year from 2009 to 2015.[6] For example, calendar year 2015 would include registrations due March 1, 2015. Since some registrations may be submitted late, the 2015 includes registrations that may have occurred throughout 2015.

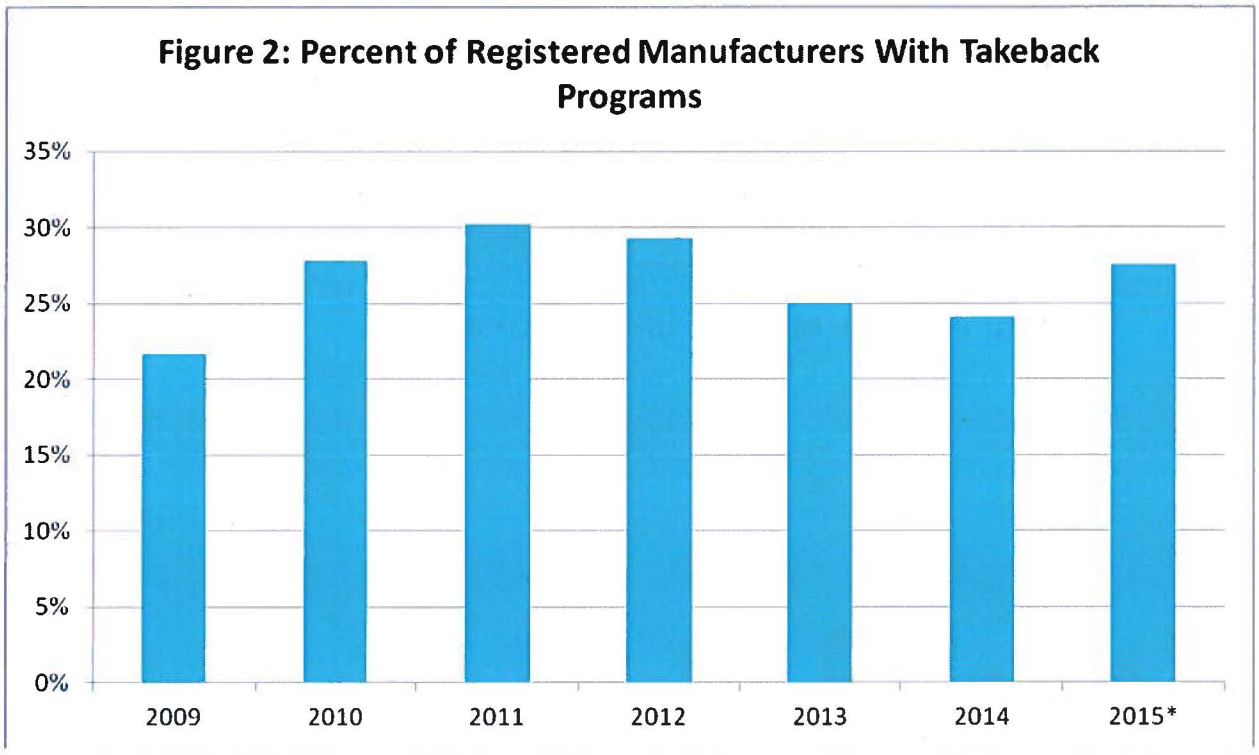
Manufacturer registrations increased significantly in 2013 and 2014. This is likely the result of two factors. First, in 2013 the scope of the registration requirement changed to include manufacturers that sell any number of CEDs in Maryland. Second, the Department began enforcement activities at the retailer level in 2014, which probably led to increased awareness of the registration requirement. Despite the increase in registrations in recent years, total registration numbers remain below the estimated number of manufacturers subject to the requirement, which is currently 224.



[6] Throughout this report, registration data is captured from MDE's spreadsheet documenting registrations in each calendar year. Whether or not a manufacturer has a MDE-approved takeback program is documented at the time the registration is processed. In some cases, a manufacturer obtains MDE approval for a takeback program mid-year, after registration is already submitted and processed for that year. MDE continuously updates the list of MDE-approved takeback programs on its website as additional programs are approved throughout the year. So, while the number of MDE-approved takeback programs listed on the website is fluid, the number listed for each year in Figure 1 should be viewed as a snapshot at the time of registration.

Figure 2 shows the percent of registered manufacturers that implemented a MDE-approved takeback program in each year. MDE-approved takeback programs were the most prevalent in 2011 at 30%. One possible explanation for the dip in 2013 and 2014 is that the fee for a manufacturer's initial year of registration does not depend on whether the manufacturer implements a MDE-approved takeback program. As a result, it may be expected that the percentage of manufacturers with MDE-approved takeback programs would be lower in years with many new registrations, such as 2013 and 2014.

In addition, the requirement for a MDE-approved takeback program to include instructional materials on data sanitization began in 2013 and may have resulted in fewer MDE-approved takeback programs. Of the 24 total manufacturers with MDE-approved takeback programs in 2012, 22 were still registered in 2013. Of these, 17 still had MDE-approved takeback programs and five did not. Of the five manufacturers that no longer had MDE-approved takeback programs, three had MDE-approved takeback programs again by 2014. This may suggest that it took some manufacturers an extra year to incorporate the required data sanitization information into their takeback programs.



B. Impact of the Fee Increase on the Prevalence of MDE-Approved Takeback Programs

Beginning in 2013, the annual renewal fee for a large manufacturer without a MDE-approved takeback program increased from $5,000 to $10,000, while the annual renewal fee for a large manufacturer with a MDE-approved takeback program remained at $500. The fee increase was intended to encourage implementation of MDE-approved takeback programs, presumably under the theory that a larger potential cost savings would produce a stronger incentive for a manufacturer to implement a MDE-approved takeback program. In order to determine whether this has been the case, this section examines

whether manufacturers subject to the fee increase were more likely to implement MDE-approved takeback programs after the increase occurred in 2013 than they were in previous years.

As discussed in Section III.A, the overall prevalence of MDE-approved takeback programs did not increase beginning in 2013, and in fact decreased in 2013 and 2014. However, concurrent with the fee increase, many new manufacturers were registered that were not subject to the increased $10,000 annual renewal fee and thus could not have been affected by any enhanced incentives it provided. For this reason it is necessary to isolate the manufacturers subject to the fee increase, which are large manufacturers submitting annual renewal registrations (rather than initial registrations). This subset will be referred to as "large renewal manufacturers."

Figure 3 shows the total number of large renewal manufacturers registered in each year and the number that had MDE-approved takeback programs. Before 2013, the law did not require manufacturers to submit sales data, so it is not possible to identify precisely which manufacturers registered before 2013 would correspond with the "large" category beginning in 2013. For years prior to 2013, all manufacturers that submitted annual renewal registrations are included here as large renewal manufacturers. Prior to 2013, manufacturers were required to register if they manufactured an average of more than 1,000 CEDs per year over the previous 3 years. Beginning in 2013, the large category includes manufacturers that sold more than 1,000 CEDs in Maryland in the previous year.

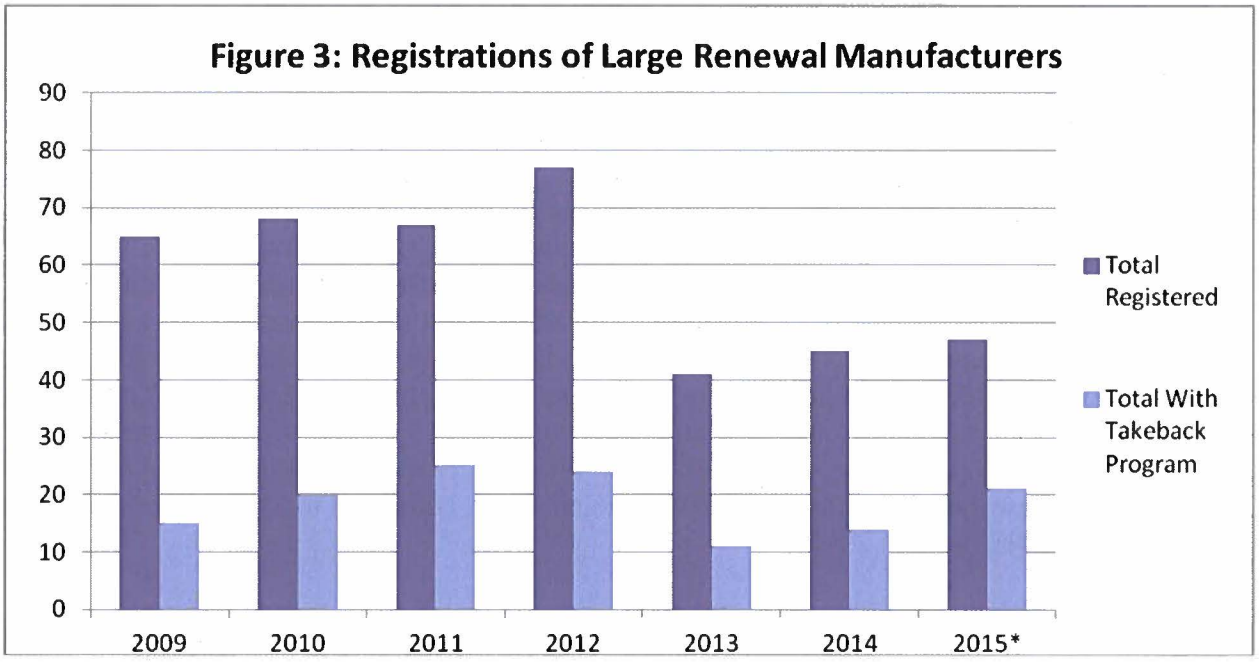
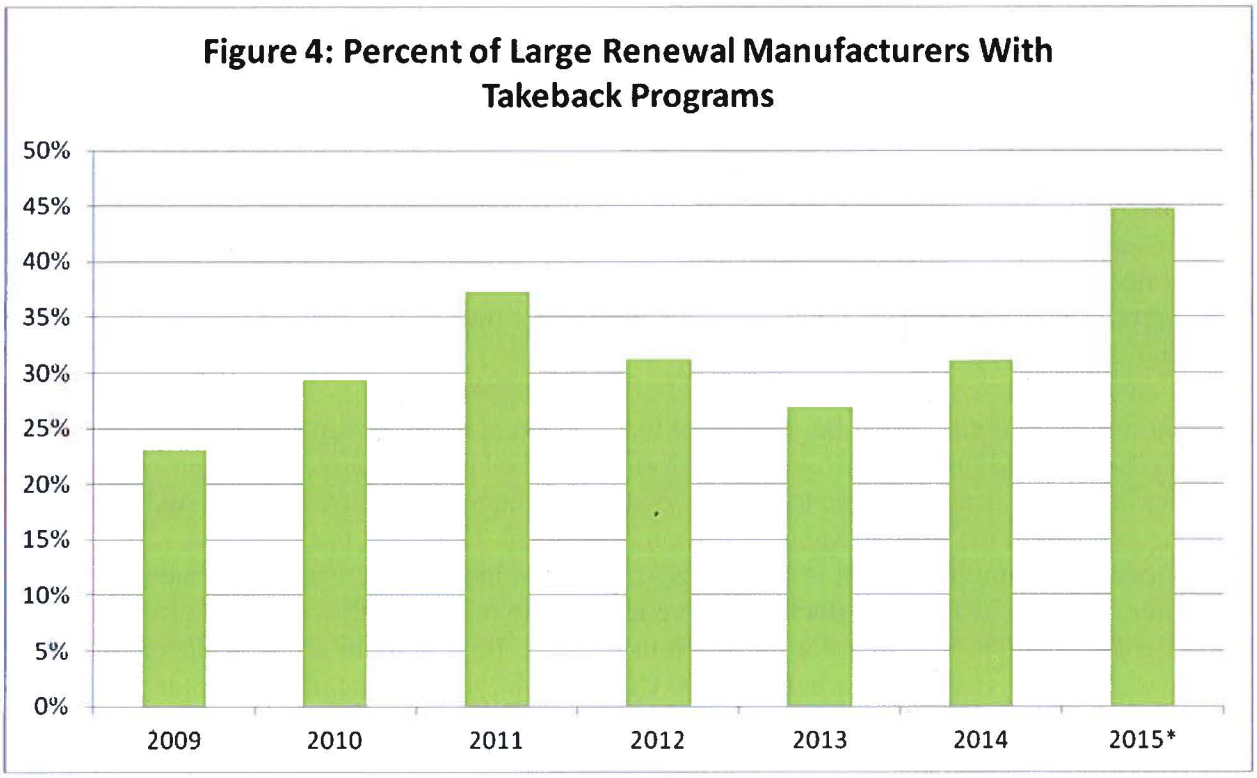


Figure 4 shows the percent of large renewal manufacturers with MDE-approved takeback programs in each year. In 2013 and 2014, MDE-approved takeback programs were no more prevalent among large renewal manufacturers than they were in previous years. In 2013, there was actually a decrease in the percent of large renewal manufacturers with MDE-approved takeback programs. However, this percentage recovered in 2014, and by 2015, a greater percentage of large renewal manufacturers had MDE-approved takeback programs than in any previous year at 45%.



C. Fee Revenue and Grants

Figure 5 shows the total fee revenue received for each year of the SERP between 2009 and 2015. The lighter area shown for 2013 through 2015 is the estimated additional revenue that was received due to the fee increase. For example, in 2013, 29 manufacturers paid the $10,000 annual renewal fee. Assuming these manufacturers would have paid only $5,000 without the fee increase, the additional revenue due to the fee increase was $145,000.[7] This does not account for any decrease in fee revenues that may have occurred due to manufacturers implementing MDE-approved takeback programs in response to the higher fee. Total revenue increased somewhat in 2013 and 2014. Large renewal manufacturers paid more on average, per manufacturer, after the fee increase than they did before ($3,503 per large renewal manufacturer from 2009 through 2012, compared to $6,563 per large renewal manufacturer from 2013 through 2015)

The Department has issued electronics recycling grants to counties and municipalities three times, as shown in Table 2. (Appendix D provides the amounts granted to each jurisdiction during each of the three grant cycles.) The Department expects to issue the next recycling grants in fiscal year 2017. The objective of the grants is to increase recycling of electronics by residents. Grants have been used to establish permanent collection facilities, provide curbside pickup for seniors, purchase equipment, and hold special collection events.[8] In calendar year 2007, which corresponds with the first fiscal year in

[7] 29 manufacturers x $5,000 = $145,000.

[8] For additional information about local government electronics recycling activities and eCycling grants, see MDE's annual Maryland Solid Waste Management and Diversion Reports, available at http://mde.maryland.gov/programs/Land/RecyclingandOperationsprogram/Publications/Pages/Programs/LandPrograms/Recycling/publications/index.aspx

which electronics recycling grants were issued,[9] the number of special collection events increased 160% from the previous year to a total of 26. When grants were issued again in the following year, the number of special collection events increased again to 34.

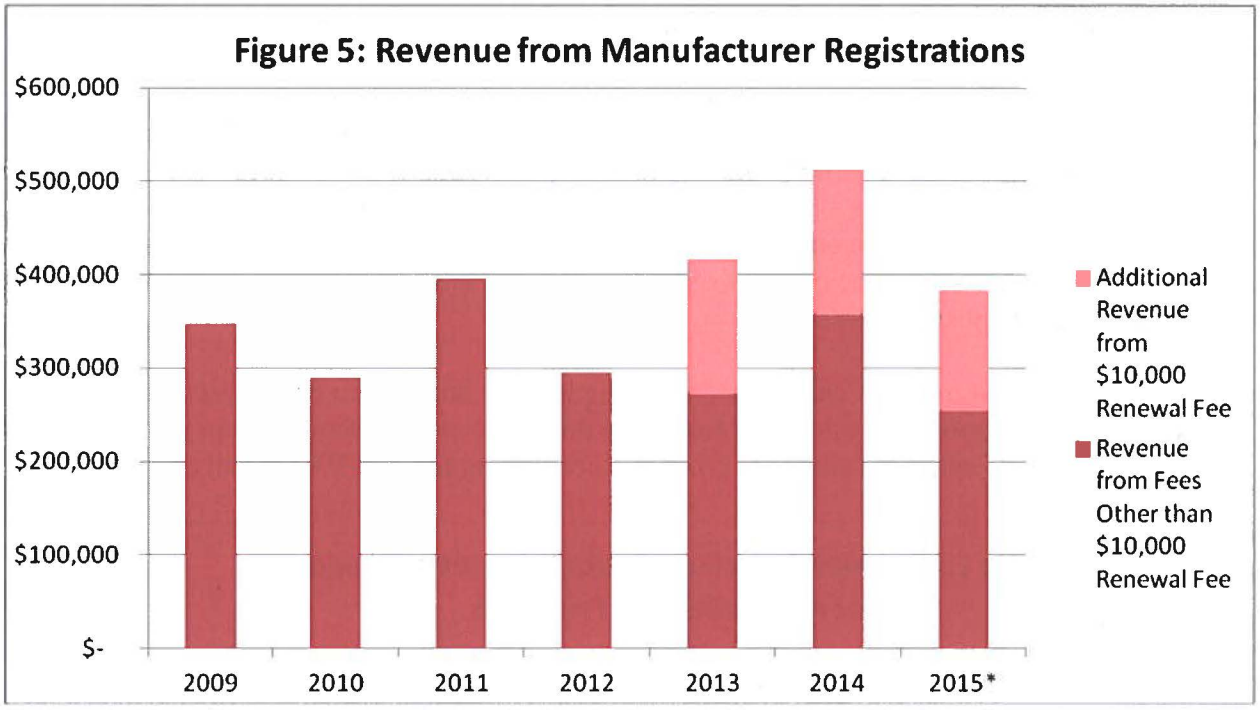


Table 2: Electronics Recycling Grants

Fiscal Year	Total Grants Issued
2008	$ 190,000
2009	$ 616,552
2015	$ 500,000

D. Recycling Data

Electronics recycling occurs in Maryland through several channels. Some counties and municipalities collect electronics from residents through permanent collection programs or periodic special collection events. Businesses may contract privately for electronics recycling services. Customers may also use MDE-approved takeback programs established by manufacturers under the SERP. Figure 6 shows the tons of electronics recycled through local government residential collection programs and through private commercial recycling.[10] The commercial recycling figures include only commercial recycling that is reported to MDE by the counties and may not capture all commercial electronics recycling. Substantial increases in residential tonnages in calendar years 2007 through 2009 correspond with the

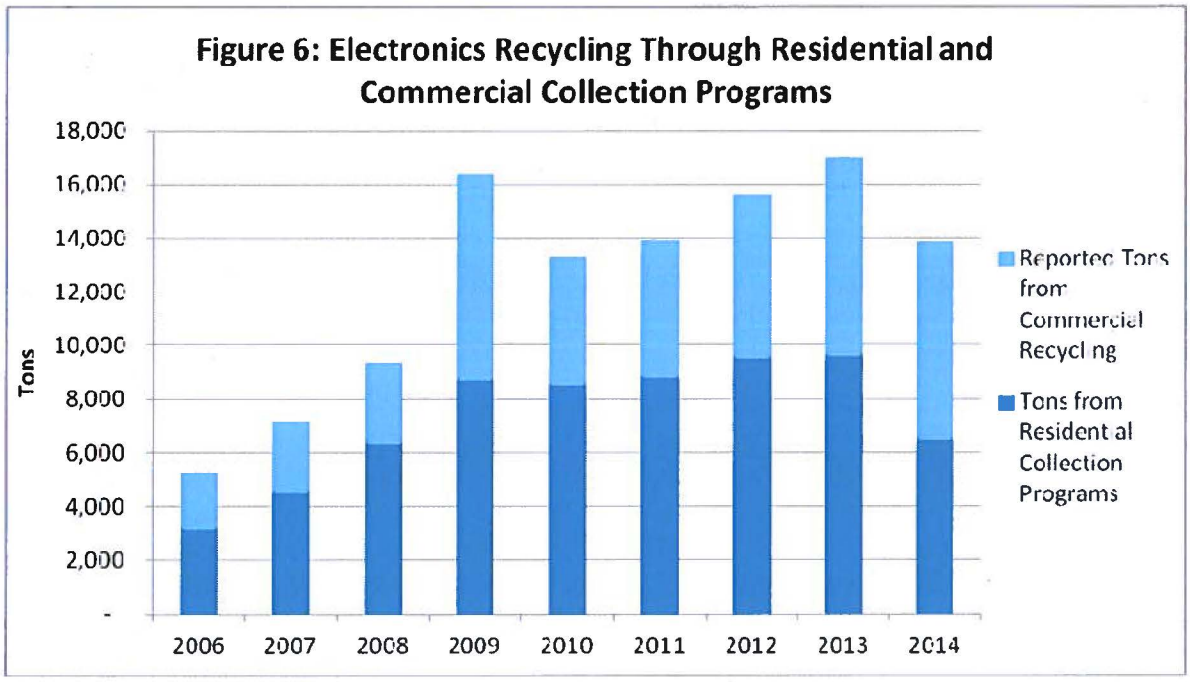
[9] Both the SERP data and recycling data generally is collected and reported by calendar year in Maryland. Grants are issued by fiscal year. The first electronics recycling grants were issued in fiscal year 2008, which ran from July 1, 2007 through June 30, 2008.

[10] This data is collected from counties each year on different deadlines than the SERP data. The most recent year available as of the writing of this report was 2014.

issuance of grants in fiscal years 2008 and 2009. Electronics recycling depicted in Figure 6 includes electronics other than CEDs.

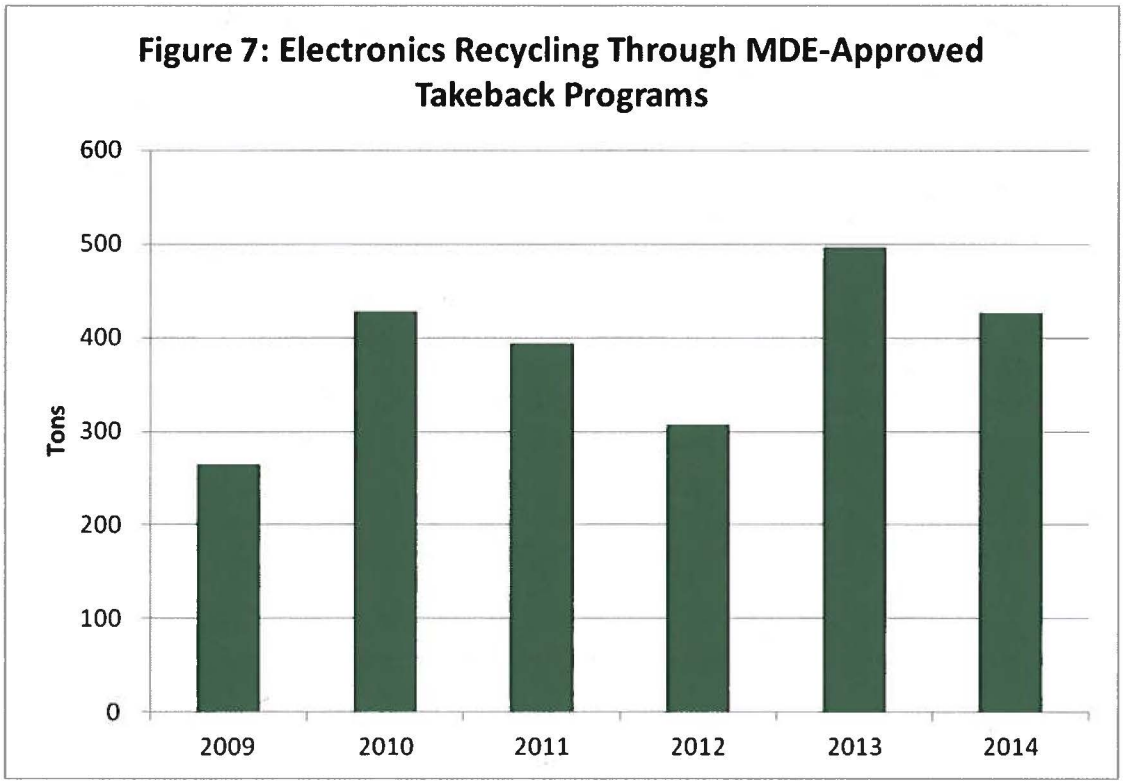
Figure 7 shows the tons of CEDs that were reported as returned through MDE-approved takeback programs under the SERP. The quantity of CEDs collected through an MDE-approved takeback program in a given calendar year is required to be reported by the manufacturer in the following year's registration form. For example, Figure 7 shows that 500 tons of CEDs were recycled through MDE-approved takeback programs in 2013, based on data from 2014 manufacturer registration forms. However, some manufacturers reported CED collection occurring in years in which they did not have MDE-approved takeback programs.[11] These quantities are removed so that Figure 7 includes only CEDs collected under MDE-approved takeback programs.[12] The opposite issue also exists: not all manufacturers required to report the quantity of CEDs collected did report. Because of this, additional, unreported collection is possibly occurring.

Figures 6 and 7 show that much of electronics recycling in Maryland (47 to 62%, based on the year) occurs through local government residential collection programs, with commercial recycling accounting for 35 to 51% and MDE-approved takeback programs accounting for 2 to 3% annually.



[11] This includes but is not limited to cases in which the manufacturer had implemented a takeback program but had not yet submitted it for approval in the previous year. For example, if a manufacturer implemented a takeback program in 2013, then submitted it for approval with the 2014 registration, quantities of CEDs collected in 2013 may have been reported on the 2014 registration form, even though they were not actually collected under a MDE-approved takeback program.

[12] Where the takeback program was approved at some point during the registration year, collection that occurred during that entire year is included if reported.



IV. Discussion and Recommendations

The Department distributed the data in Section III to the workgroup members and requested input related to the workgroup's task to "review and assess the impact of the $10,000 annual registration fee ... on the number of covered electronic device takeback programs implemented by manufacturers." This section contains a discussion of input received on that issue. Members also raised a number of other issues related to the SERP more generally, which fall outside of the workgroup's charge under Chapter 400 of 2012. These additional topics are discussed in Appendix C.

The following opinions were expressed by workgroup members regarding the SERP registration fees and are discussed in more detail in IV.A through D:

- Factors may have impacted manufacturers' decisions regarding takeback programs.
- The fees are inadequate to support local electronics recycling programs. The registration fees under the SERP are too low and should be increased. Alternatively, the current $10,000 annual renewal fee for the large manufacturers should be retained and not allowed to revert to $5,000.
- The negative impact of high compliance costs on manufacturers should be considered in evaluating registration fees.
- The threshold number of CEDs sold in Maryland for the highest fee tier should be increased to avoid subjecting small- and medium-sized businesses to the highest fees.

A. Issue: Impact of $10,000 Annual Renewal Fee for Large Manufacturers on the Number of MDE-Approved Takeback Programs

Manufacturers as a whole were no more likely to implement MDE-approved takeback programs in the period after the fee increase became effective than they were before. The average percentage of manufacturers with MDE-approved takeback programs was 27% before the fee increase and 26% afterward.

Manufacturers affected by the fee increase were more likely to implement MDE-approved takeback programs after the fee increase became effective. The average percentage of large renewal manufacturers with MDE-approved takeback programs was 30% before the fee increase and 34% afterward. This increase was due entirely to 2015, as the average prevalence of MDE-approved takeback programs among large renewal manufacturers in 2012 and 2013 was slightly lower than in previous years, at 29%. The inability to filter the pre-2013 registrations by sales quantities makes it difficult to compare the data across only the group affected by the fee increase.

In summary, the data suggests that the increased fee may have had a positive impact on the prevalence of takeback programs in 2015. There was no similar increase in 2013 or 2014, but this may have been because it took manufacturers one or two years to become aware of and adjust to the changes made to the SERP. It is also possible that factors other than the $10,000 fee contributed to the increased prevalence of takeback programs among these manufacturers in 2015. For example, increased awareness of corporate social responsibility may lead manufacturers to increasingly adopt takeback programs over time, regardless of legislation. In addition, according to the U.S. EPA, recycling of consumer electronics in the U.S. as a whole has shown a strong upward trend, increasing from 30.6% in 2012 to 40.4% in 2013, the most recent year available.[13] This may signal factors such as increasing availability of recycling services and increased consumer demand for recycling opportunities, both of which may encourage manufacturers to adopt takeback programs independent of legislation. More states have adopted electronics recycling laws over time as well, with 25 states now having some type of electronics recycling law.[14] It may be that changes in laws other than Maryland's, or the combined incentives of many state programs, resulted in some manufacturers adopting takeback programs.

Revenue from the $10,000 fee did seem to have a positive impact on SERP revenue from large renewal manufacturers. However, this effect could decline over time if additional MDE-approved takeback programs are implemented. Past data shows that grant funding provided through fee revenue is effective at increasing opportunities for electronics recycling at the local level. Since the majority of electronics recycling in Maryland continues to occur through local residential collection programs, support for these programs is important.

B. Issue: Adequacy of Fees to Support Local Electronics Recycling Programs

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[13] U.S.EPA., Advancing Sustainable Materials Management: Facts and Figures in 2013 (June 2015), http://www.epa.gov/wastes/nonhaz/municipal/pubs/2013_advncng_smm_rpt.pdf Note that because of increasing costs for electronics recycling, this trend may not continue. See Appendix C for additional discussion of changes in the electronics recycling market.

[14] National Center for Electronics Recycling, http://www.electronicsrecycling.org/public/contentpage.aspx?pageid=14

Several members noted that the revenue from registration fees under the SERP is not sufficient to fully fund local government electronics recycling programs. In part because of the changing nature of the electronics waste stream and limited markets for recycled Cathode Ray Tubes (CRTs) (discussed further in Appendix C), costs to operate electronics recycling programs have increased over time. The Northeast Maryland Waste Disposal Authority advises that recently these costs have led several of its member counties to discontinue recycling of televisions and monitors, including Anne Arundel, Baltimore, and Carroll Counties. The Authority estimates that these devices constitute 71% by weight of the total electronics recycling stream formerly collected in those jurisdictions and 35% of the total electronics recycling stream for all Authority jurisdictions, not including Harford County data. This equates to over 2,500 tons of television and monitor material no longer being recycled each year, beginning CY 2014. NMWDA also estimates that the annual costs to Montgomery and Howard Counties to operate electronics recycling programs are $450,000 and $200,000, respectively. In comparison, total fee revenue under the SERP ranges from approximately $300,000 to $500,000 annually, and a significant portion of that revenue is used to administer the SERP and other recycling programs, leaving limited funding for grants. Based on this, some workgroup members believe that the fee levels are inadequate and should be increased, or at least maintained without the automatic reversion scheduled to occur.

The Department notes that the SERP is a shared responsibility system, meaning that manufacturers, retailers, consumers, and local governments all have roles, financial or otherwise, in electronics recycling in Maryland. The law requires most manufacturers to contribute to recycling opportunities for their products, but provides flexibility in how that contribution is made. Some manufacturers choose to supplement local recycling programs by providing statewide mail-in or drop-off return programs for their products. Manufacturers that choose not to provide this service must contribute financially in the form of higher registration fees. The SERP is intended to enhance the availability of various recycling options for CEDs. It is not intended as a funding mechanism for local government electronics recycling programs.[15] The Department acknowledges that many counties and municipalities choose to provide convenient, effective electronics recycling programs to their residents at a cost that exceeds available grant funding. This is particularly true currently, given the challenging markets for recycled electronics. Local recycling programs may also be broader than the SERP, collecting electronics that fall outside the definition of CEDs.

Another issue to consider in assessing fee levels is that it is hard to predict the net effect that higher or lower fees would have on future revenue. Higher fees exert both upward and downward effects on revenue. They encourage more takeback programs, reducing revenue, but require manufacturers without takeback programs to pay more, increasing revenue. A variety of external factors may also impact decisions regarding takeback programs. As a result, it cannot be assumed that further increases in the fees for manufacturers without MDE-approved takeback programs would significantly increase revenue.

C. Issue: Impact of Fees on Manufacturers

Another member stated that costs to manufacturers under the SERP should be considered in making any recommendations related to fees. CED manufacturers provide valuable goods, services, and employment. High compliance costs may adversely impact these businesses, especially those that are small, new, or struggling financially. Half of all states now have electronics recycling legislation, many of these with their own fees on manufacturers. In addition to paying fees in the various states in which

[15] For a summary of the workgroup's more general discussions regarding the effectiveness of local government collection and manufacturer takeback programs, see Section II of Appendix C.

they do business, companies may have to pay consultants, attorneys, recyclers, and other contractors to assist in compliance with electronics recycling laws. According to one member, compliance costs can reach into the tens or hundreds of thousands of dollars.

D. Issue: Number of CEDs Sold for Large Manufacturer Category

The workgroup also discussed whether it is appropriate to apply the highest fee bracket to manufacturers selling 1,000 or more CEDs in Maryland annually. One member asserted that this threshold is too low and subjects all but the smallest manufacturers to the higher fee, including small- and medium-sized businesses.

MDE notes that one purpose of the revised fee structure under the 2012 legislation was to ensure the SERP provides the strongest incentives to the manufacturers that potentially contribute the most CEDs to Maryland's waste stream. MDE worked with the Consumer Electronics Association and legislators in 2012 to develop a structure that would provide relief for the smallest businesses while enhancing the incentive for larger contributors to provide recycling opportunities. Manufacturers selling only a very small number of CEDs in Maryland are exempt from all fees, but are still required to register each year in order to certify that they continue to sell below the threshold number of CEDs.

Data obtained by MDE from the Electronics Recycling Coordination Clearinghouse (ERCC) estimates the number of devices sold in Maryland in 2014 by each of 122 manufacturers. Of these, over one third were estimated to have sold fewer than 100 CEDs in Maryland, and over half sold fewer than 1,000. Despite applying to less than half of the 122 listed manufacturers, the large manufacturer category captures over 97% of Maryland's estimated market share.[16]

Another factor to consider is the impact of further changes to the fee structure on the ease of complying with the SERP. Manufacturers that sell their products throughout the U.S. potentially have dozens of electronics recycling laws they must learn and comply with. Steady increases in registration under the SERP and the Department's own experience with manufacturers and retailers suggest increasing awareness of and compliance with the SERP. Before any additional changes are made that require further adjustment by regulated entities, the benefits should be weighed against the potential for confusion or delays in compliance.

E. Conclusions and Recommendations

The Department believes that the 2012 changes to the SERP have, overall, been beneficial to the Program. Many more manufacturers have registered in recent years. Consumers now have more manufacturer takeback programs available to them than ever before. The Department acknowledges that local governments have made significant progress in improving access to electronics recycling through special events and permanent collections programs, often independent of grant funding. These programs continue to capture significantly more material than is collected through MDE-approved takeback programs, including some quantities of electronics outside the subset of CEDs. However, the SERP was not intended as a funding mechanism for local programs, and the fee levels were not set with the expectation of yielding sufficient revenue for that purpose. Instead, the SERP seeks to increase recycling options through a combination of manufacturer takeback programs and supplemental funding for local programs. By this standard, the Department considers the program successful.

[16] The ERCC sales data for Maryland is based on national sales figures and Maryland's share of the U.S. population.

Based on the workgroup members' comments, there are three potential options for addressing the $10,000 annual renewal fee for large manufacturers without MDE-approved takeback programs.

Option 1: The General Assembly could pass legislation to retain the $10,000 annual renewal fee for all large manufacturers. This would preserve the fees currently in force.

Option 2: The General Assembly could pass legislation to retain the $10,000 annual renewal fee for only a subset of the current "large" category. For example, the $10,000 fee might be applied only to those selling 5,000 or more CEDs per year in Maryland, while those selling 1,000 to 4,999 CEDs per year in Maryland would join the "medium" category, subject to the $5,000 annual renewal fee. This compromise may preserve the enhanced incentive for the manufacturers selling the most CEDs, while providing some relief to those on the lower end of the current "large category."

Option 3: The General Assembly could take no action. The $10,000 annual renewal fee for large manufacturers without MDE-approved takeback programs would revert to $5,000 beginning March 1, 2016. All other fees would remain the same.

Table 3 shows the three options, with their potential impacts on the number and market share of manufacturers potentially subject to the $10,000 fee, as well as the estimated change in revenues. Each of the options affects only manufacturers that do not have MDE-approved takeback programs. Since some portion of the manufacturers potentially subject to the $10,000 fee will have MDE-approved takeback programs, in estimating impacts to revenue it is assumed that 47% of large renewal manufacturers will continue to have MDE-approved takeback programs in the future. Note that this method of estimation has limitations because it does not account for the fact that Options 2 and 3 may impact the proportion of large renewal manufacturers with MDE-approved takeback programs.

Table 3: Options for Annual Renewal Fee for Large Manufacturers Without MDE-Approved Takeback Programs

(Annual renewal fee for manufacturers with MDE-approved takeback programs remains at $500 under all three options)

Option		Number of manufacturers potentially subject to $10,000 annual renewal fee[1]	Portion of total Maryland market share covered under $10,000 annual renewal fee[1]	Estimated loss of revenue (relative to current program)[2]
1	Pass legislation to retain $10,000 fee, preserving the current program.	59	97%	$0
2	Pass legislation to retain $10,000 fee only for those selling 5,000 or more CEDs in Maryland annually.	42	96%	$45,000
3	Take no action; allow fee to revert to $5,000	0	0%	$155,000

[1] Based on number of CEDs sold in Maryland, estimated from ERCC 2014 Data.

[2] Assumes that 47% of the manufacturers potentially subject to the $10,000 annual renewal fee will have MDE-approved takeback programs and 53% will not. For example, under Option 2, there would be 17 fewer manufacturers potentially subject to the $10,000 fee than under the current program (59 – 42 = 17). Assuming 53% of these manufacturers, or approximately 9 of the 17, do not have MDE-approved takeback programs, the potential loss in revenue would be $45,000 (9 x $5,000 = $45,000).

The workgroup members did not reach consensus on which of the three options is preferable. The data reviewed in this report was mixed. The 2015 registration year was the only year showing a clear increase in the prevalence of MDE-approved takeback programs among large renewal manufacturers, and it is impossible to conclusively determine the primary factors driving the increase in MDE-approved takeback programs in that year. Finally, it is impossible to determine whether the increase in MDE-approved takeback programs in 2015 has translated into more CED recycling, because data for CEDs collected through the takeback programs in 2015 will not be available until the 2016 registration year.

Regardless of whether the fee is allowed to revert to $5,000, the Department will continue to track the successes and challenges of the SERP, including by improving data reporting on CEDs collected for recycling. It will also work to increase awareness of the availability of MDE-approved takeback programs among local governments and consumers.

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Appendix A – Workgroup Members

A.Hussain Alhija, Maryland Department of the Environment

Joseph Bissonnette, HTC America, Inc.

Anthony Drury, Washington County

Tim Dunn, Best Buy

C. Robert Ernst, Maryland Recycling Network

Kaley Laleker, Maryland Department of the Environment

Katherine McIlroy, Northeast Maryland Waste Disposal Authority

Dave Mrgich, Maryland Department of the Environment

Allison Schumacher, Consumer Electronics Association

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Appendix B – Full Registration Data

SERP Manufacturer Registration Data, CY 2009 - 2015

	2009	2010	2011	2012	2013	2014	2015
Total Manufacturers Registered	74	72	86	82	116	141	156
Total Registered with MDE-approved Takeback	16	20	26	24	29	34	43
Percent with MDE-approved Takeback	22%	28%	30%	29%	25%	24%	28%
Large Manufacturer Renewals[1]	65	68	67	77	41	45	47
Large Renewals with MDE-approved Takeback	15	20	25	24	11	14	21
Percent Large Renewals with MDE-approved Takeback	23%	29%	37%	31%	27%	31%	45%
Total Revenue	$347,500	$290,000	$395,500	$295,500	$416,500	$512,000	$383,500
Average Paid Per Manufacturer	$4,696	$4,028	$4,599	$3,604	$3,586	$3,631	$2,458
Average Paid Per Large Renewal Manufacturer	$3,962	$3,676	$3,187	$3,188	$7,317	$7,044	$5,330
Number of Manufacturers that Paid $10,000 Renewal Fee	0	0	0	0	29	31	26

[1]For years prior to 2013, it is assumed that all registered manufacturers are large manufacturers. However, no sales data was required to be submitted until 2013.

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Appendix C – Grant Amounts by Jurisdiction

Grants Issued in FY 2008

Jurisdiction	Amount
Allegany County	$27,000
Calvert County	$12,606
Cecil County	$12,607
Garrett County	$8,582
Howard County	$10,000
Midshore Region*	$16,000
Montgomery County	$10,000
Prince George's County	$18,923
Washington County	$18,700
Worcester County	$12,606
Annapolis, City of	$6,750
College Park, City of	$11,483
Greenbelt, City of	$11,890
Hyattsville, City of	$12,853
TOTAL	$190,000

*Mid-Shore includes Caroline, Kent, Queen Anne's, and Talbot Counties.

Grants Issued in FY 2009

Jurisdiction	Amount
Anne Arundel County	$33,678
Baltimore County	$42,572
Calvert County	$25,000

Carroll County	$32,892
Charles County	$40,955
Cecil County	$28,098
Garrett County	$16,074
Harford County	$43,750
Howard County	$32,500
Midshore Region*	$44,283
Montgomery County	$30,000
Prince George's County	$27,900
Washington County	$40,500
Worcester County	$39,436
Annapolis, City of	$18,912
Bowie, City of	$12,000
Brentwood, Town of	$18,159
College Park, Town of	$10,943
Hyattsville, City of	$18,900
Laurel, City of	$25,000
Takoma Park, City of	$10,000
Westminster, City of	$25,000
TOTAL	$616,552

*Mid-Shore includes Caroline, Kent, Queen Anne's, and Talbot Counties.

Grants Issued in FY 2015

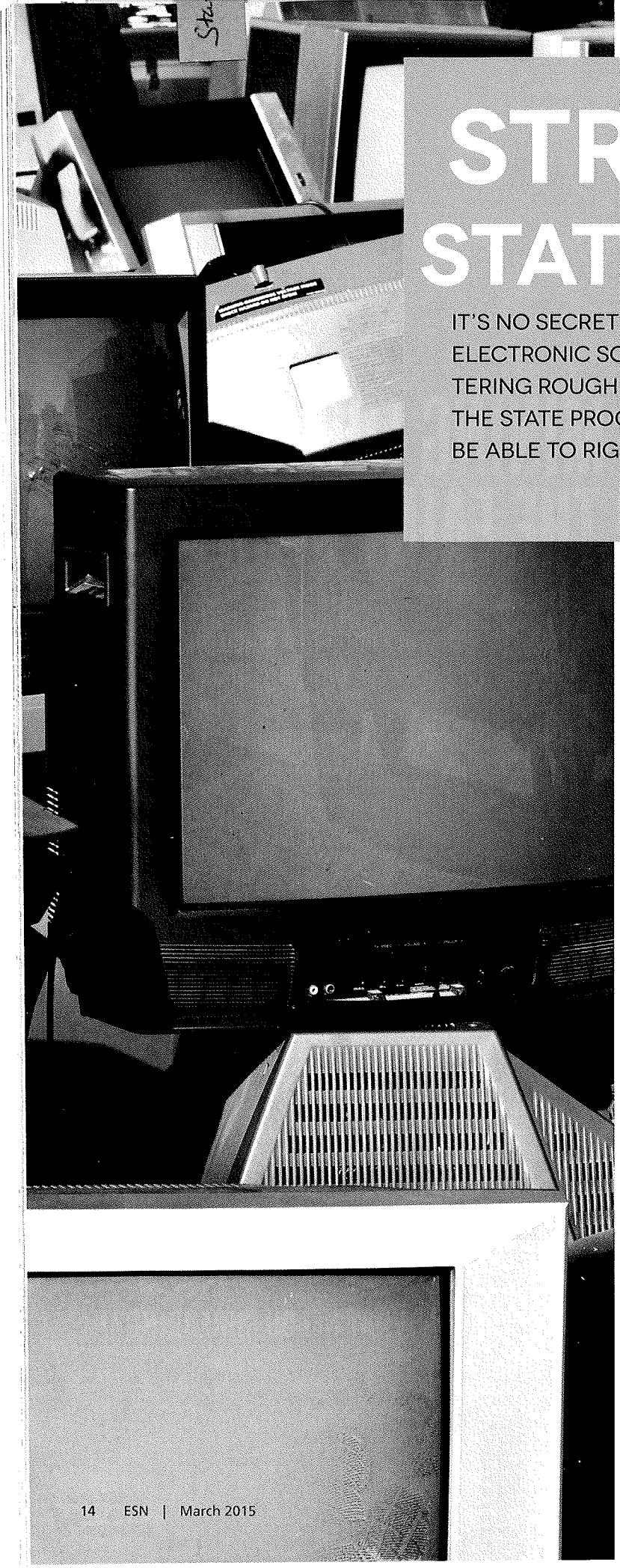
Jurisdiction	Amount
Allegany County	$7,500

Baltimore City	$38,000
Calvert County	$31,400
Carroll County	$28,558
Cecil County	$35,600
Dorchester County	$10,000
Frederick County	$31,200
Harford County	$33,200
Howard County	$27,200
Midshore Region*	$32,104
Montgomery County	$27,200
Prince George's County	$33,200
St Mary's County	$31,200
Washington County	$35,600
Wicomico County	$22,498
Worcester County	$33,200
College Park, Town of	$7,326
Hagerstown, City of	$15,000
La Plata, Town of	$7,564
Laurel, City of	$12,450
TOTAL	$500,000

*Mid-Shore includes Caroline, Kent, Queen Anne's, and Talbot Counties.

Attachment 3

Electronics Recycling State Policy Articles and Background Data



STRUGGLING STATE-BY-STATE

IT'S NO SECRET THAT A NUMBER OF STATE-MANDATED ELECTRONIC SCRAP RECOVERY PROGRAMS ARE ENCOUNTERING ROUGH WATERS. A POLICY EXPERT LAYS OUT WHERE THE STATE PROGRAMS WENT WRONG AND HOW THEY MAY BE ABLE TO RIGHT THE SHIP. BY RESA DIMINO

At the dawn of the 21st century, managing scrap electronics became a critical policy issue, particularly at the state level. Fifteen years later, with half of U.S. states having programs in place to collect material, some are struggling to keep pace with the changes in the e-scrap landscape. Concern among state officials is growing and talk is turning to the need to update those programs to meet today's challenges. In the worst cases, states are seeing e-scrap collection networks shrink, raising questions about program viability.

Most concerning, community collection programs are finding themselves at risk. "If we don't fix it in 2015, we are going to have to stop collecting e-waste next year," said one Illinois county-level solid waste director.

What led us to this spot? And what are the specific proposals to deal with the complex issues facing state efforts?

The birth of programs

Around 2000, states began to recognize end-of-life electronics as a fast-growing, costly and sometimes-toxic portion of the waste stream – a portion that would require an approach different from that taken to manage conventional waste streams. When the Product Stewardship Institute (PSI) asked states to name their biggest waste problem in 2000, respondents consistently put electronics at the top of the lisr.

From 2003 to 2010, 25 states passed laws to encourage the recycling of scrap electronics. Although firm before-and-after statistics are not available, these laws have clearly sparked a surge in scrap electronics recycling in the U.S.

They have also fostered the development of an extensive retail take-back network at national chains like Best Buy and Staples as well as at nonprofit entities like Goodwill and Salvation Army. State laws vary as to the types of electronic products they cover and the way they structure collection. However, 23 laws rely on electronics manufacturers to fund the recycling infrastructure for products at end-of-life – a model known as extended producer responsibility, or EPR. (The two states relying on alternative systems: California, which adopted a consumer-funded advanced recycling fee, and Utah, which focused on education.)

Many of the state EPR laws don't include detailed program requirements for manufacturers, and these states are among the poorest performers, as measured by pounds of e-scrap collected per capita (see chart on page 16). The states that do have detailed requirements tend to rely on one of two approaches.

States that use *convenience standards* require manufacturers to operate enough collection sites in the state to meet a specific standard of convenience for consumers wanting to properly dispose of their electronics (e.g., one site per county and one for every community with a population greater than 10,000). In these programs, government typically ensures accountability and coordination by contracting for the management of a statewide collection network, paid for by the manufacturers. The contractor is required to manage the collection network, arrange for the recycling of all electronics collected by the network and then distribute the costs among manufacturers. The contractor must also provide recycling services at no cost to the collectors. In most states with convenience-based systems, manufacturers can "opt out" by creating their own robust network, but most companies do not.

States that use *performance standards*, on the other hand, provide each manufacturer with a target of how much e-scrap it must collect, and this figure is usually expressed as a number of pounds, based on either a percentage of the manufacturer's sales or its share of a statewide goal. In states with performance goals, a manufacturer's main obligation is to pay for the collection of its assigned amount of e-scrap, although the laws are not always clear whether the manufacturer is required to cover the full cost of collection and processing. Policymakers intended for performance goals to provide an incentive to manufacturers, either working individually or in groups, to support a robust and convenient collection network.

As programs have matured, some have enjoyed smooth sailing. The most stable and effective programs – in Oregon, Vermont and Washington, for example – are driven by convenience standards. These programs, in which government plays a strong role in contracting for recycling services, tend to support a robust infrastructure with year-round financial support, regardless of the volumes collected.

Some states that rely solely on performance standards, however, are experiencing turbulent seas. They include Illinois, Minnesota, New Jersey, New York, Pennsylvania and Wisconsin.

The problem with pounds

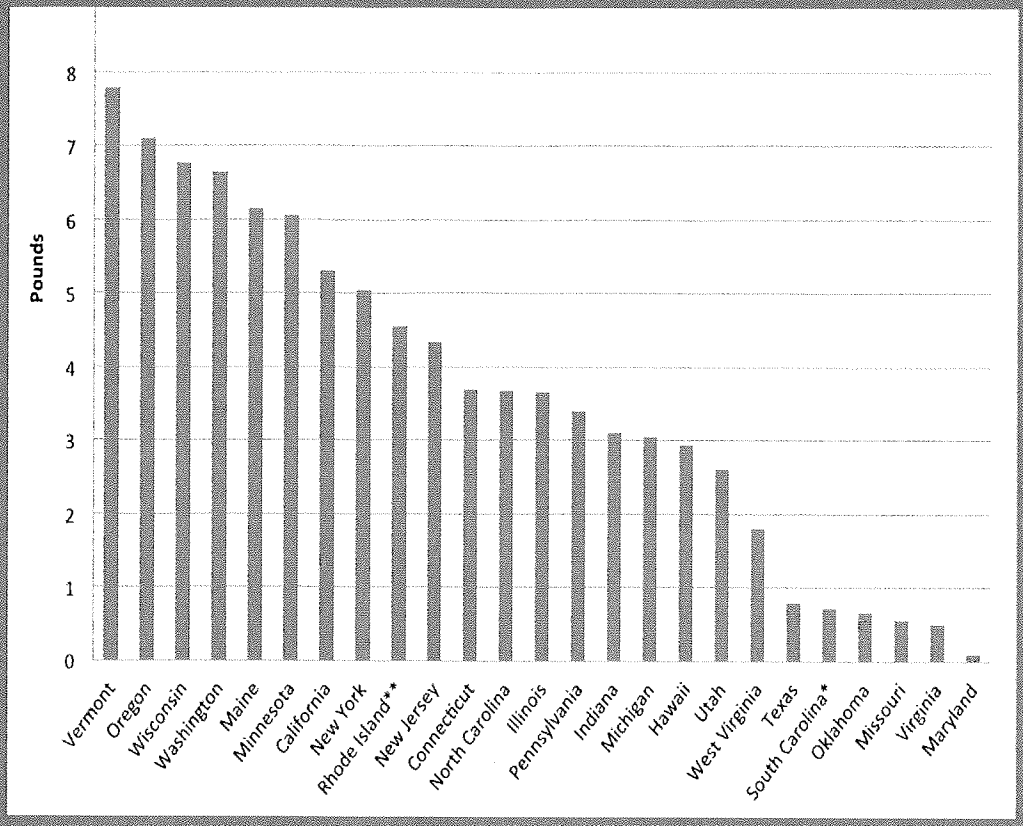
To put it simply, in states relying on

performance standards, manufacturer funding has not covered the full cost of e-scrap recycling.

Instead of supporting robust collection networks through open-ended arrangements, manufacturers often pay for the collection and recycling of only the amount of e-scrap they are required to collect. Sometimes they pay contractors enough to cover the full cost of collection and processing, but sometimes they do not. Once manufacturers meet their goals, which is sometimes midway through the year, their financial support for e-scrap collection dries up, hurting both local governments and the e-scrap firms that service them.

What's causing that situation? One issue is that in some performance-standard states, manufacturer quotas are based on the weight of electronics sold, and new products are getting lighter every year. So while the weight of e-scrap collected in a state may fall only slightly (old electronics aren't getting any lighter), the performance target is falling fast.

E-scrap collection volumes per capita in states with recycling laws, 2013



Note: This chart presents available data on program collections performance, but does not provide an "apples to apples" comparison as the covered products and covered entities (residents, businesses, schools, etc.) vary from state to state.

Source: Electronics Recycling Coordination Clearinghouse

* 2012 data

** 2011 data

Take Wisconsin as an example of what a weight disparity can look like. In the program year ending in June 2014, the manufacturer target in the Badger State was 28.4 million pounds – nearly 10 million pounds less than the amount of e-scrap collected. This means increased costs to consumers and local governments as they attempt to pay for e-scrap disposition.

Lightweighting is only part of the conundrum, though. The CRTs found in obsolete TVs and monitors typically make up 60 to 80 percent of the weight of e-scrap returned through state programs, and they are extremely costly to manage responsibly because previous markets for recovered CRT glass have dried up as manufacturers have shifted to LCD and other technologies.

"It's a perfect storm," explains Walter Alcorn, the Consumer Electronics Association's vice president of environmental affairs. "The CRT markets and peak CRT returns, combined with struggles between the local recyclers, who typically service local government collectors, and the national recyclers, who provide compliance services for manufacturers, put enormous stress on the system."

Many states have experienced instability in their CRT efforts and e-scrap collection systems. And recycling companies have incurred a wholly unexpected cost that is getting passed on to local governments and other collectors, and, in some cases, to the public.

According to E-Cycle Wisconsin's annual program report for 2014, "Unless manufacturer recycling targets are updated, the collection and recycling system funded by manufacturers will no longer meet the electronics-recycling demand of Wisconsin households and schools, particularly in rural areas of the state."

Reduced access for residents

The lack of funding in some performance standard states has translated to reduced access to collection sites, and as the Wisconsin report indicated, rural areas are most vulnerable because they garner low volumes that must be transported long distances to collection and processing facilities. "With fewer manufacturer dollars in the program," says Sarah Murray, Wisconsin E-Cycle program manager, "all the electronics out there are not getting covered."

Wisconsin is not alone. "Somewhere along the way the program dynamics

– between collectors and recyclers, and recyclers and manufacturers – changed," says Walter Willis, executive director of the Solid Waste Association of Lake County in Illinois. "When the program began, we had interest from multiple recyclers, and no-cost or revenue-generating year-to-year contracts," he explains. "This year, my agency will spend 10 percent of our reserves to keep the program going. If we don't fix it in 2015, we are going to have to stop collecting e-waste next year."

Since the players in e-scrap EPR programs – local governments, collectors, processors and manufacturers – have different needs and interests, coordinated implementation of collecting and recycling scrap electronics is challenging. Finding straightforward fixes to program problems also becomes difficult.

"Manufacturers tend to manage their recycling obligations in these states like they manage their supply chain – tight controls, few vendors, maximum efficiency," says CEA's Alcorn. They seek out national recycling firms that can provide broad, multi-state compliance services. Meanwhile, local governments and collectors often work with smaller, regional players with whom they have long-standing relationships.

But some industry voices have raised concerns about that model.

"One of the risks of EPR programs is that they can force the recycling market into a few players' hands, limiting competition and encouraging monopolistic action," notes Eric Harris, director of government and international affairs for the Institute of Scrap Recycling Industries. "Most small- and medium-sized companies are being displaced as manufacturers gravitate toward larger, regional recyclers."

The larger recycling companies that have manufacturer agreements aren't always interested in servicing some community collection sites. And the small, local recycling companies that have traditionally served these communities are no longer being funded by manufacturers, so they are now charging fees to local governments and other collectors, which squeezes collection efforts that were built on no-fee approaches.

Many states reported initially robust collection networks developing at no or low cost to local governments at the time their laws came into place. No more: Collectors in New York, Illinois and other states are still bidding out e-scrap recycling services, but the bids they are getting are coming with a significant price tag. "We are willing to take on our share of the costs – providing collection sites," explains Willis of Lake County in Illinois. "But we expect the EPR program to provide no-cost recycling services."

Officials have confirmed collection networks are shrinking and public access to e-scrap recycling is being sacrificed.

"The number of collection sites has gone down," says Wisconsin's Murray, "and we are seeing fewer events." The same dynamic is playing out in Illinois and New York as e-scrap firms drop collection sites.

Charting the waters

Most stakeholders agree that, at least in Illinois, New York and similar states, the storm is raging. The debate now is how to best weather that storm and which policy options offer the best chance at smooth sailing as markets evolve and dynamics change. The issue at hand is trying to figure out who pays for what when it comes to program improvements.

Some state laws, like those in Illinois and New York, explicitly state that consumers should have free e-scrap recycling, with manufacturers expected to foot the bill. But those laws don't say that local governments and other collectors are necessarily free from chipping in to the costs of collection and processing. Local governments are arguing that the intent of the laws is for manufacturers to fund the costs of recycling end-of-life electronics. Recycling companies and manufacturers argue that end-of-life fees, whether assessed to collectors or consumers, should stay on the table, at least until the CRT crisis has subsided.

"EPR programs put a downward cost pressure on the market, making it tough for recyclers to make a profit," argues ISRI's Harris. "Take New York as an example. Recyclers are collecting more CRT glass than OEMs are willing to pay for, and they [recyclers] are prohibited from charging [consumers and businesses] to make up the difference. Are we really saying that recyclers should be the ones to take a loss and pay for consumers and businesses' recycling cost?"

One possibility would be to write legislation or enact policies that demand more from manufacturers. Boosting manufacturers' performance targets should increase manufacturers' funding of the collection system. While they may not solve all of the issues, such increases will help alleviate the immediate financial pressures and give states and stakeholders time to consider broader structural fixes. But electronics industry representatives say their pockets are only so deep.

"Historically, [the consumer electronics] industry has been viewed as a piñata," says CEA's Alcorn. "Whack us with some legislation and the candy comes out." But today in the TV and IT business, sales are declining. "We're running low on candy, so we're not playing that role anymore." He adds electronics makers spend $100 million per year on EPR programs in the U.S. While critics may say that is not enough, Alcorn says such a price pill is tough to swallow when sales are down.

Some observers would like to see more government oversight in the states that rely on performance standards, to avoid some of the cost shortfalls that are being reported. "One of the biggest misnomers within state and local governments is that EPR programs require less oversight and enforcement," says ISRI's Harris. "This is absolutely incorrect. By statute, we've required the fox [OEMs] to guard the henhouse [collection and recycling]. Now we need policymakers to bring the farmer [government] back in with the shotgun to straighten this out."

Deal with CRTs first?

Since CRTs are creating the major stress points on the e-scrap recycling systems, maybe states need a CRT specific solution. Recycling companies and manufacturers argue that the costs and challenges of managing CRTs are so different from other electronics that they warrant a different approach. States like North Carolina, South Carolina and Texas all have programs that treat TVs and IT equipment differently. The current debate in those states centers on whether EPR is even needed for the cost-neutral or valuable products in the stream. "Moving

forward," says ISRI's Harris, "we shouldn't be afraid to ask the following: If the used electronics device has a positive value, like laptops, CPUs and game consoles, and a recycler can handle it at no charge, do we even need EPR, or anything more than a disposal ban?"

On the other hand, government stakeholders and recycling advocates question whether some products' positive value is enough to cover their collection and transportation costs. And they point out that markets are variable; what has a positive value today may be negative five years from now.

Wisconsin's Murray asks a question many of her colleagues in other states are also grappling with: "How do you craft a law that stands the test of time, as market conditions change?"

Finally, of course, there's the question of political will – once the right path is defined, will it be implemented? Some are encouraging policymakers to look at EPR more broadly, noting that manufacturer take-back is one of many possible approaches to EPR, and that eco-fees (consumer fees paid at point-of-sale) and other options should be considered.

States begin to set the course

In Michigan, New Jersey, Pennsylvania and Wisconsin, state agencies have convened stakeholders to discuss the challenges they face and potential solutions. Michigan and Wisconsin are still early in their processes. Pennsylvania's Department of Environmental Protection, meanwhile, has issued "Guiding Principles" for the program. Collectors and recycling companies are reportedly pursuing legislative solutions in New Jersey. And Minnesota has introduced legislation to effectively increase its performance goal.

In Illinois, the Illinois Product Stewardship Council has championed legislation to increase the performance goal (from 50 percent of the weight of a manufacturer's prior year's sales to 80 percent) and ensure that local governments are offered cost-neutral collection (i.e., not subject to fees for service) by recycling companies working on manufacturers' behalf.

Stakeholders in New York, convened by the New York Product Stewardship

Council and facilitated by PSI, are exploring mechanisms for increasing the state performance target and tightening up convenience standards and better regulating CRT management. The working group includes representatives from local governments, ISRI, CEA and the Natural Resources Defense Council.

The NYPSC/PSI work group has made several short-term recommendations. One is for New York's Department of Environmental Conservation (DEC) to clarify manufacturers' responsibilities and the state's expectations related to compliance. To that end, DEC recently issued a letter to manufacturers with obligations in that state that reads, in part:

"A manufacturer's annual acceptance standard, provided by the Department, sets the minimum acceptance standard amount a manufacturer must collect to avoid a surcharge. Stopping acceptance once this minimum acceptance standard is met, contracting with program partners to collect only this minimum acceptance standard amount and then ceasing collection, or purchasing weight indiscriminately from electronic waste recyclers/brokers to meet this minimum, is not consistent with the intent of the Act, and fails to meet the Act's requirements of providing a continuous and convenient collection program."

This shot across the bow can certainly be read as a warning. It's unclear whether New York will take enforcement action or be challenged by manufacturers that interpret the law differently. What is clear is that DEC wants to see things change.

Can we cooperate?

At the end of the day, most state and local governments are not ready to let the e-scrap EPR ship sink. Yet few seem interested in the major structural changes needed to transform performance-target programs into ones that resemble the more centrally managed, convenience-centric models. Such changes often involve greater government involvement, and policymakers in performance standard states are largely standing by their original aims to avoid high levels of government engagement.

The most likely outcome in the short term is that performance goals will be increased and CRT management will be placed under greater scrutiny through stronger regulation of CRT movement and transparency into CRT management practices. In the long term, states may look to more government-intensive, convenience-driven centralized approaches to EPR.

Finding the best course through this storm and toward smooth seas will require continued dialogue, like the NYPSC/PSI work in New York, to identify solutions that facilitate efficient and effective e-scrap collection. Coordination among states would be wise, since their problems are similar, and would benefit manufacturers and recycling interests as well. **ESN**

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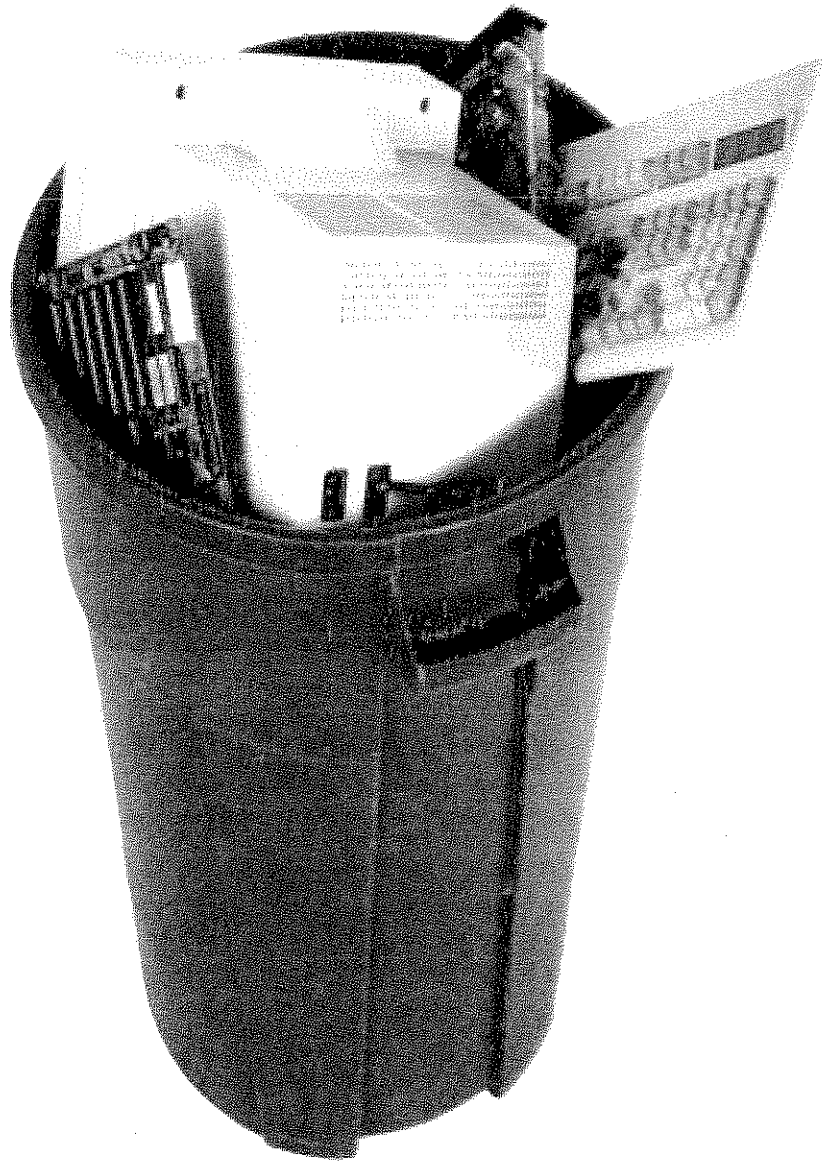
Illinois' Electronic Products Recycling and Reuse Act

Problem and Legislative Solution

By Melville Nickerson



We are all guilty of either hoarding or tossing obsolete electronic products into the garbage. Our technology-rich lives have become increasingly dependent on the electronic gadgets that allow us to work and communicate more efficiently and are a source of entertainment. In 2005 ABC News reported that by the year 2007, between 315 million and 600 million computers would become obsolete in the United States – that's the equivalent of a 22-story pile of trash covering the entire city of Los Angeles. In 2002 INFORM, the national environmental research organization, determined that by the year 2005 U.S. consumers would throw away 130 million cellular phones annually. In 2006, the United States Environmental Protection Agency reported that the fastest growing components of our nation's garbage are obsolete electronic products.

In the years since these studies were undertaken, market forces and human social evolution have surged to create the perfect intersection between the production of relatively inexpensive electronic products and individual consumption – the result is we now own and rely on an ever-increasing number of electronic gadgets. The disposal of obsolete electronic products - or e-waste, the preferred term of the geeky-hip - has become an enormous human health and environmental problem. This issue has local and international implications since e-waste contains varying amounts of toxic materials.

E-waste contains a long list of toxic materials such as lead, mercury, brominated flame retardants, cadmium, and beryllium. Cathode-ray tubes, the predecessors of flatscreen televisions and monitorscontain between four and eight pounds of lead. Lead is a neurotoxin that can harm the kidneys and reproductive system. Even low-level exposure to lead can impair a child's mental development. Lead accumulates in the environment and affects the natural development of plants, animals and microorganisms. Before flat screen television and monitor owners exhale in relief that most flat screens contain less lead, they should note that flat screen panels contain more mercury. Exposure to mercury can cause brain and kidney damage. Mercury is harmful to a developing fetus and can be passed through breast milk – just 1/70th of a teaspoon of mercury can contaminate 20 acres of a lake, making the fish unfit to eat. The plastic casings of computers, and other products, contain brominated flame retardants and polyvinyl chloride(PVC). Brominated flame retardants may cause thyroid damage and harm fetal development. The incineration of PVC produces highly toxic dioxins. Cadmium is found in many electronic products and is used in the production of cables, wires, semiconductors, and many other items. Long-term

exposure to cadmium damages kidneys and bones. Beryllium is used in motherboards and connectors and has been linked to lung disease. As consumers, we bear responsibility to ensure the proper disposal of these items.

In Illinois, the vast majority of consumers toss their e-waste into the garbage. That e-waste ultimately ends finds its way to landfills where it accumulates by the ton and becomes a ticking toxic time bomb. The solid waste associations contend that a properly run landfill can handle e-waste without the risk of leaching. In 2005 the General Accounting Office reported, "even with the uncertainty surrounding the risks associated with toxic substances in used electronics, EPA has identified a number of these substances as priority toxic chemicals for reduction because they don't break down when released into the environment and can be dangerous even in small quantities." Simply tossing e-waste into the garbage is not a viable option.

Recycling or reusing e-waste is the correct answer, but due to some bad actors, recycling can be as much of a problem as a solution. Recently, the news programs, *20/20* and *60 Minutes*, as well as *National Geographic Magazine*, reported on the ills of sham recyclers that export e-waste to developing nations where the dismantling of e-waste becomes a health risk for unprotected workers and a plaguing environmental problem. In places like Accra, Ghana, or Guiyu, China, poor laborers burn e-waste for a few dollars a day in order to salvage valuable components, and in the process release harmful toxins into the air, ground and water. In November 2008, *60 Minutes* reported "Potable water must now be trucked into Guiyu and scientists have discovered that the city has the highest levels of cancer-causing dioxins in the world. Pregnancies in Guiyu are six times more likely to result in miscarriages, and seven out of ten children have too much lead in their blood." These unfortunate human tragedies are the result of the new, exploding global market for electronic equipment components. E-waste contains many components that can be reused, such as gold. According to the same General Accounting Office Report mentioned previously, one ton of e-waste contains more gold than 17 tons of ore. In Illinois, responsible recyclers are able to safely retrieve other valuable items such as copper, aluminum, and circuit chips and, in the process, safely dispose of the toxins contained in e-waste.

So far, the United States has refused to join 170 other countries in ratifying the Basel Convention, an international agreement governing the transboundary movements of hazardous wastes and their disposal. The U.S. Environmental Protection Agency (EPA) is charged with regulating the disposal of hazardous waste under the Resource Conservation and Recovery Act (RCRA). RCRA regulates some--but not all--e-waste. Even when a particular class of e-waste is regulated - cathode-ray tubes, for example -residential and small businesses are exempt. In September 2008, the Government Accountability Office released a scathing critique of the EPA's failure to control the export of cathode-ray tubes. As a result, several states have taken the lead on solving the problem.

New Law One of Strongest in Nation

Illinois' landmark Electronic Products Recycling and Reuse Act, 415 ILCS 150/1, was signed into law on September 17, 2008. Illinois became the 17th state in the nation and only the second in the Upper Midwest to pass an electronic recycling law. Illinois' new law is one of the nation's strongest, protecting the environment and the public from the toxic substances contained in electronic products while providing incentives for reuse and donation to underprivileged families, the disabled, and public schools. I and colleagues at the Environmental Law & Policy Center drafted and advocated for the bill for the past two years.

The good news is that Illinois' law provides a solution to the growing problem of e-waste. The law requires electronic manufacturers, retailers and the Illinois Environmental Protection Agency to participate in the management of obsolete residential electronic products. The result is a five-fold win for Illinois residents. First, the law does not require state or local government funding. Instead, manufacturers of televisions, computers, monitors, and printers are required to set up and pay for the collection, transportation, recycling, and reuse of obsolete residential electronic products. Second, there is a real benefit to the environment since the law bans televisions, computers, monitors, and printers from landfills starting January 1, 2012. Thus, non-residential consumers—like law firms—will need to work with their IT hardware providers or e-waste recyclers to properly handle the disposal of their obsolete televisions, computers, monitors and printers. Third, the electronic recycling and reuse program is free to Illinois residential consumers. Fourth, it is estimated that the law will create approximately 4,000 new jobs and $740 million in new revenue. Fifth, the law creates standards for electronic recyclers that protect workers and the environment while adding transparency to the national and international shipment of e-waste.

As previously mentioned, obsolete electronic products contain valuable materials that can be recycled for reuse. The reuse of these items conserves energy and natural resources. Entities and individuals may also take advantage of other tangible benefits through the donation of their obsolete equipment to most 501(c)(3) non-profit organizations or by partnering with reuse companies that refurbish computers and share a portion of the resale revenue with the partnering entity.

It is hoped that the passage and implementation of the new Electronic Products Recycling and Reuse Act will create a fine balance between sound environmental policy and economic development, thus providing a benefit to all Illinoisans. ■

Melville Nickerson is Staff Attorney with The Environmental Law & Policy Center, where he played a lead role in drafting, negotiating and lobbying for the passage of the Electronic Products Recycling and Reuse Act

Editorial Perspective

Stonewalling one possible CRT solution

During a Q&A session at last year's E-Scrap Conference, an audience member asked me an interesting question. I'm paraphrasing, but the question was essentially this: Do you think emerging CRT processors are being dishonest about their intentions to one day start recycling the glass they're getting paid to take?

My response was to say many of the people I talk to share a surprising level of confidence about their processing ideas. Each executive implies he or she is holding *the* solution to the much-debated "CRT glass crisis." Like an athlete on the bench, they're brimming with belief that, if given the chance, they can win – and win big.

And while I will continue to let emerging processors themselves offer a more direct answer to the audience member's memorable question, inside this issue of the magazine you'll find a story about a process that is actually up and running – but having a hard time getting any glass.

Since early 2014, Kuusakoski Recycling has been treating leaded CRT glass and using it as alternative daily cover (ADC) at a landfill in Peoria, Illinois. According to the company, treating the glass essentially prevents any of the lead from leaching out now or in the future. And, in a CRT market as constrained as ours, Kuusakoski makes the argument that avenue is better than allowing CRTs to collect dust in a warehouse.

As my story gets into, just one of the 25 state electronics recycling programs in place counts Kuusakoski's method toward manufacturer recycling goals. Illinois, the lone program that counts it, cites limited CRT recycling outlets as the basis for its decision; program administrators from other states typically argue that, despite the challenges, there are other options out there. In addition, opponents point to the fact the Kuuaskoski method directs CRT glass to a landfill – the exact place traditional diversion efforts aim to cut out of the equation.

The approach is outright banned from use by all companies holding R2 certification, and it is allowed only "as a last resort" by e-Stewards, which considers the method disposal, not recycling.

Kuusakoski's CEO Rich Hipp tells me that without much state program support, the ADC operation was at roughly 25 percent capacity in 2014, treating somewhere between 12,000 and 13,000 tons of CRT glass when it has the capacity to exceed 50,000 tons per year. Because of that, Kuusakoski is now looking into storing treated glass, instead of using it as ADC, in a mineable cell. The idea is that when a more palatable outlet emerges, the glass can be removed from storage and sent further downstream for "true" recycling.

While e-Stewards is actively courting members to weigh in on whether that process should be permissible, it is unclear at this point whether the approach will fare any better than the ADC strategy.

The irony of it all is that Kuusakoski has managed to open its doors during this severe market crunch when competitors continue to aim to open their facilities "soon." And, as so many have called up to tell me, glass continues to amass in warehouses and open fields throughout this country, with no apparent or affordable downstream home for rising volumes.

But if you're a glass-half-full kind of person, perhaps you believe there's something more resonant at play. Perhaps you believe this young industry, framed often as the Wild West of the recycling world, is having a conversation out loud about its own image and impact. Perhaps it's making a statement by denying one or two solutions and waiting it out for something more ideal. Time will tell if that more ideal solution actually materializes.

Bobby Elliott

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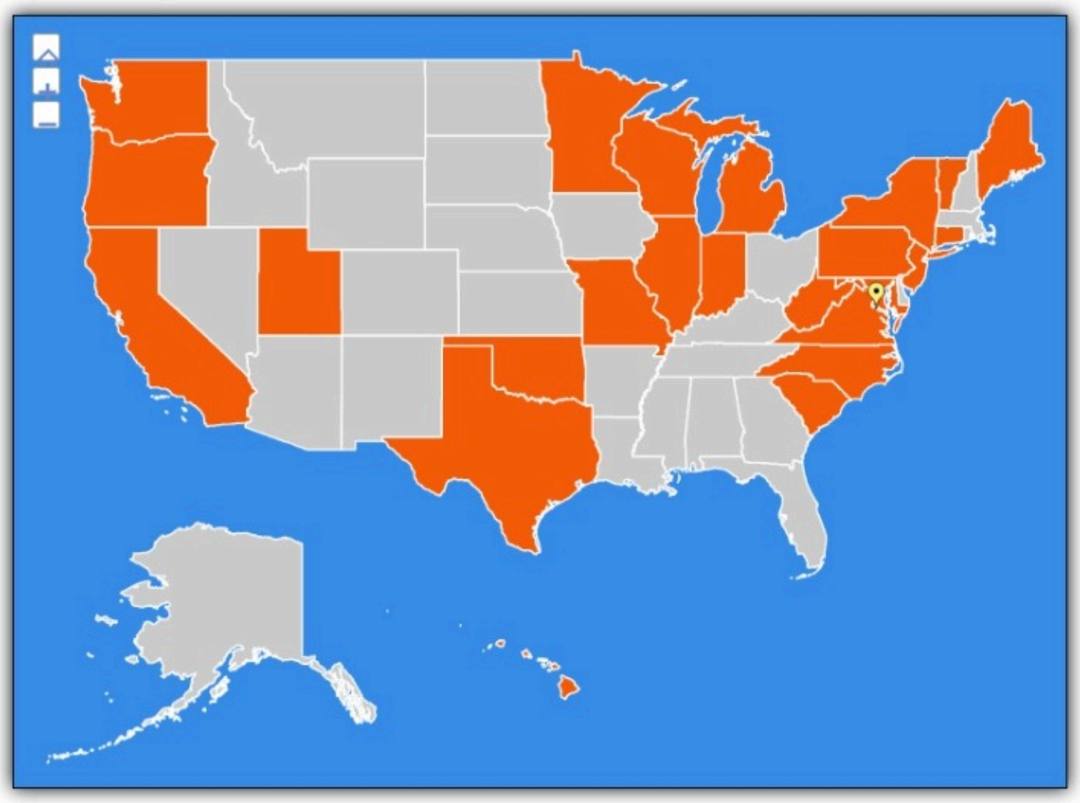
Map of States With Legislation

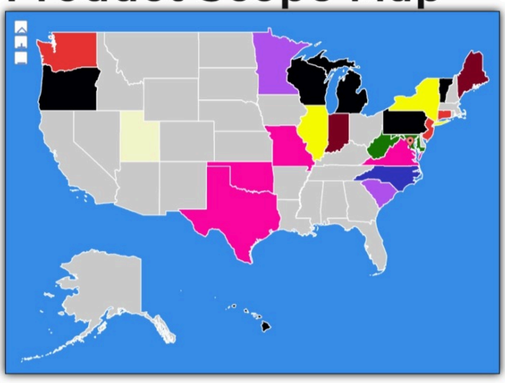


There are currently 25 states with e-waste laws (plus the District of Columbia). States highlighted in orange have passed some type of e-waste legislation. Click each individual state for state-specific information. Or see below for a comprehensive list.

Year E-Waste Laws Were Passed:

2003: California
2004: Maine
2005: Maryland
2006: Washington
2007: Connecticut, Minnesota, Oregon, Texas, North Carolina
2008: New Jersey, Oklahoma, Virginia, West Virginia, Missouri, Hawaii, Rhode Island, Illinois and Michigan
2009: Indiana, Wisconsin
2010: Vermont, South Carolina, New York, Pennsylvania
2011: Utah
2014: District of Columbia

Product Scope Map



Search:

STATE	RESPONSE
CA	CRT Monitor, CRT TV, Flat Panel/LCD Monitors, Flat Panel/LCD TV, Laptops, LCD Laptops, LCD-containing Smart Displays, LCD-containing Tablets, OLED-containing desktop monitors, OLED-containing laptop computers, OLED-containing Tablets, Organic light-emitting diode (OLED)-containing TVs, Plasma Televisions, Portable DVD players with LCD screens, Tablets
CT	Computers, Monitors, Printers, Televisions
DC	All-in-One Computer, Cable and Satellite Receivers, Computer Speakers, Desktops, DVD players, DVRs, E-readers, Game Consoles, Keyboards, Laptops, Mice, Monitors, Portable Music/Media Player, Printers, Servers, Signal Converter Box, Tablets, Televisions, VCRs
HI	Desktops, E-readers, Laptops, Monitors, Printers, Tablets, Televisions
IL	Computers, Desktops, Digital Converter Boxes, DVD players, E-readers, Fax, Game Consoles, Keyboards, Laptops, Mice, Monitors, Portable DVD, Portable Music/Media Player, Printers, Scanners, Servers, Tablets, Televisions, VCRs
IN	E-readers, Laptops, Monitors, Tablets, Televisions
MD	Cell Phones, Desktops, E-readers, Laptops, Monitors, Tablets, Televisions
ME	3D Printer, All-in-One Computer, Digital Frames, E-readers, Game Consoles, Laptops, Monitors, Portable DVD, Printers, Security Monitors, Tablets, Televisions, Virtual Reality Headsets
MI	Desktops, Laptops, Monitors, Printers, Tablets, Televisions
MN	Monitors, Televisions
MO	Desktops, E-readers, Laptops, Monitors, Tablets
NC	Desktops, Game Consoles, Laptops, Monitors, Multi-function Device, Printers, Scanners, Tablets, Televisions, Virtual Reality Headsets
NJ	Computers, Desktop Printers, Fax, Monitors, Printers, Televisions
NY	CRT Monitor, Desktops, E-device power cords and chargers, E-readers, External Hard Drive, Flat Panel/LCD Monitors, Game Consoles, Keyboards, Mice, Monitors, Portable DVD, Portable Music/Media Player, Printers, Scanners, Servers, Tablets, Televisions
OK	Desktops, E-readers, Laptops, Tablets
OR	Desktops, E-readers, Keyboards, Laptops, Mice, Monitors, Printers, Tablets, Televisions
PA	Desktops, E-readers, Keyboards, Laptops, Monitors, Printers, Tablets, Televisions
RI	Desktops, Laptops, Monitors, Tablets, Televisions
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WI	Desktops, E-readers, Laptops, Monitors, Servers, Tablets, Televisions
WV	Cell Phones, Desktops, Laptops, Monitors, Smart Displays, Tablets, Televisions

Showing 1 to 26 of 26 entries

This data was compiled using the Compliance Calendar database. For more robust reporting capabilities or to obtain this information in Excel format, please visit eCyclingCompliance.org

How U.S. Laws Do (and Don't) Support E-Recycling and Reuse

April 6, 2016 • 8 min read

● ESG

WRITTEN BY
Knowledge at Wharton Staff

There is no U.S. federal law that requires the recycling of electronic waste or prohibits it from being exported to developing countries. Some in Congress have tried to pass a bill that would make the overseas dumping of toxic e-waste illegal, but the Responsible Electronics Recycling Act (RERA) has been stuck in a House subcommittee for more than two years.

An existing law, the federal Resource Conservation and Recovery Act (RCRA) does cover some toxic electronic waste, but according to the Electronics TakeBack Coalition (ETBC), virtually all electronic components that are being exported for recycling are exempted. The only exception, as of December 26, 2014, is the federal CRT (cathode-ray tube) Rule, which led to the much-publicized prosecution of a single Michigan e-waste trader in March 2015.

That's it, legislatively, at the federal level. The EPA facilitated discussions between 2001 and 2003 to try to reach consensus on what could be a national e-waste law, said Scott Cassel, chief executive officer and founder of the Product Stewardship Institute, but without success.

"By the end of that process, there were a number of policy options on the table," according to Cassel, "but the electronics industry could not come to an internal agreement on what it wanted. That resulted in no national agreement, and the issue was thrown back to the states to develop their own solutions. But no one state model emerged. And manufacturers are still not on the same page as an industry because of competing interests."

What's Happening at the State Level

The first state to pass an e-recycling law was California, in 2003. Since then, 27 other states and the District of Columbia have followed suit. (Massachusetts legislators have tried to pass a statewide e-recycling law for several years without success; the state does ban e-waste from landfills). That leaves 22 states with no statewide laws, although in many places, take-back programs are offered by private companies, nonprofits and/or local governments (New York was the first major city to set up its own e-waste collection program and to ban electronics from garbage cans).

While the California law is financed by an explicit fee, 23 other states require manufacturers to cover the costs involved in collecting and recycling their products to some degree, according to ETBC. It's generally assumed that such extended producer responsibility (EPR) laws will not only cover costs, but also give manufacturers an incentive to design greener products, thereby reducing the recycling costs they have to cover.

But that's in theory. In practice, EPR laws often assign responsibility for e-waste financing to "a whole class of manufacturers," rather than to individual companies, argues Josh Lepawsky of Memorial University in Canada.

"Since all producers in such a system share responsibility for their own and each other's end-of-life products, the incentive for any single producer to make design changes that would reduce the costs of recycling or reuse are diluted." According to Walter Alcorn, a vice president for the environment at the Consumer Electronics Association (CEA), "Better design for the environment because of take-back mandates is not happening."

Laboratories for Democracy

State laws also fall short in other ways, but they are serving as the "laboratories of democracy" that Supreme Court Justice Louis Brandeis envisioned in 1932. Among the "experiments" being conducted:

Convenience vs. performance mandates — five states (Connecticut, Maine, Oregon, Vermont and Washington) have laws that require manufacturers to provide enough broadly distributed collection sites to meet demand (i.e., to make it convenient for all state residents to properly dispose of their electronics). To meet this requirement, the state generally hires a contractor to manage a statewide collection system paid for by the manufacturers, so in practice, the convenience mandate also represents a centralized approach.

The remaining EPR states use a performance, rather than a convenience standard, setting collection targets generally based on weight. The goal is often stated as a percentage of the previous year's sales or average sales of the past few years. If manufacturers fail to meet minimum targets, they may have to pay an additional fee.

Based on the amounts of e-waste collected per capita (as calculated by ETBC), states using the convenience method are outperforming those employing the target-setting approach. According to Resa Dimino, senior advisor for policy and programs at the Product Stewardship Institute, a major reason is that electronic devices have been getting lighter each year, and as the weight of sold electronics declines, so does the targeted weight of materials that manufacturers have to collect and recycle.

But the products people are turning in tend to be older and heavier, so manufacturers are hitting targets well before meeting demand. Once they've hit their mandated goal, manufacturers are no longer obligated to fund recycling efforts. The resulting lack of funding, said Dimino, has reduced access to collection sites in some performance-standard states.

One possible answer to the performance vs. convenience approach that New York state is currently trying is to combine the two kinds of requirements. The experiment is ongoing.

The CRT problem: Among the heaviest materials showing up at recycling centers are CRT monitors and TVs, which can represent a significant share of the e-waste stream. These dinosaurs from the pre-digital age pose a particular burden, not just because they contain lead, but also because the market for recovered CRT glass has virtually disappeared with the advent of flat-screen technology. Today, said Dimino, there is only one company in India that recycles CRT glass, and the cost of CRT management has doubled as a result.

Dimino explained that manufacturers initially thought the CRT problem would pass through the system in a year or two, but studies have found that people are hanging on to CRT monitors and TVs, using them as coffee tables or giving them to their kids. Dimino estimated that it will be six or seven years before manufacturers see a drop-off in CRTs. Based on the minimal decline in CRT recycling that ERI has seen over the past 11 years, it will be a minimum of 15 years before the CRT problem eases significantly, said John Shegerian, chairman and CEO of Electronic Recyclers International (ERI).

However states deal with the CRT problem, the issue points to a larger concern for any law governing e-waste: E-recycling laws have to allow for the fast-changing conditions of the electronics marketplace.

Five more lessons from the states

As states continue to struggle with e-waste legislation, they also continue to generate important lessons for future lawmakers. ETBC has compiled a list of lessons learned by studying the outcome of the various state programs. Among them are:

1. **Make requirements specific.** You don't collect what you don't legally require. Texas, among others, did not specify levels of performance, and nearly half of the 78 computer companies in the state collected no e-waste at all, while "a small San Antonio company called Altex collected 92% of the volume."
2. **Encourage rural collection.** It costs less to collect e-waste in dense urban areas than in rural ones, so laws should either require rural collection specifically or incentivize it, as Minnesota has done.
3. **Ban e-waste from landfills.** States that implement a landfill ban on e-waste see recycling volumes climb when the bans go into effect.
4. **Don't let recycling discourage reuse.** Laws that reward recycling more than reuse can inadvertently discourage the latter. In California, recyclers are not reimbursed for reuse, "so reusable units are mostly diverted for recycling," said ETBC.
5. **Make the scope of collection as broad as possible.** People want to bring in all the e-waste they have and are more likely to use programs that accept it all.

No Substitute for a Federal Law

States are doing what they can to deal with e-waste in the absence of federal legislation. But there are some measures only a federal statute can address. State laws often reference standards and international agreements forbidding the export of toxic e-waste to developing countries, for instance, but states lack jurisdiction over the matter. And the complicated patchwork of varying state laws makes it far more difficult and expensive for manufacturers to be good corporate citizens than would a single, coherent federal law.

Finally, the differing state requirements provide no incentive for manufacturers to focus on greening their products, because no one state has the market heft needed to influence global companies. As Lepawsky notes, the European Union represents such a large market that its Restriction of Hazardous Substances Directive has "created a de facto global standard for electronics manufacturing, because it is more economical for manufacturers to produce all their products that are also sold in the EU to that jurisdiction's material specifications, rather than different specifications for different markets."

Federal legislation could jump-start dramatic progress in the reduction, reuse and recycling of e-waste.

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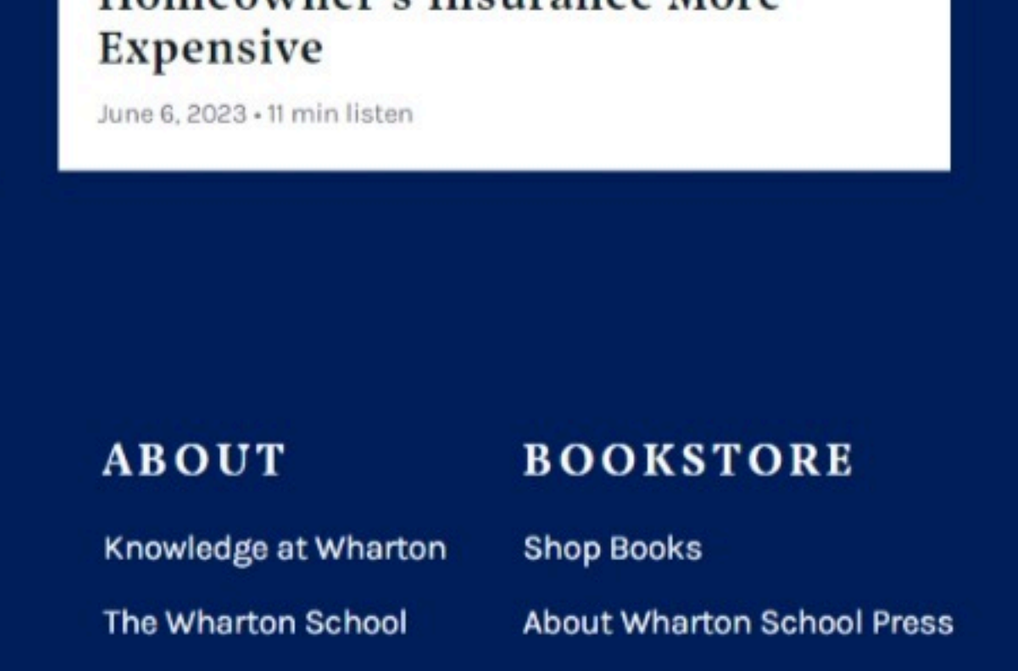

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Latest Per Capita Collection Rates

Latest Per Capita Data on Electronics Recycling Programs

The NCER continually monitors data from legislated state recycling programs and provides updates on this site. Below is a table of the most recent available data on most of the state laws. The per capita values are helpful, but cannot be compared across states without taking into account differences in product scope and covered entities. Those differences are also explained on this site.

ERCC Collections Per Capita 2009-2014

ERCC Collections Per Capita 2015 - 2017

ERCC Collections Per Capita 2018 - 2020

State	Actual Pounds Collected 2018 or Jul17-Jun18	Lb/capita 2018 or Fiscal/PY18	Actual Pounds Collected 2019 or Jul18-Jun19	Lb/capita or Fiscal/
CA	101,000,000	2.55	90,321,051	
CT	12,000,000	3.36	10,892,898	
HI	3,288,769	2.32	3,147,657	
IL	39,361,085	3.09	29,500,000	
IN	14,621,110	2.18	14,546,473	
ME	6,996,259	5.23	7,586,688	
MD	9,274,000	1.53		
MI	11,784,092	1.27	12,249,740	
MN	27,600,000	4.92	24,900,000	
NC	25,265,324	2.43	24,702,995	
NJ	70,000,000	7.86	57,700,000	
NY	98,530,226	5.04	100,179,530	
MO	119,176	0.02	160,647	
OR	20,179,832	4.82	18,019,990	
OK	834,780	0.21	458,401	
PA	56,489,792	4.41	56,442,621	
RI	5,496,441	5.20	5,317,836	
SC	13,716,716	2.70	15,028,340	
TX	19,354,090	0.67	19,410,210	
VA	1,603,308	0.19	1,325,567	
VT	3,685,745	5.88	3,460,051	
WA	25,333,619	3.36	21,370,000	
WI	25,530,867	4.39	23,554,009	
WV	874,883	0.48	656,619	
Totals	**593,821,822**		**539,492,366**	

Attachment 4

The United States Conference of Mayors Resolution Establishing Statewide, Fully Funded Extended Producer Responsibility (EPR) Programs for Electronics

Resolutions

Establishing Statewide, Fully Funded Extended Producer Responsibility (EPR) Programs for Electronics

Adopted at the 85th Annual Meeting in 2017

WHEREAS, ?No federal law exists that mandates electronics recycling; and

WHEREAS, ?About 41% of discarded consumer electronics or "electronic material" are collected for recycling, according to the most recent data available from the United States Environmental Protection Agency (EPA); and

WHEREAS, ?Electronic material can be defined as, but limited to, televisions, computers, office equipment, portable communication/music devices and other computer or electronic related accessories; and

WHEREAS, ?the exorbitant costs of collection and handling of discarded electronics is borne by a combination of local governments, manufacturers and consumers; and

WHEREAS, ?Extended Producer Responsibility (EPR) is a mandatory type of product stewardship that includes, at a minimum, the requirement that the producer's responsibility for their product extends to post-consumer management of that product and its packaging, shifting financial and management responsibility, with government oversight, upstream to the producer and away from the public sector and incorporates recycling and related costs into the price of new products; and providing incentives to producers to incorporate environmental considerations into the design of their products and packaging; and

WHEREAS, ?While many states and the District of Columbia have enacted various types of electronics recycling legislation, these laws vary greatly in their effectiveness and implementation, and furthermore, more than 20 states still have no statewide laws; and

WHEREAS, ?Even among the majority of states with such legislation, many states are dependent on electronics recycling performance standards which are generally based on tonnages that sometimes fall short of actual collection amounts; and

WHEREAS, ?the market for recovered CRT glass (the most significant component of CRT monitors and televisions by weight) has virtually disappeared with the advent of flat-screen technology, which has caused the cost of CRT management to increase steadily; and

WHEREAS, ?In total, an estimated 3.5 million tons of CRT devices will require management from 2015 to 2033, according to the National Center for Electronics Recycling; and

WHEREAS, ?Stockpiles of CRT material have been found sitting in warehouses, abandoned and with no plan for sustainable management 'not only because of the market problem in which jurisdictions struggle to fund recycling programs with reputable recyclers, but because in many cases recyclers are difficult to audit by individual municipalities; and

WHEREAS, ?Without adequate funding and stringent electronics legislation electronic material collected for recycling in the United States may result in improper shipment to countries not approved by e-Stewards or R2 certification bodies, where they may be handled in a manner that endangers human health and the environment, since these countries tend to lack the necessary infrastructure to safely manage electronic material; and

WHEREAS, ?Improper disposal or recycling of electronics can result in serious public health and environmental impacts 'for example, analog/CRT television sets and monitors contain large amounts of leaded glass; LCD flat screen monitors contain mercury in small fluorescent tubes all of which can be harmful to human health; and

WHEREAS, ?Where laws do exist, they rarely, if at all, provide incentives for manufacturers to design products that are easy to repair, refurbish, and/or recycle- which would be a significant step in reducing the amount of electronics that end up in the waste stream,

NOW, THEREFORE, BE IT RESOLVED,?that the United States Conference of Mayors supports the passage of federal legislation that requires the recycling of electronic material funded by a visible fee incurred upon sale of new electronics established by electronics manufacturers, requires safe handling and recycling of collected electronics, certifications, and further incentivizes innovation in product design that will result in products that are refurbishable, repairable, reusable, and/or more easily recyclable; and

BE IT FURTHER RESOLVED,?that the United States Conference of Mayors calls on each state to enact new or strengthen existing EPR legislation using visible fees established by manufacturers to finance harmonized statewide programs to sustainably manage electronic material within its borders (where manufacturer may be understood to include brand owners and/or product first importers and distributors); and?

BE IT FURTHER RESOLVED,?that each program should be designed and implemented to ensure that the full cost of sustainable electronics materials management is borne by product manufacturers in the fee they set on the products they sell rather than capped at specific tonnages or flat annual fees; and be it further; and

BE IT FURTHER RESOLVED,?that to the extent such legislation establishes a "convenience standard" for 'free and accessible' collection of discarded electronics from consumers, it should ensure that collection is free to the consumer except in cases where municipalities hold may hold special electronics collections events and charge nominal fees to cover costs, provide collection options that make it as convenient to recycle a product as it is to purchase that product, and further, recognizing the difficulties surrounding CRT recycling in particular, establish accessible and convenient drop-off locations throughout the state, in both urban and rural areas to include existing municipal infrastructure if preferred, such as recycling drop-off centers at landfills and transfer stations; and be it further; and

BE IT FURTHER RESOLVED,?that such legislation should establish a process that requires participating recyclers to carry certifications, such as e-Stewards OR the R2 standard in addition to RIOS (Recycling Industry Operating Standard) OR ISO 14001 (for environmental management), ISO 9001 (for quality management) and OHSAS 18001 (for occupational health and safety), and/or others that may exist, that affirm recyclers' commitment to responsible management of electronics collected, and include monitoring and auditing controls to ensure sustainable materials management; and be it further; and

BE IT FURTHER RESOLVED,?that such legislation should include a plan for implementing an outright landfill ban on electronic material separately collected for recycling; and be it further; and

BE IT FURTHER RESOLVED,?that such legislation should in addition provide incentives for manufacturers to design products that are re-useable, refurbishable and/or repairable first and foremost; and be it further; and

BE IT FURTHER RESOLVED,?that agencies and bodies at all levels of government 'local, state, and federal' are urged to adopt fully funded electronics EPR requirements on manufacturers in bids, contracts, and purchasing agreements; and be it further,

BE IT FURTHER RESOLVED,?that the United States Conference of Mayors calls on manufacturers to support, financially and otherwise, the development of markets for CRT glass and other hazardous electronics components.?

?
?
?

View all Resolutions

Attachment 5

Maryland Recycling Network Electronics Recycling Policy Webinar

E-SCRAP NEWS
A Resource Recycling, Inc. publication

Local government rep describes e-scrap funding problems

Published: April 5, 2018
Updated: April 5, 2018
by Colin Staub

Budget shortfalls are a reality for state programs nationwide, and in Maryland, the strain is increasingly being felt at the county level.

The Maryland Recycling Network (MRN) recently held a webinar that featured Kitty McIlroy, project analyst for the Northeast Maryland Waste Disposal Authority (NWMDA), which manages electronics recycling contracts for a handful of Maryland jurisdictions.

She said that despite there being a state program in place, the specifics of the legislation do not do enough to ensure the full cost of electronics recycling is covered. That has put the onus on counties, which play an outsized role in Maryland's local government system.

"There's still 3.5 million tons of CRTs that will require management from 2015 to 2030," McIlroy asserted, citing a figure from the National Center for Electronics Recycling. "That is a big deal for a lot of local jurisdictions, especially when it comes to their budgets."

Maryland's program

Maryland's e-scrap program does not focus on convenience or performance standards, meaning it's notably different from the initiatives in place in states such as Connecticut, Oregon, Vermont or Washington.

Under those systems, manufacturers manage and pay for the statewide collection network, and in some cases they are required to operate a minimum number of collection centers statewide to provide sufficient convenience when it comes to collection of the residential stream.

Maryland's program, enacted in 2005, instead boils down to offering two options, manufacturer takeback networks and local government-run collection sites.

The program requires manufacturers of certain devices (computer or video display devices that contain a screen larger than four inches, measured diagonally) to register with the state's environment department and pay a certain amount to the state. Manufacturers must pay a $5,000 or $10,000 registration fee each year, based on the number of devices they sell in the state.

The registration fees collected from manufacturers are used in part to fund grants that are available for municipalities and counties that offer collection options separate from the manufacturer takeback options.

OEMs can reduce their fee to just $500 if they offer residents free takeback for covered devices. These takeback programs must meet several criteria: They have to be free to Maryland customers, provide a free shipping container if one is requested, and include educational information about data destruction.

McIlroy contended that such an arrangement is not leading to an economically sustainable system.

She noted that in 2016, the state issued $250,000 in grants, with up to $15,000 available for an individual jurisdiction. But she said last year it cost nearly $800,000 for just four of the state's counties to pay for their e-scrap collection programs.

"A $15,000 grant does not cover even one month of service for some (NWMDA) jurisdictions," McIlroy said.

'Not the most user-friendly process'

She added that when it comes to the manufacturer takeback option, there is a shortfall in resident awareness. Takeback program information is typically provided on the OEM's website and the state website, but McIlroy said such details often don't make it to the individuals that need them.

"At this point, it's up to the Maryland resident to look up their electronics manufacturer's brand information, and then figure out if they're covered or not by calling or searching online," McIlroy explained.

There are only a handful of free drop-off sites run by manufacturer takeback programs in the state. Most of the OEM programs use mail-in collection, even for larger, bulky items such as TVs. The mail-in service requires the resident to wait for packing materials to be shipped to them and can be complicated when the resident wishes to send in multiple devices.

Overall, McIlroy said, the takeback system in Maryland "is not the most user-friendly process."

This means most residents are moving their end-of-life material into the pipeline managed by local governments, leaving counties in a lurch. McIlroy said there are only six out of the state's 23 counties that offer year-round free electronics recycling drop-off for residents. Those jurisdictions operate the sites with funds allocated through their local budget.

"The remaining jurisdictions are faced with either disposing of electronics, or asserting some sort of tipping fee for recycling," McIlroy said.

Photo credit: Sean Pavone/Shutterstock

More stories about local programs

- Curbside e-scrap collection to restart in New York borough
- State program tonnage drops by 29% in 2020
- A processor's history of public-sector contract controversy

Posted in News, Top stories | Tagged local programs, regulation/oversight |

The latest e-scrap industry news

Aurubis says it's going to build a US e-scrap smelter
One of the world's largest copper producers this week laid out plans for a $345 million smelter in Georgia to process printed circuit boards, cables and other scrap materials into an intermediate copper product.

Industry comes back together at Chicago event
Hundreds of electronics recycling and reuse leaders gathered this week for a conference that explored how stakeholders have coped with COVID-19 – and detailed what comes next for the sector.

Morgan Stanley data breach case reaches settlement
A class-action lawsuit against Morgan Stanley stemming from fumbled ITAD jobs has been tentatively settled, although details of the agreement remain confidential for now.

ITAD firm expands flagship New York facility
Liquid Technology this fall opened a 31,000-square-foot addition to its existing Brooklyn, N.Y. processing location. The company cited customers' sustainability goals driving greater ITAD demand.

Project tests giving 'eco-credits' to incentivize recycling
An $8.4 million, multi-year project in Europe found that providing incentives directly to consumers can impact the recycling rates of mobile devices.

Writer: Bitcoin mining fosters computer reuse, not waste
A Bitcoin Magazine contributor says cryptocurrency mining provides an incentive to reduce the generation of e-scrap through the resale of used units.

IT group says e-scrap should be COP26 priority
The global climate change conference taking place this month should increase its focus on end-of-life electronics management, a U.K.-based IT industry association recently stated.

See more E-Scrap News headlines

maryland recycling network

Electronics Recycling

Feb 15, 2018

States throughout the U.S. have taken different approaches to electronics recycling. These typically range from a manufacturer funded model (CT) to a consumer funded model (CA). Last year, the Municipal Waste Management Association (MWMA), an environmental affiliate of The United States Conference of Mayors, drafted a resolution calling for the passage of a federal law mandating the recycling of electronic material. At its 2017 annual conference, the United States Conference of Mayors adopted an amended version of that resolution.

Produced on Thursday, February 15 this webinar explores how these programs have been implemented as well as the impact to date on electronics recycling. Kitty McIlroy, Project Analyst for the Northeast Maryland Waste Disposal Authority, shares a brief overview of state programs, highlighting the differences between product stewardship and extended producer responsibility laws between states, followed by an update on the status of the Conference of Mayors resolution and a short discussion of Maryland's EPR law. She is joined by Doug Kobold, Waste Management Program Manager for Sacramento County, CA who details CA's Product Stewardship law, how it works and how Sacramento County benefits from it, as well as any challenges they face. They also discuss in more detail options for MD going forward.

Download slide PDF >>

Attachment 6

Northeast Maryland Waste Disposal Authority Member Jurisdiction Fiscal Year 2023/2022/2021 Electronics Recycling Tonnages/Costs; and

MDE Solid Waste Management and Diversion Report 2022 (CY 2021) Electronics Recycling Data, MDE Electronics Recycling Webpages and Manufacturer Take Back Programs

Anne Arundel County (televisions/computer monitors not included in recycling program):

FY ’22: 429,920 pounds recycled; annual cost of $0.00.

FY ’21: 348,080 pounds recycled; annual cost of $0.00.

Baltimore City:

FY ’23: 478,785 pounds recycled; annual cost of $134,059.80.

FY ’22: 666,705 pounds recycled; annual cost of $186,677.40.

Baltimore County (televisions/computer monitors not included in recycling program):

FY ’23: 545,140 pounds recycled; annual cost of $117,549.20.

FY ’22: 470,383 pounds recycled; annual cost of $131,707.24.

Carroll County (televisions/computer monitors not included in recycling program):

FY ’23: 83,412 pounds recycled; annual cost of $25,857.72.

FY ’22: 117,620 pounds recycled; annual cost of $36,462.20.

Frederick County:

FY ’23: (full data not included): 169,880 pounds recycled; annual cost of $23,057.

FY ’22: 171,080 pounds recycled; annual cost of $23,780.

Harford County (televisions/computer monitors not included in recycling program):

FY ’22: 63,620 pounds recycled; annual cost of $0.00.

FY ’21: 254,800 pounds recycled; annual cost of $0.00.

Howard County:

FY ’23: 1,060,527 pounds recycled; annual cost of $226,496.36.

FY ’22: 768,080 pounds recycled; annual cost of $130,573.60.

Montgomery County:

FY ’23: 1,980,300 pounds recycled; annual cost of $389,536.60.

FY ’22: 2,455,140 pounds recycled; annual cost of $480,248.94.

Total Authority Member FY '22 costs: $989,449.38; FY '23 costs: $916,556.68.

Electronics Recycling (eCycling)

Computers, televisions, and other consumer electronics are a rapidly growing part of the waste stream. The potential environmental and health threats posed by discarded computers and other consumer electronics that may contain toxic materials such as lead, mercury, cadmium, and chromium, continue to raise concerns about these products' disposal.

In 2005, Maryland became the third state to enact electronics recycling legislation. The Statewide Electronics Recycling Program (SERP) requires manufacturers of covered electronic devices (CED) to register with and pay an annual registration fee to MDE in order to sell their products in Maryland. A retailer may not sell a CED unless the manufacturer is registered. The annual registration fee is based upon the number of CEDs sold in Maryland the previous year. A reduced registration fee is available for manufacturers who have a Department-approved takeback program. Registration fees may be used by MDE to award grants to counties and municipalities to conduct CED recycling activities.

One-hundred seven (107) manufacturers registered with MDE and were authorized to sell their products in Maryland in CY21. Fifty-four (54) manufacturers have MDE-approved free takeback programs. Of these, Acer America Corporation, ASUS Computer International, Best Buy, Dell Marketing LP, Element TV

Company, LP, EliteLux Technologies, Inc., Funai Corporation, Google, Inc., Hewlett Packard Company, Hisense USA, JVCKENWOOD USA Corp., Kyocera Communications, Inc., LG Electronics USA, Inc. Motorola Mobility, LLC, Nintendo of America, Panasonic Corp of North America, Sony Electronics, Inc., TransCosmos America, TTE Technology, Inc., VTech Electronics North America, LLC, Viewsonic Corporation, and Vizio, Inc. reported recycling 165.41 tons through their free recycling programs in CY21. The remaining manufacturers reported 0 tons of Maryland electronic recyclables.

MDE performed 323 inspections at 308 electronics retailers during FY22. The inspections resulted in the issuance of 27 Site Complaints against retailers for selling unregistered manufacturer brands. 100% of the Site Complaints were successfully resolved in FY22.

Cumulative highlights of eCycling in Maryland include:

- 132 special collection events (i.e., 1 or 2-day collection events) have been held in 24 jurisdictions since CY11, through CY20.
- There were 4 special events in CY21, an decrease from the 3 collection events in CY20.
- Permanent collection programs have been established in Allegany, Anne Arundel, Baltimore, Calvert, Carroll, Cecil, Charles, Frederick, Garrett, Harford, Howard, Montgomery, Prince George's, St. Mary's, Washington, and Worcester counties, Baltimore City, and Midshore Region.

Information on Maryland's eCycling program is available on MDE's webpage at mde.maryland.gov/ecycling. Table 26 gives a breakdown of the electronics equipment collected in CY21. Figure 9 summarizes the electronics tonnage totals collected since collection began in 2001. An additional 1,445.54 tons of electronics from commercial businesses were reported by the counties in CY21 as having been recycled. These were not part of residential eCycling programs.

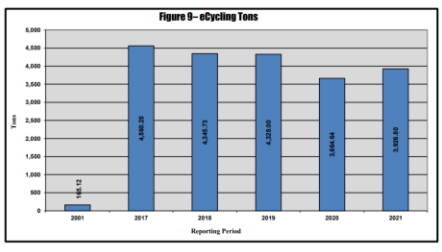
Table 26 – eCycling Collection Programs

County	Population (2021)	Type	Date(s)	No. of participants	Tons collected ^	Pounds collected ^	Pounds/ participant
Subtotal Maryland	6,165,129	–	2011-2020	–	67,940.98	7,457,925	–
eCycling Special Events in 2021							
Midshore (2)	–	1-day 1-day	Apr Oct	533 378	8.36 5.86	16,720 11,720	31.4 31.0
Montgomery	–	1-day	Oct	NA	3.74	7,480	NA
Worcester	–	1-day	Nov	283	0.5	1,000	3.5
Subtotal Events	–	–	2021	1,194	18.46	36,920	30.92
Permanent eCycling in 2021							
Allegany	68,684	–	2021	–	25.03	50,060	–
Anne Arundel	584,064	–	2021	–	197.57	395,133	–
Baltimore City	592,211	–	2021	–	401.63	803,260	–
Baltimore County	850,702	–	2021	–	267.00	534,000	–

County	Population (2021)	Type	Date(s)	No. of participants	Tons collected ^	Pounds collected ^	Pounds/ participant
Calvert	92,515	–	2021	–	284.17	568,340	–
Carroll	172,148	–	2021	–	55.48	110,960	–
Cecil	103,370	–	2021	–	25.00	50,000	–
Charles	165,209	–	2021	–	87.89	175,780	–
Frederick	267,498	–	2021	–	274.25	548,500	–
Garrett	28,955	–	2021	–	16.09	32,180	–
Harford	259,162	–	2021	–	115.47	230,940	–
Howard	329,248	–	2021	–	423.96	847,920	–
Midshore Region	139,871	–	2021	–	66.35	132,700	–
Montgomery **	1,057,201	–	2021	–	1,333.58	2,667,160	–
Prince George's **	957,767	–	2021	–	163.00	326,000	–
St. Mary's	113,209	–	2021	–	127.00	254,000	–
Washington	153,956	–	2021	–	39.37	78,740	–
Worcester	52,322	–	2021	–	5.50	11,000	–
Subtotal Permanent	5,988,092	–	2021	–	3,908.34	7,816,673	–
TOTALS (2011 – 2021) ^				**1,194 (2021)**	**71,867.78**	**15,311,516**	**30.92 (2021)**

^ Due to rounding, tons to pounds conversion doesn't exactly = x 2,000.

** Totals from the City of Takoma Park's permanent eCycling program were included in Montgomery County's permanent total. Totals from the City of Laurel's and College Park's permanent eCycling program were included in Prince George's County's permanent total.



Information above, last accessed: 7/22/23: MSWMaDR '22.pdf (maryland.gov)

Information below, last accessed: 7/22/23:

Registered Electronic Manufacturers (maryland.gov)

eCycling Home Page (maryland.gov)

MRM | HOME (mrmrecycling.com)

Using Greener Methods | VIZIO

Electronics Recycling (eCycling) in Maryland

Benefits of Electronics Recycling (eCycling)

- Reduce the amount of toxics entering the waste stream (lead, mercury and arsenic)
- Save landfill space
- Conserve natural resources.
- Reduce the rate of electronic waste generated each year

Details on eCycling activities including the amount of electronics collected for recycling can be found in the annual Maryland Solid Waste Management and Diversion Report available in the Publications section of the Department's web page.

Maryland ecycles! Learn more about how to recycle your old electronics below...

Announcements

The Department's eCycling commercials. New!

The Department's 15-second eCycling Television Commercial

The Department's 30-second eCycling Television Commercial

The Department's 15-second eCycling Radio Commercial

The Department's 30-second eCycling Radio Commercial

Electronic Collection and Recycling Grant Program for Counties and Municipalities

Counties that have addressed methods for the separate collection and recycling of computers and video display devices in their solid waste management plans and municipalities for local computer and video display device recycling programs are eligible for the grants under the Statewide Electronics Recycling Program.

No eCycling grants are currently being offered. Details and forms on eCycling grants, when available, are available in the County Coordinator Resources Section of the Department's Waste Diversion web page.

How to eCycle in Maryland

Electronic Manufacturers that will recycle my old electronic device for free.

Maryland's eCycling legislation requires CED manufacturers to register with MDE annually, and in certain circumstances pay an annual registration fee, in order to sell their products in the State. Part of Maryland's eCycling legislation enables manufacturers to qualify for a reduced annual renewal registration fee by offering Maryland customers free takeback of their end-of-life CEDs. MDE encourages Maryland CED customers to take advantage of these manufacturer takeback programs when disposing of their end-of-life CEDs.

Registered manufacturers whose listing includes a toll-free telephone number or web link have a MDE-approved takeback program and offer free takeback of their CEDs. Details of the takeback program are available by calling the toll-free telephone number or going to the manufacturers web page. If you feel that the manufacturer is not fulfilling the responsibility relating to the takeback of their old CEDs, please contact MDE to report and detail the problem.

In addition to manufacturer takeback programs, the following also exist to recycle your old CEDs. Inclusion on this list does not constitute endorsement by MDE. Please be sure to contact the company for information or clarification about the services offered, hours of operation, specific requirements, and current charges.

- Recycling Market Directory's Electronics Recycling Section;
- Electronic Manufacturers Recycling Management Company (MRM)
- Cell Phone Recycling
- Apple
- Epson
- IBM
- Best Buy
- Staples

Finally, some Maryland counties also offer recycling of end-of-life electronics **for their residents**. Some of the money received from manufacturer registrations is used as grants to Maryland counties and municipalities to support their eCycling programs. Please contact your County for details on their programs.

Community eCycling Residential Collection Events

eCycling Collection Events occur throughout the year in many different Counties. Listed below are special eCycling events that have been reported to MDE by Maryland jurisdictions. Upcoming special events include:

Currently no events have been reported to the Department. Make sure to check other resources on this page.

Permanent Collection Sites for Residents

Unless otherwise noted, all permanent sites are only open to **residents** of the County or City listed.

Allegany County
301-777-5933
Website

Annapolis, City of
Public Works Operation Center, 935 Spa Rd.
Monday thru Friday, 7:30 a.m. to 4 p.m.
Website

Anne Arundel County
410-222-7951
Website

Baltimore City
See website for locations and times. For more information, please call 410-396-4511 to contact the Baltimore City Office of Recycling.

Accepted items include televisions, computer monitors, desktops, laptops, printers, scanners, DVD and VCR recorders, cell phones, PDAs, tape recorders, keyboards, mice, external disk drives, computer speakers, modems, remotes and cables.

Baltimore County
Central Acceptance Facility & Western Acceptance Facility
Monday thru Saturday 7 A.M. to 4 P.M.

Eastern Sanitary Landfill
Monday thru Saturday 7:30 A.M. to 3:30 P.M.
410-887-2000 (Baltimore County Call Center)
Accepted items include VCRs, DVD players, computers, mice, keyboards, cell phones, power supplies, laptops, scanners, computer cables and cords, stereos, answering machines, and other home electronics. NO TVs , monitors and appliances.
Website

Calvert County
See website for locations and times.
Call 410-326-0210 for information.
*Phones, computers, monitors, printers, keyboards, mice, copiers, VCRs, DVD players, televisions, two-way radios and other home electronics

Carroll County
Northern Landfill
Monday thru Friday 7 A.M. to 4:30 P.M.
Saturday 7 A.M. to 3 P.M.
410-386-2510
Computer Speakers, Central Processing Units, Computer Mice Keyboards, Cell Phones, PDA's, Printers, Power Supplies, Laptop Computers, Scanners, Computer Cables and Cords, and Miscellaneous Circuit Boards, Chips and Cards.
Website

Cecil County
410-996-6275
Website

Charles County
Charles County Recycling Centers (Various Locations & Operating Hours)
301-932-3599
Computers, monitors, peripherals, TVs, telephones, cell phones & PDAs, printers, copiers, stereos, VCR & DVD players, camcorders, CD players, fax machines, projection equipment, calculators, scanners, electronic typewriters, consumer electronics, electronic toys, and microwaves.
https://www.charlescountymd.gov/services/environmental-resources/recycling-centers-drop-off-facilities/-selamenityid-33

Frederick County
Citizen's Convenience Center at the Frederick County Municipal Landfill
301-696-2985
Website

Garrett County
5 sites: Landfill, Kings Run, Bumble Bee, Grantsville, Garrett Hwy. sites
Monday, Wednesday, Friday 7 A.M. to 6 P.M.
Saturday 9 A.M. to 6 P.M.
Sunday 12 P.M. to 6 P.M.
Contact: Kimberly Madigan 301-334-7492
Accepted items include: answering machines, battery backups, CD burners, CD players, calculators, camcorders, cell phones, computers & components, copiers, DVD players, digital cameras, docking stations, electric typewriters, electric wire & cable/cords, fax machines, gaming systems, hard drives, keyboard/mouse/ peripherals, laptops, medical equipment, microwaves (glass plate removed), (flat-screen) monitors, network hardware, overhead projectors, pagers, PDA's, phone systems, printers (and ink cartridges), plotters, power supplies, projection equipment, remote controls, scanners, security equipment, servers/ cabinets, shredders, tape drives, tape players, Telecomm Equipment, telephones, two-way radios, UPS systems, VCR's, zip drives. Website

Greenbelt, City of
240-542-2153
4 Collection events per year
Website

Harford County
Harford Waste Disposal Center (Scarboro Landfill)
410-638-3417
Computers (NO monitors) and peripherals
Website

Howard County
Alpha Ridge Landfill
410-313-7678
Computers and peripherals, monitors, and TVs.
Website

Midshore Counties (Caroline, Kent, Queen Anne's, Talbot)
See website for locations and times.
Call 1-800-473-2925 for information.

Montgomery County
Shady Grove Transfer Station
311 or 240-777-0311
Computers and peripherals, CD players, cell phones, calculators, camcorders, consumer electronics, copiers, cords & cables, digital cameras, DVD players, electronic toys, electric typewriters, fax machines, microwave ovens, monitors, PDAs, printers, projection equipment, scanners, small electric appliances, stereos & speakers, telephones, TVs, VCR players. Please recycle all large appliances with electronic components at our scrap metal recycling site which is located near the office trailer. Commercial quantities are not accepted. Large institutions wishing to recycle TVs can make other arrangements with the County.
Website

Prince George's County
Brown Station Road Sanitary Landfill (BSRSL)
301-952-7625
Computers & peripherals, monitors, fax machines, cell phones, radios, stereos, TVs (non-console), scanners, copiers, pagers, VCRs
Website

St. Mary's County
301-863-8400
Website

Somerset County
See website for locations and times.

Washington County
Forty West Landfill
240-313-2796
Small fee applies, call for details.
Website

Wicomico County
Newland Park Landfill
410-548-4935
(Monday - Friday)
Website https://www.wicomicocounty.org/671/ConvenienceRecycle-Center-Information

Worcester County
Central Site Landfill
410-632-3177
Website

Maryland's eCycling Legislation

Maryland's Statewide Electronics Recycling Program, Sections 9-1727 to 9-1730 of the Environment Article, Annotated Code of Maryland (definitions in Section 9-1701) require certain electronic manufacturers to register annually with the Maryland Department of the Environment and pay an annual registration fee if they sell or offer for sale **electronic devices covered by Maryland's eCycling legislation (CEDs)** in Maryland.

A reduced annual registration fee is available, after the initial registration, if a manufacturer has a Maryland Department of the Environment-approved take back program for all of their products covered under Maryland law. An approved take back program must be free, including providing, at no cost to the returner, a method of returning a CED to the manufacturer and include educational and instructional materials relating to the destruction and sanitization of data from a CED.

Manufacturer Responsibilities

A Manufacturer may not sell or offer for sale to any person in the State a new CED unless the CED is labeled with the name of the manufacturer and the manufacturer has registered with and, if applicable, submitted a registration fee to MDE. **Registrations are due by March 1st of each year. The Department recommends that a registration be submitted 30 calendar days prior to the deadline to allow for processing by the Department.**

- Am I Registered?
- Electronic Manufacturer Registration Form
- FAQ electronics manufacturers

Retailer Responsibilities

A retailer may not sell or offer for sale to any person in the State a new CED manufactured by a manufacturer, unless the manufacturer has registered with the Department.

- Manufacturers/Brands I Can Sell in Maryland
- Frequently Asked Questions

Penalties

Manufacturers and retailers who fail to comply with the Maryland's eCycling law are subject to a civil penalty, not exceeding $10,000, and an administrative penalty up to $10,000 for each violation (each day a violation occurs is a separate violation), but not exceeding $100,000. In addition, MDE may assess against any retailer that violates the law a fine up to $1,000 for each violation, but not exceeding $10,000 total.

- Frequently Asked Questions

Additional Information

Inclusion on this list does not constitute endorsement by the Department. Please be sure to contact the company for clarification about the information provided and the services offered.

- The Department's 2006 eCycling TV Commercial
- 2004 Electronics Recycling Workgroup Report
- EPA Sustainable Management of Electronics
- Digital TV Transition
- The Green Guide to Recycling Appliances & Electronics
- Cell Phones Recycling: A Call to Action for a Better Future
- Region 3 eCycling Final Report

Contact Information

For more information on eCycling in Maryland, please email David Mrgich.

Recycling Reporting Resources
Education and Outreach
Frequently Asked Questions
Recycling at Work and School
Recycling in Maryland
Source Reduction
State Agency Recycling
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Resource Management Program Home

Registered Electronic Manufacturers

Manufacturers

Pursuant to Section 9-1727(b) of the Environment Article, Annotated Code of Maryland, a manufacturer who wishes to sell or offer for sale a qualifying electronic device must register annually with the Maryland Department of the Environment (the "Department") and submit a registration form with the proper accompanying registration fee. The Department continuously maintains the following list of eManufacturers registered and approved to sell their products in Maryland

eManufacturers Registered to Sell Products in Maryland from March 1, 2023 to February 28, 2024

(**Manufacturer links are provided for companies with Department-approved takeback programs and that will recycle their electronic device brands for free**. Additional manufacturer links are provided in the "Electronics Take Back and Recycling Programs" section on the eCycling homepage.)

- Acer America Corporation (122005-04; Acer, Gateway, AOPEN GrandPad, eMachines)
- Amazon.com Services, LLC (092413-154; oo-ytp, Astro, Eco Show, Fire, Fire TV, Kindle, E-reader, Kindle Fire)
- Amelia World Corp. dba LINSAY (091614-186; LINSAY)
- Apple, Inc. (122805-16; Apple)
- ASUS Computer International (010610-97; ASUS, Republic of Gamers, ROG)
- Aura Home, Inc. (012722-284; Aura Frames)
- BARCO NV (031221-282 ; BARCO)
- BenQ America Corp. (011806-29; BenQ, Zowie)
- Best Buy Co, Inc. (053106-36 (Insignia, Toshiba (TV), Pioneer (TV) Lively (Phone))
- BLU Products, Inc. (092214-191; BLU)
- Canon USA, Inc. (031214-169; Canon)
- Component Specialties, Inc. (021814-163; Speco Technologies)
- Contixo, Inc. (070620-247; Contixo)
- Coosea USA Technologies, Inc. (021522-286; Koobee)
- Creedon Technologies USA, LLC (061322-289; Nixplay, NIX, Nixplay Signage)
- CTL (122005-04; CTL)
- Curtis International (013114-162; RCA, Proscan, Sylvania)
- CyberPower, Inc. (011514-458; CyberPower, Syber)
- Dell Marketing LP (122705-13; Dell, Alienware, WYSE)
- Digital Products International, Inc. (Dynabook Tecra, Dynabook Portege)
- DISH Network (031122-287; Celero 5G)
- DP Audio Video LLC (030221-281; Core Innovations)
- Dynabook Americas, Inc. (040419-261; Dynabook Tecra, Dynabook Portege)
- Element TV Company, LP (031808-85; Element)
- Elitegroup Computer Systems, Inc. (022813-133; ECS)
- EliteLux (090517-254; Sansui)
- Elo Touch Solutions, Inc. (050206-35; Elo, Elo Touch Solutions)
- Emblem Solutions, LLC (010922-291; AT&T, Cricket)
- Envision Peripherals, Inc. (122607-62 ; AOC, Philips monitors)
- Equus Compute Solutions (080906-39; Nobilis)
- Fujitsu North America, Inc. (121605-03; Fujitsu)
- Funai Corporation, Inc. (112907; Aventura, Funai, Symphonic, Sanyo)
- Garmin International, Inc. (111414-198; Garmin)
- General Digital Corporation (010808-76; General Digital Corporation)
- GiiNii Tech. Corp. (092614-194; Shomi)
- Google LLC (070313-149; Google)
- GVISION-USA, Inc. (101606-46; GVISION)
- Hisense USA Corporation;092612-128; Hisense, Toshiba)
- HMD America, Inc. (021419-258; Nokia)
- HP, Inc. (122305-11; HP or Hewlett Packard)
- HTC America, Inc. (082112-127; HTC, VIVE)
- Hyundai Technology Group, Inc. (091120-276; Hyundai Technology)
- IGEL Technology Corporation (111219-271; IGEL)
- Intel Corporation (030317-247; Intel-NUC, Compute Card computer devices, Compute Stick)
- International Business Machines Corporation (011006-25; IBM)
- JVCKENWOOD USA Corporation (121807-60 ; JVC)
- Kyocera International, Inc. (093014-195; Kyocera)
- Lenovo (United States) Inc. (122005-07; Lenovo, Medion, LAVIE)
- Lexmark International, Inc. (082522-292;Lexmark International, Inc.)
- LG Electronics USA, Inc. (122805-18; LG, LG Signature, Zenith, Goldstar.)
- Microsoft Corporation (032113-143; Microsoft)
- Motorola Mobility LLC (010511-108; Motorola)
- MSI Computer Corp. (123107-66; MSI)
- Naxa Electronics, Inc. (052715-213; Naxa)
- Netgear, Inc. (090919-269;Meural)
- Newline Interactive, Inc. (111522-293; Newline)
- Nintendo of America, Inc. (040210-98; Nintendo Switch, Nintendo Switch Lite, Nintendo Switch OLED Model)
- NOOK Digital LLC (092011-121; NOOK)
- NVIDIA (022814-165; NVIDIA)
- OnePlus Technology Co. Ltd. (121818-259; OnePlus)
- Oracle America, Inc. (oracle) (122905-20; Oracle MICROS)
- Panasonic Corp. of North America (011706-28; Panasonic ToughBook, Laptops and Tablets)
- Peerless Industries, Inc. (030420-277; Peerless-AV)
- Philips Global Brand Licensing (032106-33; Magnavox, Philco, SV 2000, Philips)
- Pitney Bowes (031414-168; Pitney Bowes)
- Planar Systems, Inc. (013106-30; Planar)
- Plantronics (Poly) (033021; Poly,)
- Promethean, Inc (040620-273; Promethean)
- Richo USA, iNC. (022422-284; Richo)
- Roku, Inc. (032323-294; Roku)
- Rugged Portable Computers, LLC (032514-167; Maxvision, Rugged Portable Computers)
- Samsung Electronics America, Inc. (020706-31; Samsung)
- Sceptre, Inc. (122810-106; Sceptre, Cosmo, Komodo)
- SCHOK LLC (030419-260; SCHOK)
- Smart Technologies (031214-166; SMART IFP's)
- Start USA, Inc. (070723-297; Start)
- Sharp Electronic Corporation; (020706-32; Sharp, Sharp Equos)
- Sonim Technologies (042319-262; Sonim)
- Sony Electronics, Inc. (1222505-09; Sony)
- SunBrite TV, LLC (083111-120; SunBrite TV)
- TCL North America dba TTE Technology, Inc. (080614-177; TCL)
- TCT Mobile (USA), Inc. (090314-197; Alcatel, Alcatel One Touch, TCL tablets)
- Tinno USA, Inc. (011222-285; Tinno, Wiko, ANS, Vox)
- T-Mobile (04222-288; T-Mobile (Revvl)
- Toshiba Global Commerce Solutions (TGCS) (050614-172; Toshiba)
- Transcosmos America, Inc.(092415-220; VAIO)
- Ultimate Technology Corp. (083011-119; UTC Retail)
- Valve Corporation (061523-295; Valve)
- ViewSonic Corporation (011006-27; ViewSonic)
- VIZIO, Inc. (121807-59; VIZIO)
- Voxx International Corp. (090909-100; Project Nursery (baby monitors))
- VTech Electronics North America LLC (092414-192; VTech, LeapFrog)
- Wacom Technology Corporation (010406-23 ;Wacom)
- Walmart, Inc. (111307-53; ONN, MOTILE)
- Westinghouse Electronics USA, Inc. (122205-10; Westinghouse)
- ZTE USA, Inc. (082714-181; ZTE, AXION by ZTE, Consumer Cellular)
- ZT Systems (072811-116)

eManufacturers Registered to Sell Products in Maryland from March 1, 2022 to February 28, 2023

(**Manufacturer links are provided for companies with Department-approved takeback programs and that will recycle their electronic device brands for free**. Additional manufacturer links are provided in the "Electronics Take Back and Recycling Programs" section on the eCycling homepage.)

- Acer America Corporation (122005-14; Acer, Gateway, AOPEN, GrandPad, eMachines)
- Aluratek, Inc. (090414-182; Aluatek)
- Amazon.com Services LLC (092413-154; Kindle Fire, Fire, Echo Show, Kindle E-readers, Fire TV)
- Amelia World Corp. dba LINSAY (091614-186; LINSAY)
- Apple, Inc.(122805-16; All Apple Branded Products)
- ASUS Computer International (010610-97; ASUS, Republic of Gamers, ROG)
- Aura Home, Inc.(012722-284; Aura Frames)
- Barco NV (031221-282; Barco)
- BenQ America Corp. (011806-29; BenQ)
- Best Buy (053105-36; Insignia, Toshiba (TV), Pioneer (TV) Lively (Phone)
- BLU Products, Inc. (092214-191; BLU)
- Boxx Technologies (080613-152; Go Boxx)
- BULLITT Mobile Limited (080317-250; Caterpillar (CAT) Phone
- Canon USA, Inc. (031314-169; Canon)
- Coosea USA Technologies, Inc. (021522-286; Koobee)
- Componets Specialties, Inc. (021814-163; Speco Technologies)
- Creedon Technologies USA LLC (061322-289; Nixplay, Nixplay Signage, NIX)
- CTL (012521-280; CTL)
- Curtis International Limited (013114-162; Curtis, Proscan, RCA, Sylvania)
- CyberPower, Inc. (011514-158; CyberPower, Syber)
- Dell Marketing LP (112705-13; Dell, Alenware, WYSE)
- DISH Network LLC (031122-287; Celero 5G cell phone)
- Digital Products International (012809-93; GPX, ILive, Weather-X, ZeKI, Memorex)
- DOK Solutions, Inc. (011916-229; Karaoke USA, DOK)
- DP Audio Video, LLC (030221-281; Core Innovations)
- Dynabook America, Inc. (040419-261; Dynabook Tecra, Dynabook Portege, Dynabook Satellite, Dynabook Satellite Pro)
- Element TV Company, LP (031808-85; Element)
- Elitegroup Computer Systems (022813-133; ECS)
- EliteLux Technologies, Inc. (090517-254; Sansui)
- Elo Touch Solutions, Inc. (050206-35; Elo, Elo Touch Solutions)
- Emblem Solutions., LLC (010922-291; AT&T, Cricket brands)
- Envision Periphersls, Inc. (122607-62; AOC Monitors, Philips Monitors)
- Equus Compute Solutions (080906-39; Nobilis)
- Facebook Technologies LLC (111219; Portal)
- FIH Mobile Limited (051121-284; Sharp, InterGear)
- Fujtsu America, Inc (121605-03; Fujitsu)
- Funai Corporation, Inc. (Aventura, Funai, Symphonic, Sanyo)
- Garmin International, Inc. (111414-198; Garmin)
- General Digital 010808-76; General Digital)
- GiiNii Tech. Corp. (092614-194; GiiNii, Shomi)
- Google LLC (070313-149; Google)
- GVISION-USA, Inc. (101606-46; GVision)
- Hisense USA Corporation (092612-128; Hisense, Toshiba)
- HMD America, Inc. (121419-258. NOKIA branded cell phones)
- HP, Inc. (122305-11; HP or Hewlett Packard)
- HTC America, Inc. (082112-127; HTC)
- Hyundai Technology Group, Inc. (091120-276; Hyundai Technology)
- IGEL Technology Corporation (111219-271; IGEL)
- Intel Corporation (030317-247; Intel-NUC, Compute Card computer devices, Compute Stick)
- International Business Machines Corporation (IBM) (011006-25; IBM)
- JCVKENWOOD USA Corporation (121807-60; JVC)
- Kidz Delight Ltd. (090816-244; Kurio)
- Kyocera International, Inc. (093014-195; Kyocera)
- Lenovo (United States), Inc. (12205-07; Lenovo, Medion, LAVIE)
- Lexmark International, Inc. (082522-292;Lexmark International, Inc.)
- LG Electronics USA, Inc. (122805-18; LG, LG Signature, Zenith, Goldstar.)
- Microsoft Corporation (032113-143; Microsoft)
- Motorola Mobility LLC (010511-108; Motorola)
- MSI Corporation Corp (081911-118; MSI)
- Naxa Electronics, Inc. (052715-213; Naxa)
- Nintendo of America, Inc. (040210-98; Nintendo Switch, Nintendo Switch Lite, Nintendo Switch OLED Model, New Nintendo 2SD XL, Nintendo DSi , Nintendo DS, Nintendo DS Lite, Nintendo 2DS, Nintendo DSi XL, New Nintendo 3DS, New Nintendo 3DS XL)
- Netgear, Inc. (090919-259; Meural)
- Newline Interactive, Inc. (111522-293; Newline, Newline Interactive, Newline Interactive, Inc.)
- NOOK Digital LLC (092011-121: NOOK Digital)
- NVIDIA (022814-165; Nvidia Shield Tablet, Invidia Laptop)
- OnePlus Technology (Shenzhen) Co. Ltd.(121818-259; ONEPLUS)
- Optima Technology, Inc. (101818-256; Optima)
- Oracle America, Inc. (Oracle) (122905-20; Oracle/Sun, and MICROS)
- Panasonic Corporation of North America (011706-28; Panasonic Tough Book laptops and tablets)
- Peerless Industries, Inc. (030420-271; Peerless-AV)
- Philips Global Brand Licensing (032106-33; Magnavox, Philco, SV 2000, Philips)
- Pitney Bowes (031414-168; Pitney Bowes)
- Planar Systems, Inc. (013106-30; Planar)
- Plantronics, Inc. (033021-283; Poly)
- Promethean, Inc. (040620-273; Promethean)
- Ricoh USA, Inc. (022422-284; Ricoh)
- Rugged Portable Computers, LLC (032514-167; Maxvision, Rugged Portable Computers)
- Russell Dristibution Company (011514-156; EPIK EVOO, Quasar)
- Samsung Electronics America, Inc. (020706-32; Samsung)
- Sceptre, Inc. (122810-106; Sonim)
- School Zone Publishing Company, Inc. (03186-233; School Zone, Little Scholar)
- Sharp Electronics Corporation (020706-32; Sharp, Sharp Aquos)
- Smart Technologies LLC (031214-166; Smart Interactive Panels)
- Snakebyte USA, Inc. (122022-284; Pebble Gear)
- Sonim Technologies (042319-262; Sonim)
- Sony Electronics, Inc. (122205-09; Sony)
- Stand Steady (072822-290; Sidetrak)
- TCT Mobile, Inc. (093014-197; Alcatel, Alcatel One Touch, TCL tablets)
- TongFang Global, Inc. (031803-85 ; Westinghouse)
- Toshiba Global Commerce Solutions (TGSC) (050614-172; Toshiba)
- Tianshi Digital Technology Development Limited (121014-202; DigiLand)
- Tinno USA, Inc.(011222-285; Wiko, T-Mobile, MetroPCS, ANS)
- T-Mobile (04222-288; T-Mobile (Revvl))
- Transcosmos America, Inc.(092415-220; Vaio)
- TTE Technology, Inc., dba TCL North America; (080614-177; TCL)
- Ultimate Technology Corp. (083011-119; UTC Retail)
- VTech Electronics North America LLC (092414-192; VTech, LeapFrog)
- Vtech Telecommunications Limited (052815-214; Vtech)
- ViewSonic Corporation (011006-27; ViewSonic)
- Visual Land, Inc. (012814-161;Visual Land)
- VIZIO, Inc. (121807-59; VIZIO)
- Voxx International Corp. (090909-100; Project Nursery (baby monitors))
- Wacom Technology Corporation (010406-23; Wacom)
- Walmart, Inc. (111307-53; ONN, Motile)
- Wingtech International, Inc. (033122-188; Wingtech)
- ZTE USA, Inc. (082714-181; ZTE, AXON by ZTE)
- ZT Systems (072811-116)

eManufacturers Registered to Sell Products in Maryland from March 1, 2021 to February 28, 2022

(**Manufacturer links are provided for companies with Department-approved takeback programs and that will recycle their electronic device brands for free**. Additional manufacturer links are provided in the "Electronics Take Back and Recycling Programs" section on the eCycling homepage.)

- @Xi Computer Corporation (071713-148; @Xi Computer)
- Acer America Corporation (122005-04; Gateway, Acer, eMachines,AOPEN, GrandPad)
- Aluratek , Inc. (090414-182;Aluratek)
- Amazon.com Services LLC (092413-154; eCHO, kINDLE, Fire, Kindle Fire)
- Amelia World Corp. dba LINSAY (091614-186; LINSAY)
- Apple, Inc. (122805-16; Apple)
- ASUS Computer International (010610-97; ASUS, Nexsus ASUS, Republic of Gamers)
- Atyme Corporation, Inc. (040317-248; ATYME)
- Aura Home, Inc. (012722-284; Aura Frames)
- BenQ America Corp. (011806-29; BenQ)
- Best Buy (053105-36; Insignia, Toshiba (TV), Pioneer (TV) Lively)
- Barco, Inc. (091113-153; Barco)
- Barco NV (031221-282; Barco)
- BLU Products, Inc. (092214-191; BLU)
- Boxx Technologies (080613-152; Go Boxx)
- Canon USA, Inc. (031314-169; Canon)
- Components Specialties, Inc (021814-163;Speco Technologies)
- Coolpad Technologies, Inc. (122816-247; Coolpad Technologies)
- CSS Laboratories, Inc. (073015-217; CSS}
- CTL (012521-280; CTL)
- Curtis International Ltd. (013114-162; Proscan, RCA, Sylvania, ONN, Curtis, Blackweb)
- CyberPower, Inc. (011514-158; CyberPower, Syber)
- Dell Marketing LP (112705-13; Dell, Alienware, Wyse)
- Digital Products International, Inc. (012809-93; GPX, Ilive, Weather-X, ZeKi, Memorex)
- DOK Solutions, Inc. (011916-229; Karaoke USA, DOK)
- DP Audio Video, LLC (030221-281; Core Innovations, PBS Kids)
- Dynabook Americas, Inc. (040419-261; Dynabook Protege, Dynabook Tecra)
- Element TV Company, LP (031808-85; Element)
- Elitegroup Computer Systems; ECS)
- EliteLux Technologies, Inc. (090517-254; Sansui)
- Elo Touch Solutions, Inc. (050206-35; Elo, Elo Touch Solutions)
- Facebook Technologies, LLC. (111219-272; Portal, Oculus)
- FIH Mobile Limited (051121-284; AT&T, Cricket)
- Fujitsu America, Inc. (121605-03; Fujitsu)
- Funai Corporation (112907-55; Aventura, Funai, Symphonic, Sanyo)
- Garmin International, Inc. (111414-198; Garmin)
- General Digital (010808-76; General Digital)
- GiiNii Tech. Corp. (092614-194; GiiNii, Shomi)
- Google, LLC. (070313-149; Google)
- GVision-USA, Inc. (1011606-46; GVision)
- Hisense USA Corporation (092612-128; Hisense)
- Hitachi America, Ltd. Digital Solutions Division (122805-17; Hitachi)
- HMD America, Inc (021419258; Nokia branded cell phone)
- HP, Inc. (122305-11; HP or Hewlett Packard)
- HTC America, Inc. (082112-127; HTC)
- Hyundai Technology Group, Inc. (091120-276; Hyundai)
- Intel Corporation (030317-247; Intel-NUC, Compute Card computer devices, Compute Stick)
- International Business Machines Corporation (011006-25; IBM)
- JVCKENWOOD USA Corporation (121807-60; JVC)
- Kano Computing, Ltd. (1200220-278; Kano)
- KONKA North America, LLC (092920-227; Konka)
- Kyocera International, Inc. (093014195; Kyocera)
- Lenovo (United States), Inc. (Lenovo, Medion, Lavie)
- LG Electronics USA, Inc. (122805-18; LG, LG Signature, Zenith, Goldstar.)
- Microsoft Corporation (32113-143; Microsoft)
- Motorola Mobility (010511-108; Motorola)
- MSI Computer Corp. (081911-118; MSI)
- Netgear, Inc. (090919-289; Meural)
- Nintendo of America, Inc. (040210-98; WiiU, Nintendo 3DS, Nintendo3DS XL, New Nintendo 3DS, New Nintendo 3DS XL, New Nintendo 2DSXL, Nintendo 2DS, NES Classic, SNES Classic, Nintendo Switch)
- Nook Digital LLC (092011-121; Nook)
- NVIDIA (022814-165; Nvidia Shield Tablet, Invidia Laptop)
- OnePlus Technology (Shenzhen) Co. Ltd. (121818-259; OnePlus)
- Optima Technology, Inc. (101818-256; Optima)
- Oracle America, Inc. (Oracle) (122905-20; Oracle/Sun, and MICROS)
- Panasonic Corporation of North America (011706-28; Panasonic Tough Book laptops and tablets)
- Peerless Industries, Inc. (030420-271; Peerless-AV)
- Philips Brand Licensing (032106-33; Philips, Magnavox, Philco, SV2000)
- Pitney Bowes (031414-168; Pitney Bowes)
- Planar Systems, Inc. (013106-30; Planar)
- Plantronics, Inc. (033021-283; Poly)
- PLR IP Holdings LLC (020910-99; Polaroid)
- Promethean, Inc.(040620-273; Promethean)
- RAZER, Inc.(011619-260; RAZER)
- Reliance Communications (071918-255; Orbic)
- Rugged Portable Computers, LLC (032514-167; Maxvision, Rugged Portable Computers)
- Russell Distribution Company LLC (011514-156; Click N Kids, Epik, EVOO, HighQ, Tequnio, Elaio, Quasar)
- Samsung Electronics America, Inc. (020706-31; Samsung)
- Sceptre, Inc. (122810-106; Sceptre, oCosmo, Komodo)
- School Zone Publishing Company, Inc. (03186-233; School Zone, Little Scholar)
- SCHOK LLC (030419-260; SCHOK)
- Seura, Inc. (022416-232; Seura)
- Sharp Electrinucs Corporation (020706-32; Sharp, Sharp Aquos)
- SMART Technologies (031214-166; SMART IFP's)
- snakebyte USA, Imc. (122021-284; Pebble Gear)
- Sony Electronics, Inc. (122205-09; Sony)
- Sonim Technologies (042319-262; Sonim)
- SunBrite TV, LLC. (083111-120; SunBrite TV)
- Supersonic, Inc. (091614-185; Supersonic)
- TCT Mobile, Inc. (093014-197; Alcatel, Alcatel One Touch, TCL tablets)
- TongFang Global, Inc. (031803-85; Westinghouse)
- TTE Technology, Inc. dba TCL North America (080614-177; TCL)
- Toshiba Global Commerce Solutions (TGCS) (050614-172; Toshiba)
- TransCosmos America, Inc. (092415-220; VAIO)
- Ultimate Technology Corporation (083011-119; UTC Retail)
- Venturer Electronics, Inc. (Avita notebook Computers & tablet computer, RCA tablet Computers, RCA Portable DVD players, Vevturer tablet computers)
- ViewSonic Corporation (011006-27; ViewSonic)
- Vingroup USA LLC (080520-275; Vinsmart, Vsmart, AT&T, Cricket)
- VIZIO, Inc. (121807-59; VIZIO)
- Voxx International Corporation (090909-100; Project Nursery (baby monitor)
- VTech Telecommunications Ltd. (052815-214; VTech)
- VTech Electronics North America, LLC (092414-192; VTech, LeapFrog)
- Wacom Technology Corporation (010406-23; Wacom)
- Walmart, Inc. (111307-53; ONN, Motile)
- Wiko USA, Inc. (042519-263; Wiko)
- Wiltronic Corporation (042015-205; iView)
- ZTE USA, Inc. (082714-181; ZTE, AXION by ZTE, Consumer Cellular)
- ZT Systems (072811-116; ZT Systems)

Registered Manufacturers for 2006 – 2020

Contact Info

For more information or concerns regarding the list of registered electronic manufacturers, please contact Caj Didigu at 410-537-3314.

eCycling Topics

- The Department's eCycling Home Page
- Recycling Market Directory

Updated July 7, 2023

Remember - call first and check below for details!

▸ EVEN MORE OPTIONS...

Thanks for visiting MRM. Manufacturers working with MRM in your state provide convenient sites and some brands offer a mailback option as well. Check below for more information and recycling options.

MAILBACK MD: STATE INFORMATION CONTACT MRM

1 6.1 miles

Staples

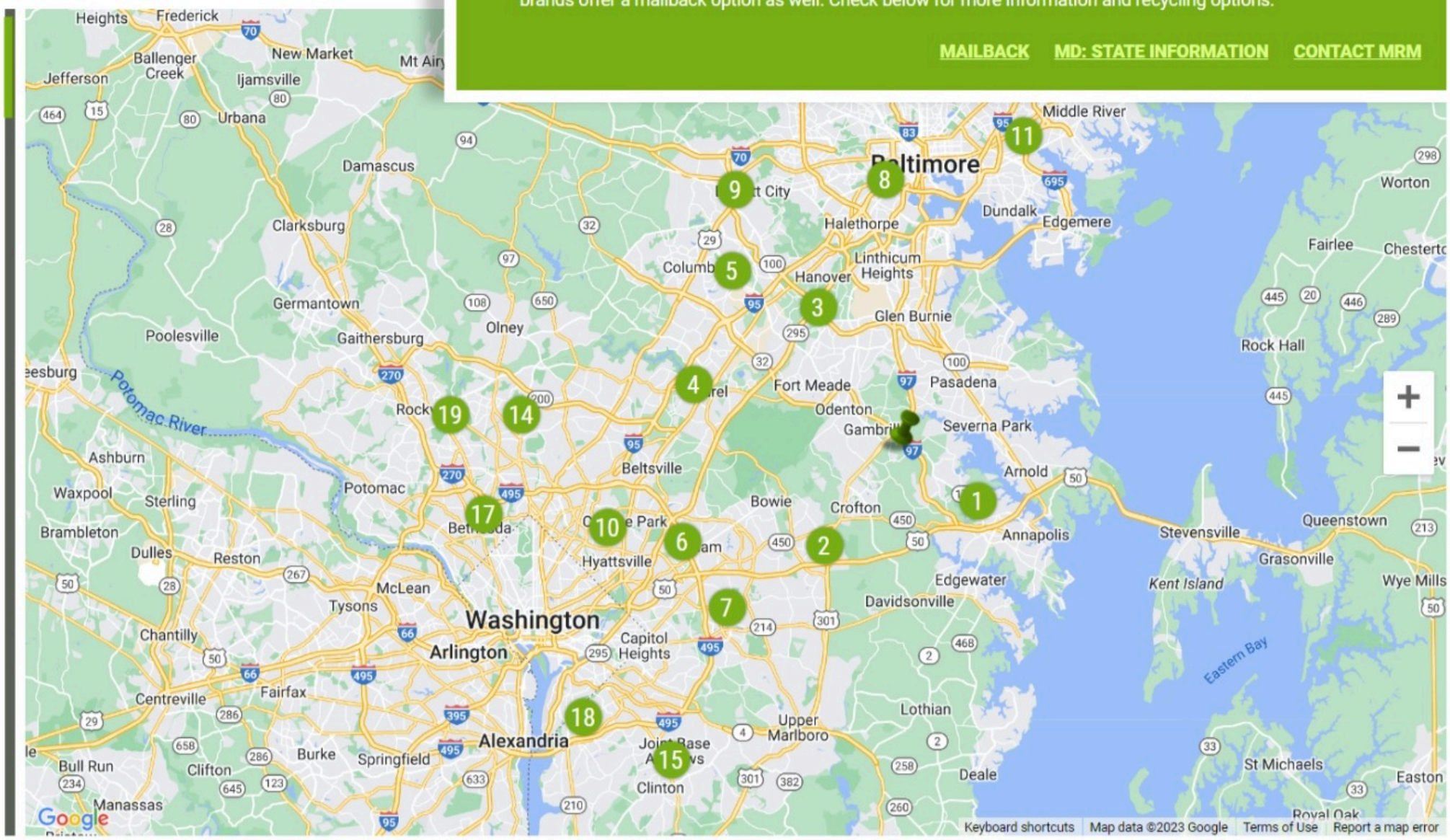
2631 Housley Road
Annapolis, MD 21401

410-266-9757

Hours:
M-F Hours 8:00am-9:00pm Sat Hours 9:00am-9:00pm Sun Hours 10:00am-6:00pm

Site Information
This Site does not accept televisions, please visit the website for more information on accepted devices, accepted devices can be recycled at no cost to Maryland consumers. For more information, click on "Even More Options" on the MRM website to see what other recycling opportunities are available to you.

WEBSITE DIRECTIONS MAP



Remember - call first and check below for details!

▸ EVEN MORE OPTIONS...

Thanks for visiting MRM. Manufacturers working with MRM in your state provide convenient sites and some brands offer a mailback option as well. Check below for more information and recycling options.

MAILBACK MD: STATE INFORMATION CONTACT MRM

2 7.9 miles

Staples

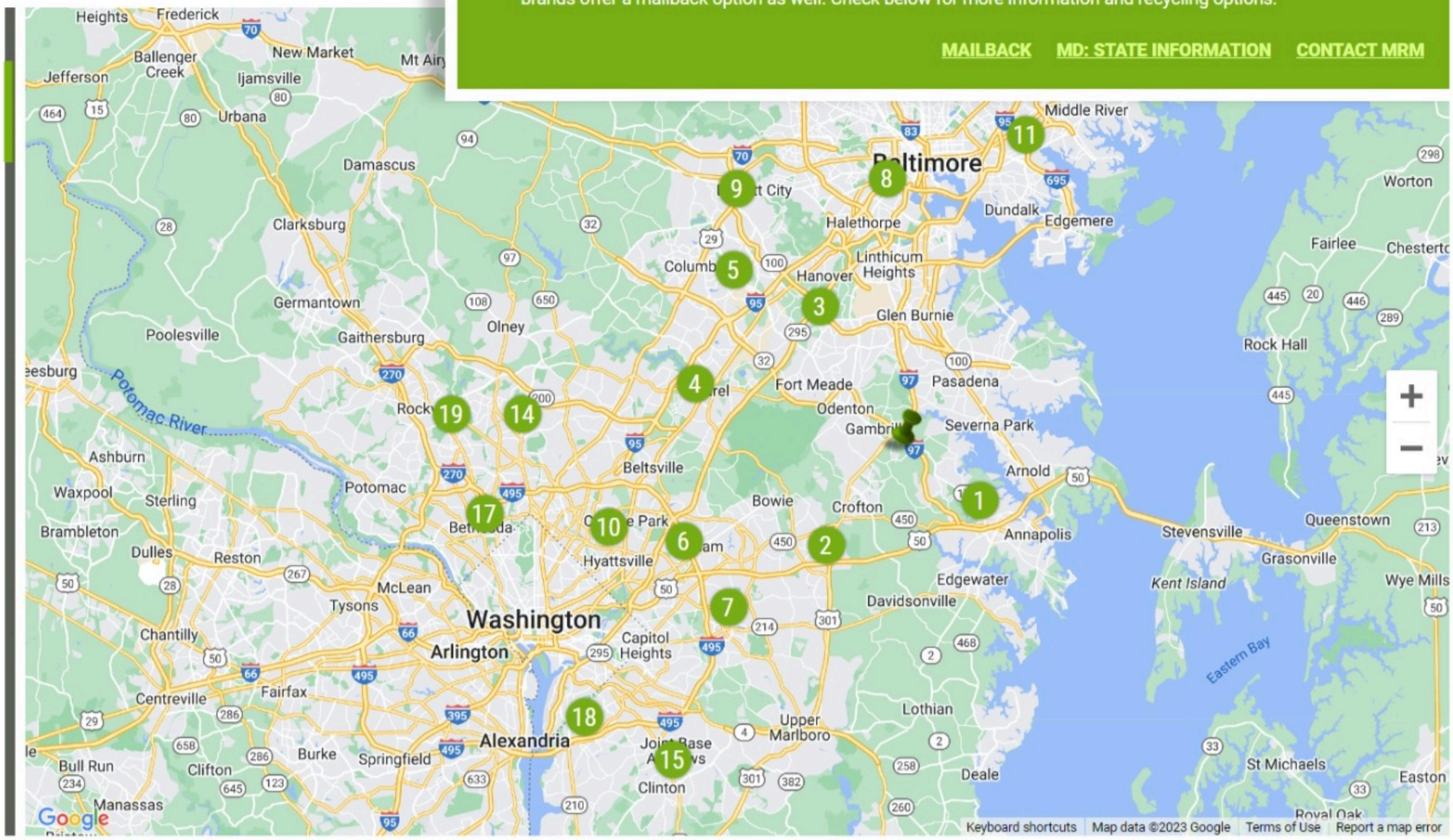
4450 Mitchellville Rd
Bowie, MD 20716

301-352-5410

Hours:
M-F Hours 8:00am-9:00pm Sat Hours 9:00am-9:00pm Sun Hours 10:00am-6:00pm

Site Information
This Site does not accept televisions, please visit the website for more information on accepted devices, accepted devices can be recycled at no cost to Maryland consumers. For more information, click on "Even More Options" on the MRM website to see what other recycling opportunities are available to you.

WEBSITE DIRECTIONS MAP



Remember - call first and check below for details!

▸ EVEN MORE OPTIONS...

Thanks for visiting MRM. Manufacturers working with MRM in your state provide convenient sites and some brands offer a mailback option as well. Check below for more information and recycling options.

MAILBACK MD: STATE INFORMATION CONTACT MRM

3 8.7 miles

Staples

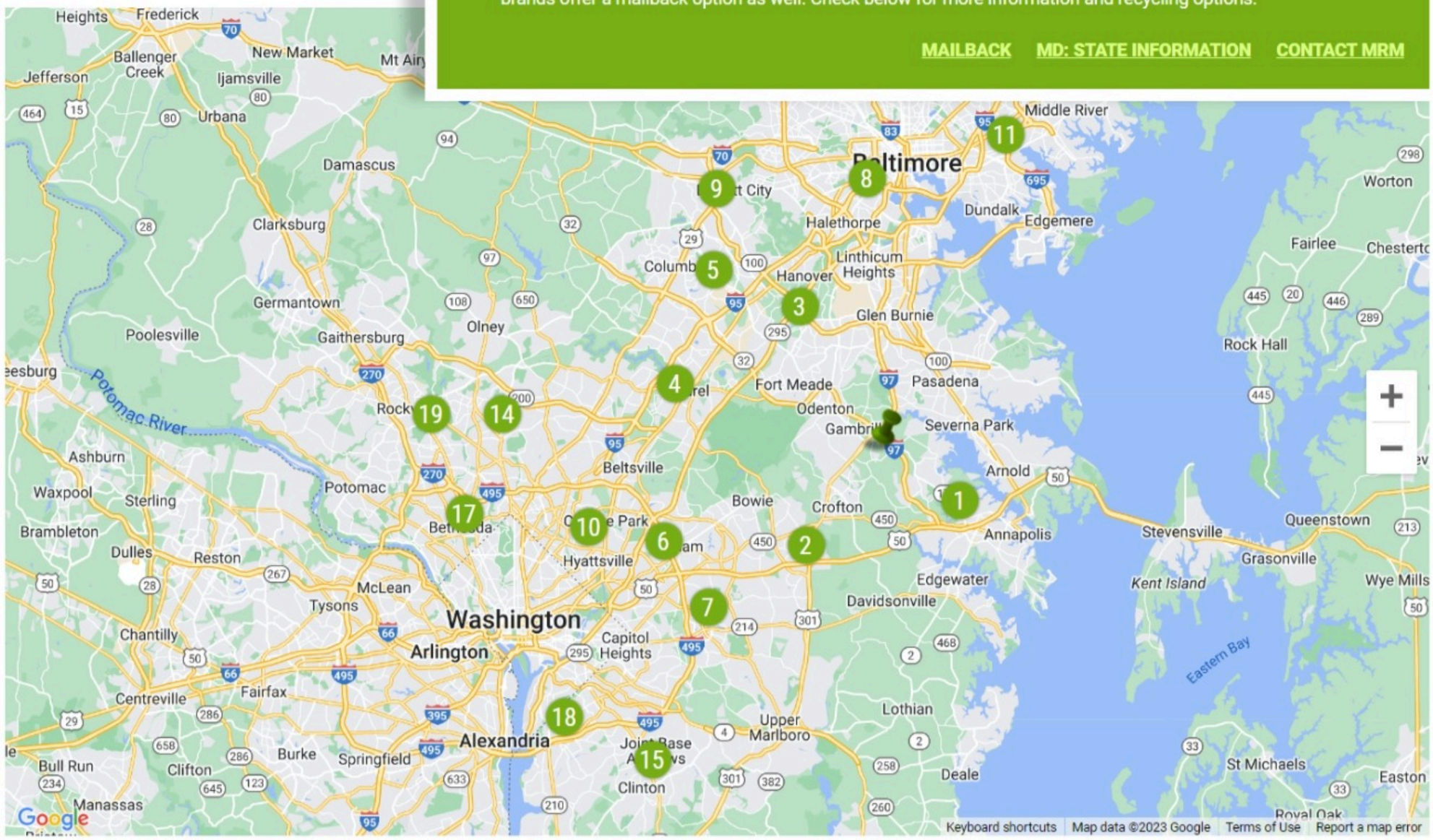
7661 Arundel Mills Blvd
Hanover, MD 21076

410-799-4828

Hours:
M-F Hours 9:00am-8:00pm Sat Hours 9:00am-6:00pm Sun Hours 11:00am-6:00pm

Site Information
This Site does not accept televisions, please visit the website for more information on accepted devices, accepted devices can be recycled at no cost to Maryland consumers. For more information, click on "Even More Options" on the MRM website to see what other recycling opportunities are available to you.

WEBSITE DIRECTIONS MAP



Remember - call first and check below for details!

▸ EVEN MORE OPTIONS...

Thanks for visiting MRM. Manufacturers working with MRM in your state provide convenient sites and some brands offer a mailback option as well. Check below for more information and recycling options.

MAILBACK MD: STATE INFORMATION CONTACT MRM

4 12.3 miles

Staples

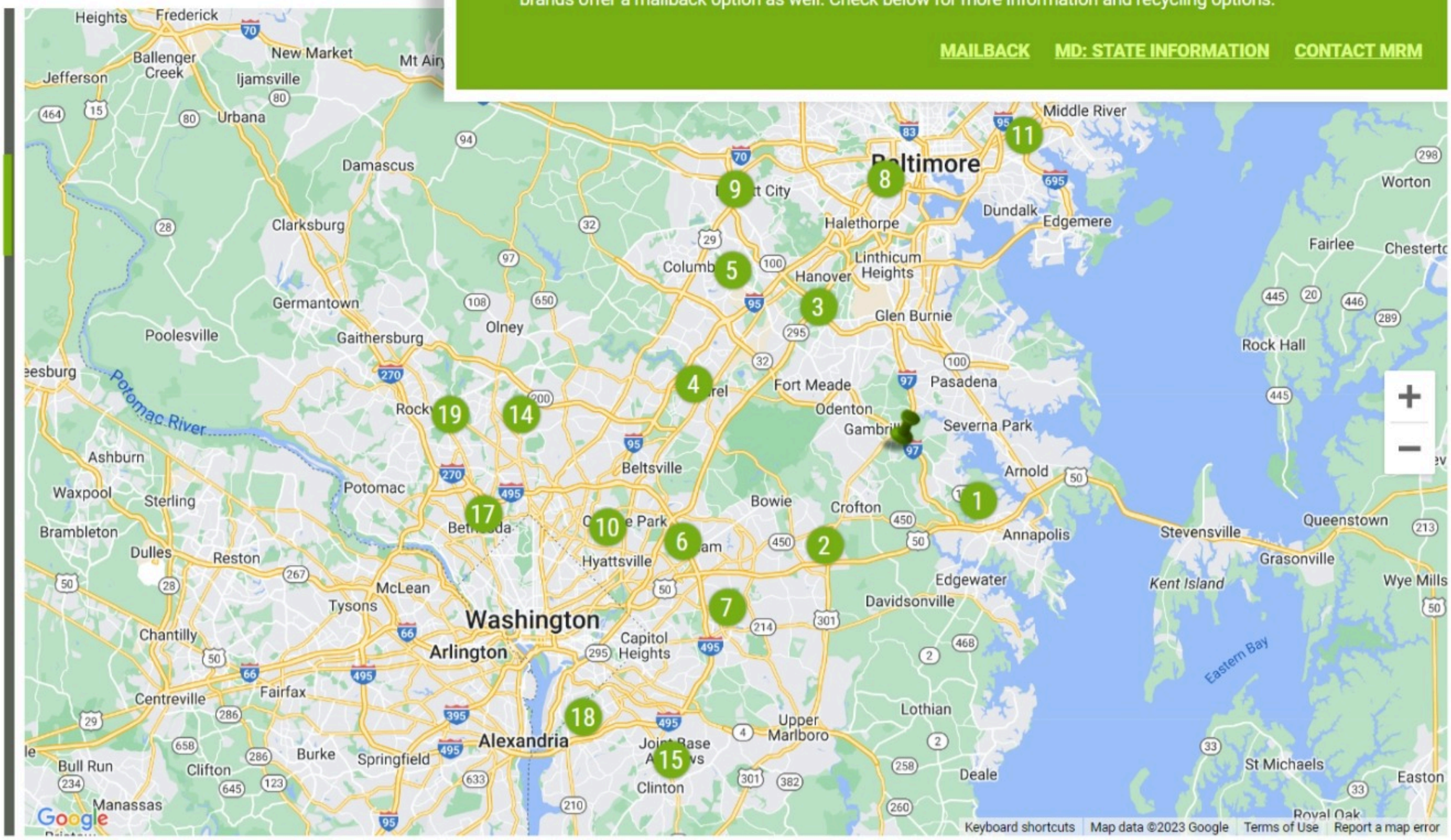
14280 Baltimore Ave (Rt. 1)
Laurel, MD 20707

301-604-4991

Hours:
M-F Hours 8:00am-9:00pm Sat Hours 8:00am-8:00pm Sun Hours 10:00am-6:00pm

Site Information
This Site does not accept televisions, please visit the website for more information on accepted devices, accepted devices can be recycled at no cost to Maryland consumers. For more information, click on "Even More Options" on the MRM website to see what other recycling opportunities are available to you.

WEBSITE DIRECTIONS MAP



Remember - call first and check below for details!

▸ EVEN MORE OPTIONS...

Thanks for visiting MRM. Manufacturers working with MRM in your state provide convenient sites and some brands offer a mailback option as well. Check below for more information and recycling options.

MAILBACK MD: STATE INFORMATION CONTACT MRM

WEBSITE DIRECTIONS MAP

5 13.5 miles

Staples

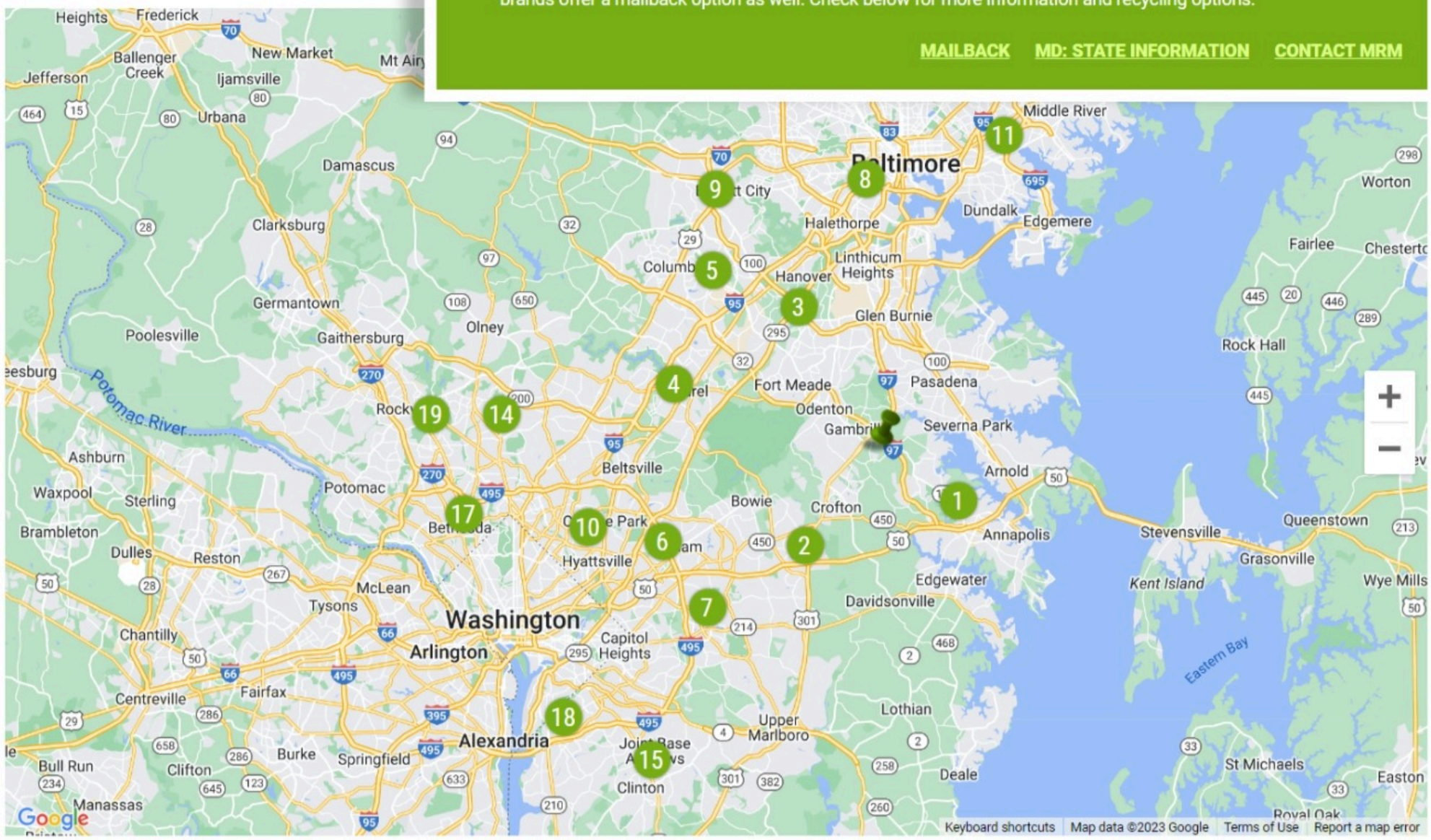
9091 Snowden River Pkwy
Columbia, MD 21046

410-312-1575

Hours:
M-F Hours 8:00am-9:00pm Sat Hours 8:00am-8:00pm Sun Hours 10:00am-6:00pm

Site Information
This Site does not accept televisions, please visit the website for more information on accepted devices, accepted devices can be recycled at no cost to Maryland consumers. For more information, click on "Even More Options" on the MRM website to see what other recycling opportunities are available to you.

WEBSITE DIRECTIONS MAP



Remember - call first and check below for details!

▸ EVEN MORE OPTIONS...

Thanks for visiting MRM. Manufacturers working with MRM in your state provide convenient sites and some brands offer a mailback option as well. Check below for more information and recycling options.

MAILBACK MD: STATE INFORMATION CONTACT MRM

6 14.1 miles

Staples

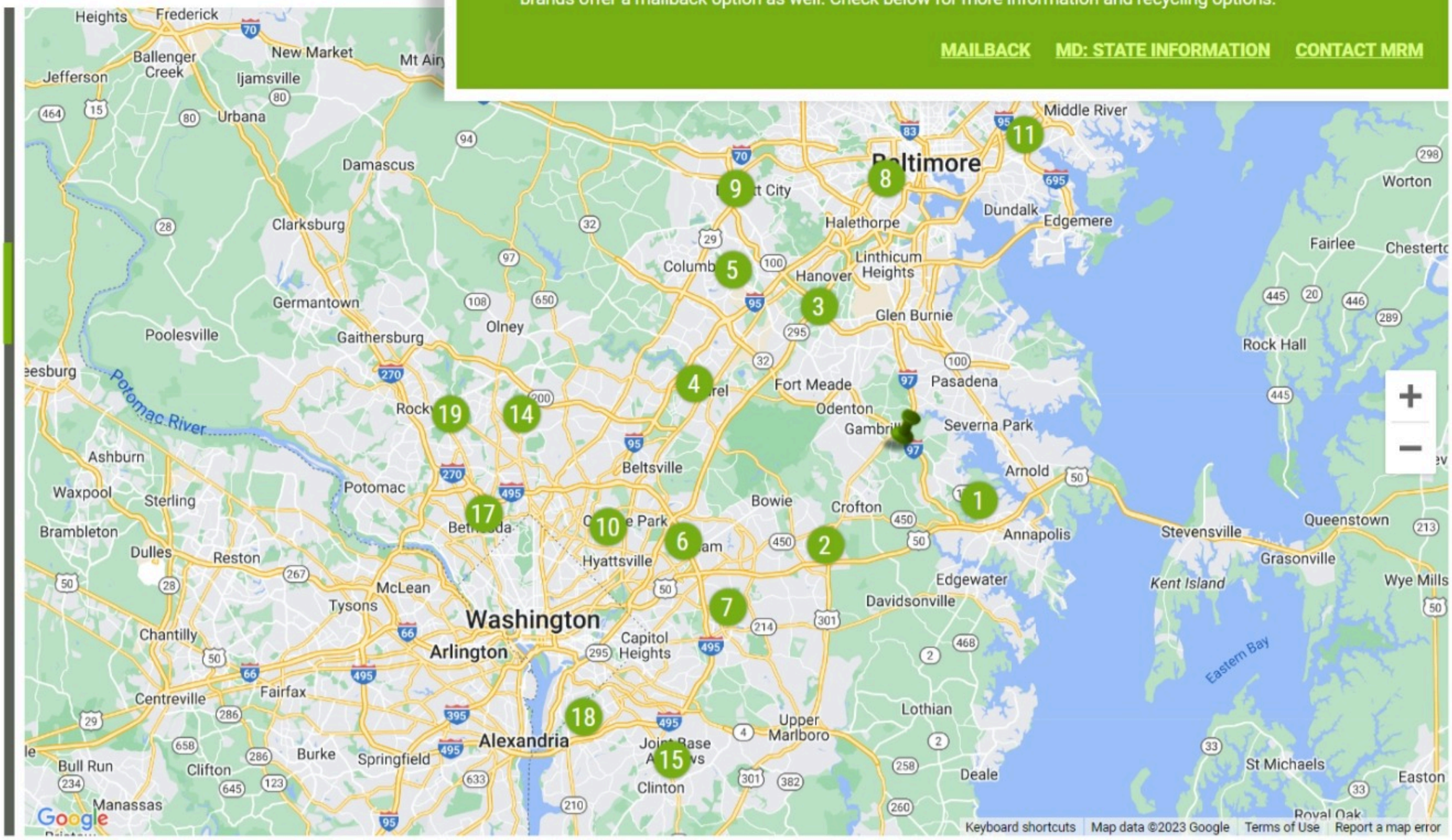
7933 Annapolis Road
Lanham, MD 20706

301-306-4530

Hours:
M-F Hours 8:00am-8:00pm Sat Hours 9:00am-6:00pm Sun Hours 11:00am-6:00pm

Site Information
This Site does not accept televisions, please visit the website for more information on accepted devices, accepted devices can be recycled at no cost to Maryland consumers. For more information, click on "Even More Options" on the MRM website to see what other recycling opportunities are available to you.

WEBSITE DIRECTIONS MAP



Remember - call first and check below for details!

▸ EVEN MORE OPTIONS...

Thanks for visiting MRM. Manufacturers working with MRM in your state provide convenient sites and some brands offer a mailback option as well. Check below for more information and recycling options.

MAILBACK MD: STATE INFORMATION CONTACT MRM

7 14.3 miles

Staples

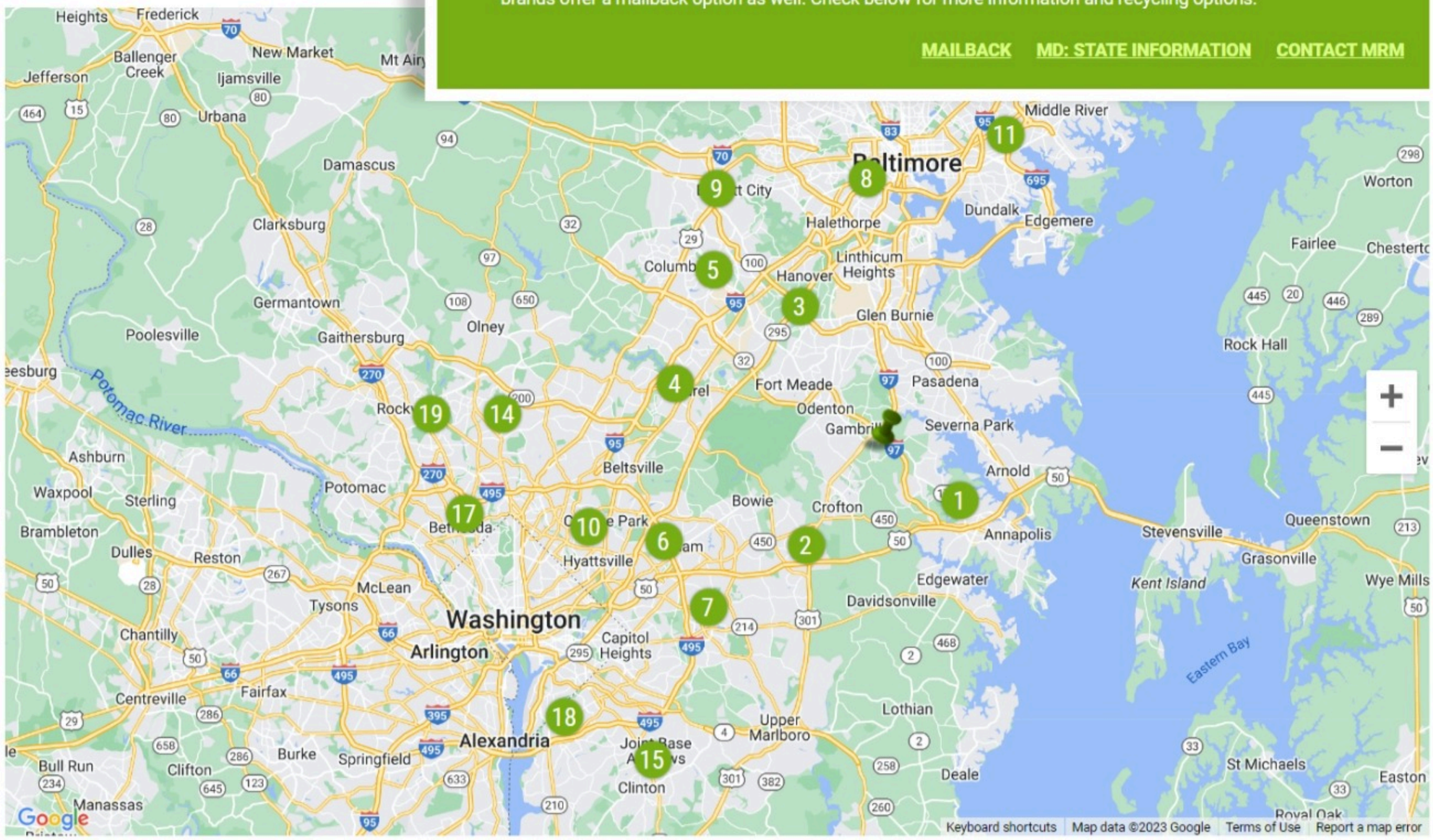
10530 Campus Way South
Largo, MD 20774

301-336-5861

Hours:
M-F Hours 8:00am-9:00pm Sat Hours 8:00am-9:00pm Sun Hours 10:00am-6:00pm

Site Information
This Site does not accept televisions, please visit the website for more information on accepted devices, accepted devices can be recycled at no cost to Maryland consumers. For more information, click on "Even More Options" on the MRM website to see what other recycling opportunities are available to you.

WEBSITE DIRECTIONS MAP



Remember - call first and check below for details!

▸ EVEN MORE OPTIONS...

Thanks for visiting MRM. Manufacturers working with MRM in your state provide convenient sites and some brands offer a mailback option as well. Check below for more information and recycling options.

MAILBACK MD: STATE INFORMATION CONTACT MRM

8 14.8 miles

eRevival Recycling

2915 Whittington Ave.
Baltimore, MD 21230

800 696 8042

Hours:
Please call for hours

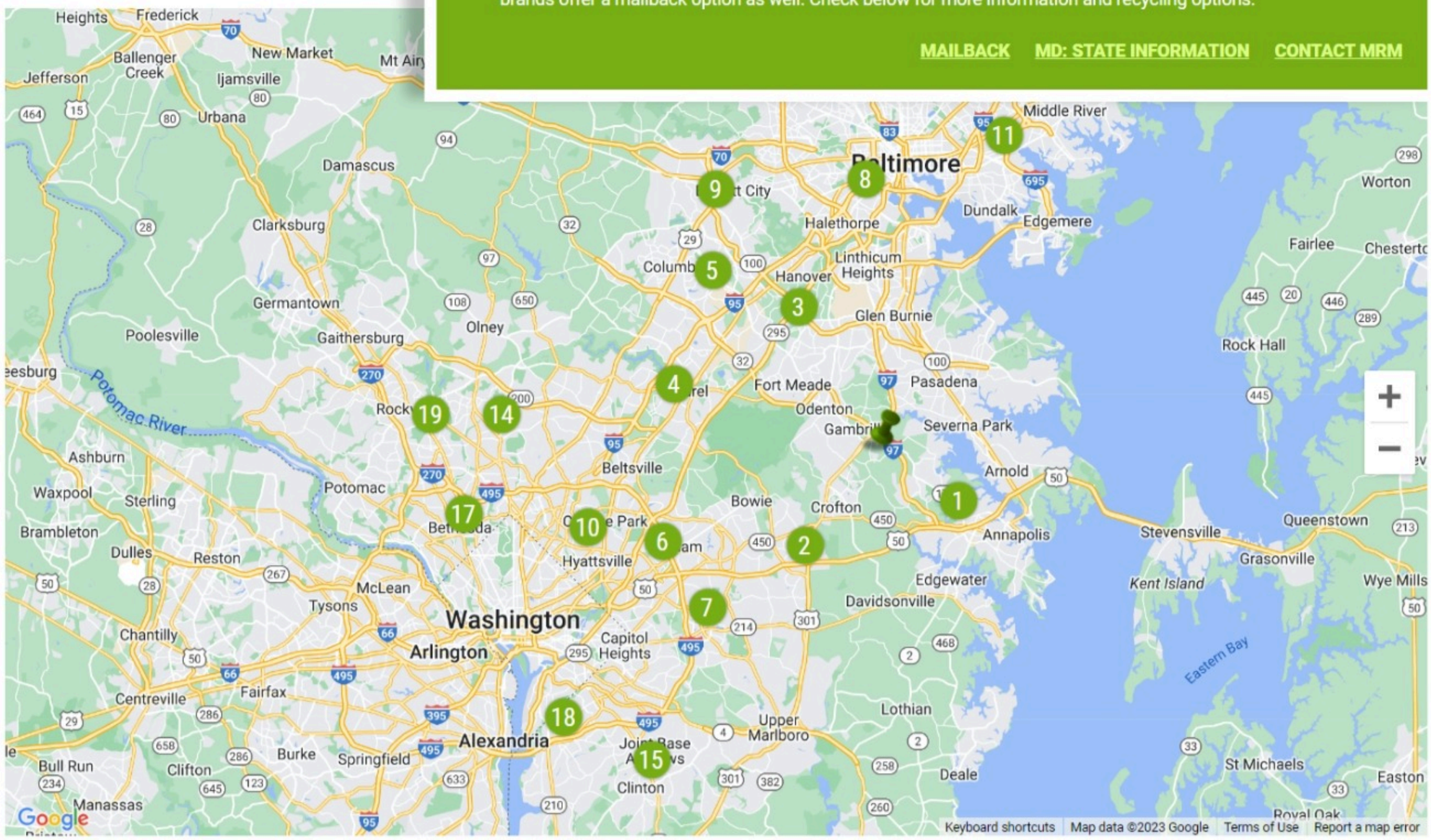
Site Information
This site accepts all covered electronics (TVs, Computers, Printers etc.) at no charge for Bloomfield residents only.

DIRECTIONS MAP

9 17.1 miles

Staples

4380-B Montgomery Road
Ellicott City, MD 21043



Remember - call first and check below for details!

▸ EVEN MORE OPTIONS...

Thanks for visiting MRM. Manufacturers working with MRM in your state provide convenient sites and some brands offer a mailback option as well. Check below for more information and recycling options.

MAILBACK MD: STATE INFORMATION CONTACT MRM

9 17.1 miles

Staples

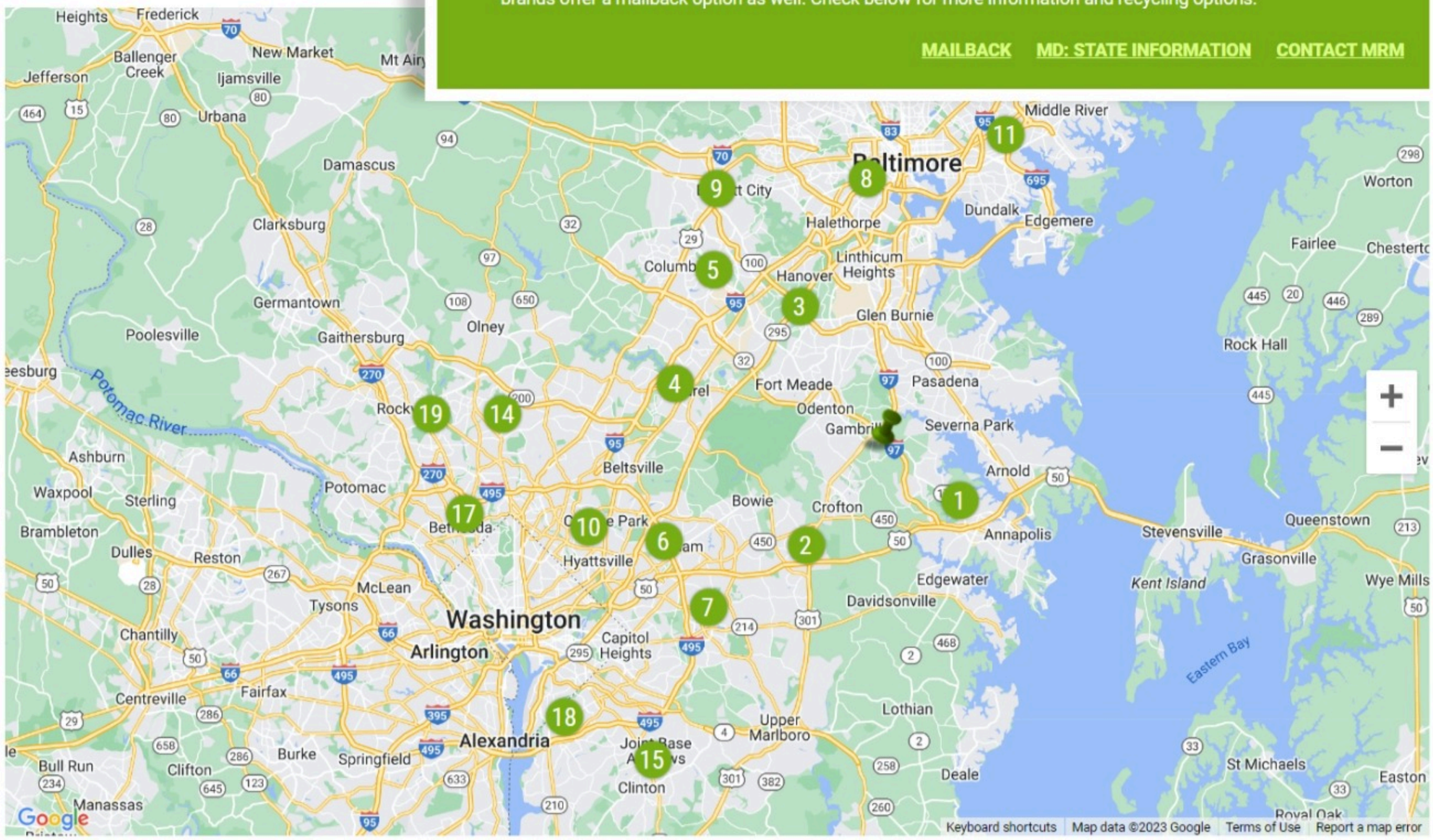
4380-B Montgomery Road
Ellicott City, MD 21043

410-461-1465

Hours:
M-F Hours 8:00am-9:00pm Sat Hours 9:00am-9:00pm Sun Hours 10:00am-7:00pm

Site Information
This Site does not accept televisions, please visit the website for more information on accepted devices, accepted devices can be recycled at no cost to Maryland consumers. For more information, click on "Even More Options" on the MRM website to see what other recycling opportunities are available to you.

WEBSITE DIRECTIONS MAP



Remember - call first and check below for details!

▸ EVEN MORE OPTIONS...

Thanks for visiting MRM. Manufacturers working with MRM in your state provide convenient sites and some brands offer a mailback option as well. Check below for more information and recycling options.

MAILBACK MD: STATE INFORMATION CONTACT MRM

10 17.8 miles

Staples

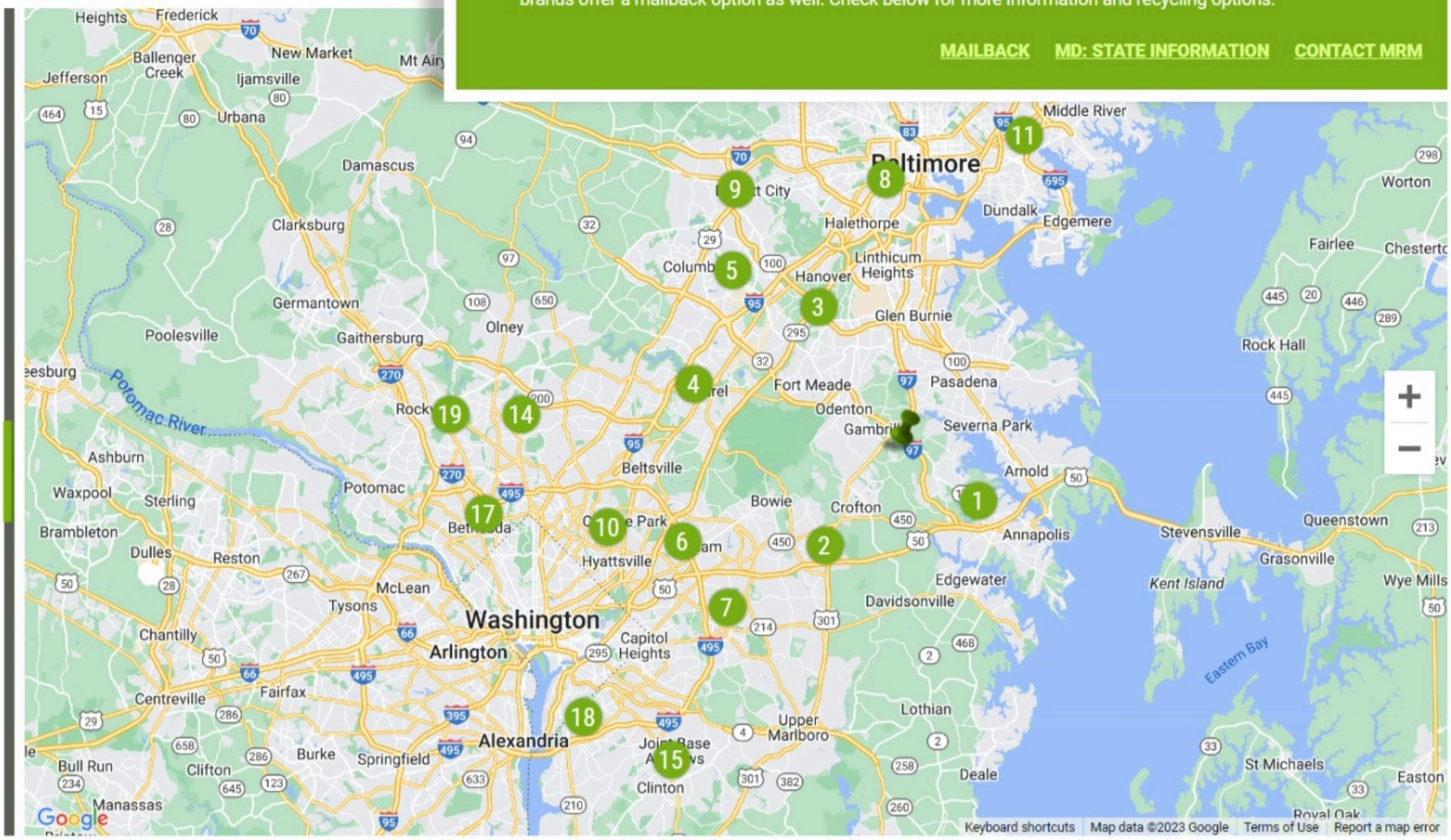
2950 Belcrest Center Drive
Hyattsville, MD 20782

301-559-2494

Hours:
M-F Hours 9:00am-8:00pm Sat Hours 9:00am-6:00pm Sun Hours 10:00am-6:00pm

Site Information
This Site does not accept televisions, please visit the website for more information on accepted devices, accepted devices can be recycled at no cost to Maryland consumers. For more information, click on "Even More Options" on the MRM website to see what other recycling opportunities are available to you.

WEBSITE DIRECTIONS MAP



Remember - call first and check below for details!

▸ EVEN MORE OPTIONS...

Thanks for visiting MRM. Manufacturers working with MRM in your state provide convenient sites and some brands offer a mailback option as well. Check below for more information and recycling options.

MAILBACK MD: STATE INFORMATION CONTACT MRM

11 18.7 miles

Staples

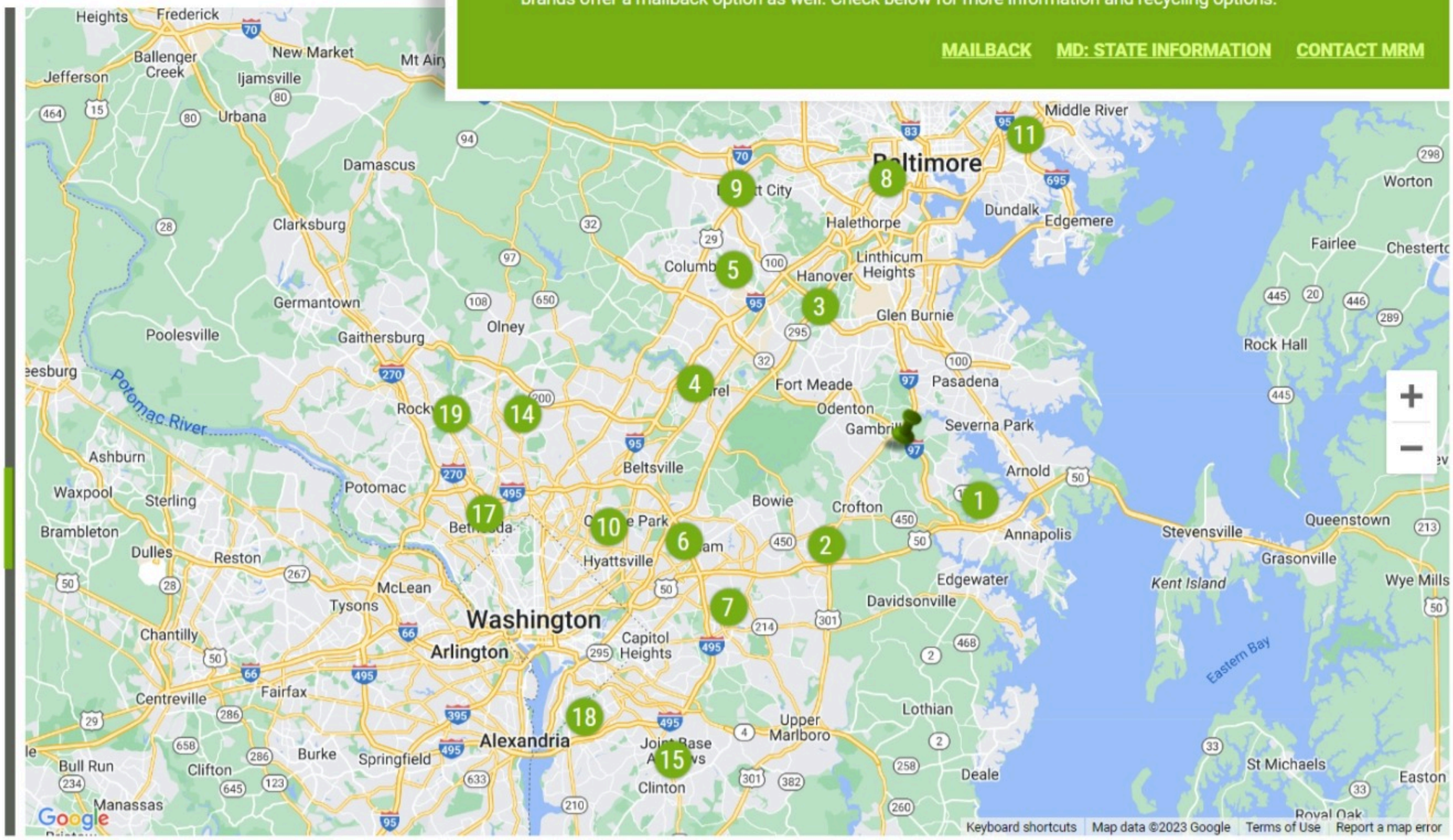
7929 Eastern Avenue
Baltimore, MD 21224

410-288-3391

Hours:
M-F Hours 8:00am-9:00pm Sat Hours 9:00am-8:00pm Sun Hours 10:00am-6:00pm

Site Information
This Site does not accept televisions, please visit the website for more information on accepted devices, accepted devices can be recycled at no cost to Maryland consumers. For more information, click on "Even More Options" on the MRM website to see what other recycling opportunities are available to you.

WEBSITE DIRECTIONS MAP



Remember - call first and check below for details!

▸ EVEN MORE OPTIONS...

Thanks for visiting MRM. Manufacturers working with MRM in your state provide convenient sites and some brands offer a mailback option as well. Check below for more information and recycling options.

MAILBACK MD: STATE INFORMATION CONTACT MRM

13 21.9 miles

Staples

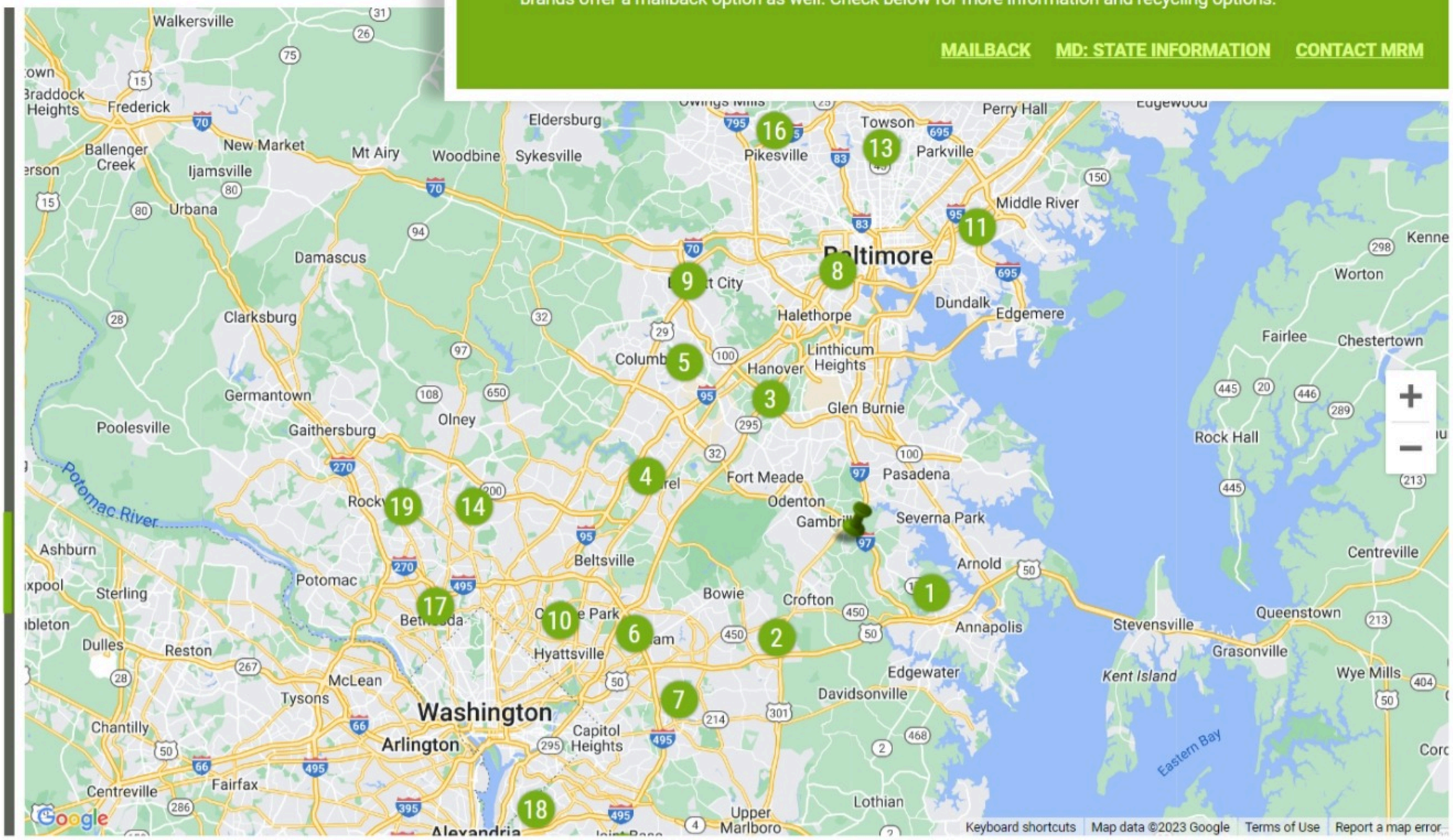
5835 York Road
Baltimore, MD 21212

410-323-6235

Hours:
M-F Hours 8:00am-9:00pm Sat Hours 9:00am-9:00pm Sun Hours 10:00am-6:00pm

Site Information
This Site does not accept televisions, please visit the website for more information on accepted devices, accepted devices can be recycled at no cost to Maryland consumers. For more information, click on "Even More Options" on the MRM website to see what other recycling opportunities are available to you.

WEBSITE DIRECTIONS MAP



Remember - call first and check below for details!

▸ EVEN MORE OPTIONS...

Thanks for visiting MRM. Manufacturers working with MRM in your state provide convenient sites and some brands offer a mailback option as well. Check below for more information and recycling options.

MAILBACK MD: STATE INFORMATION CONTACT MRM

14 22 miles

Staples

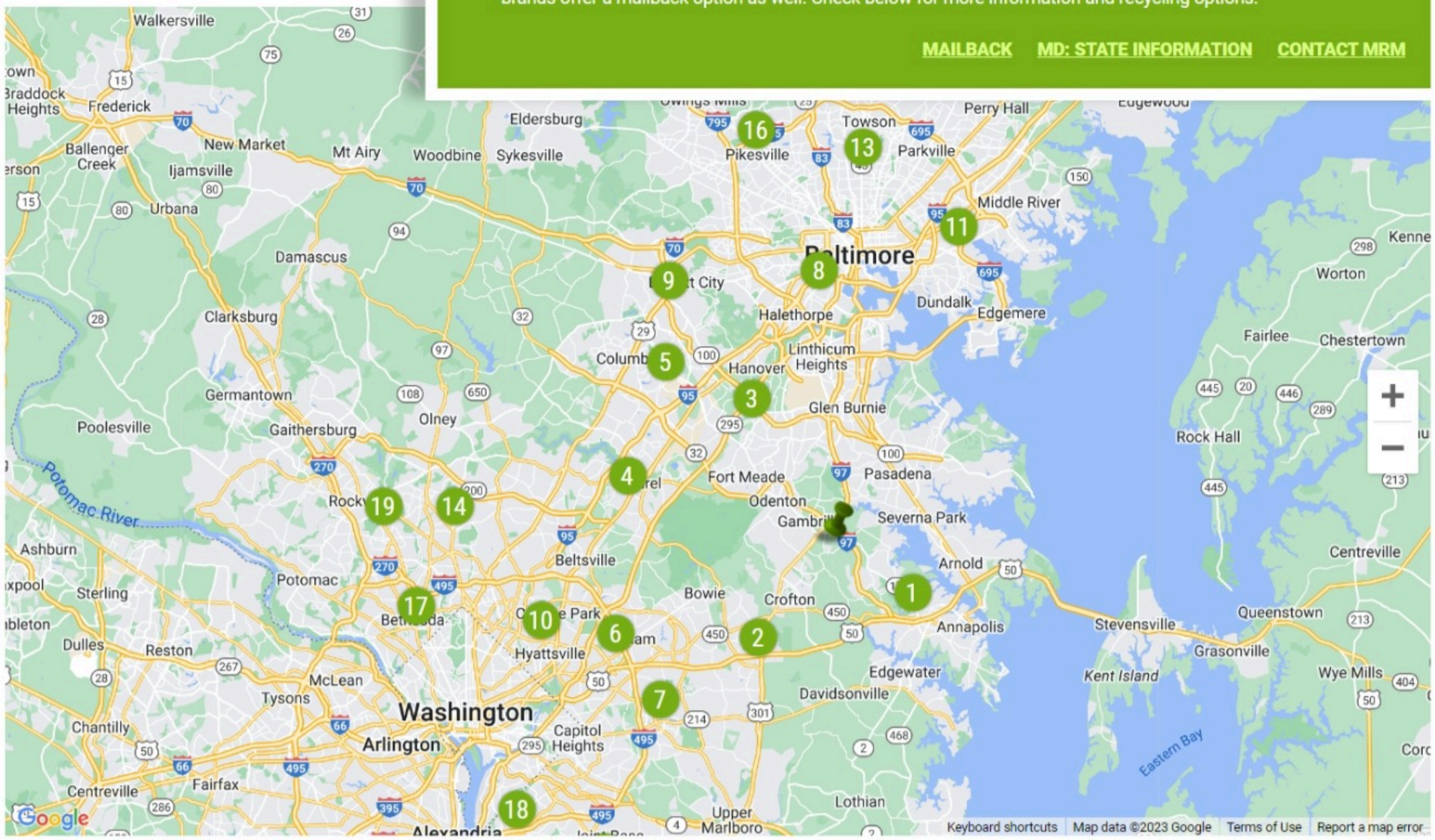
12389 Georgia Ave
Silver Spring, MD 20906

301-949-6501

Hours:
M-F Hours 8:00am-9:00pm Sat Hours 9:00am-8:00pm Sun Hours 10:00am-6:00pm

Site Information
This Site does not accept televisions, please visit the website for more information on accepted devices, accepted devices can be recycled at no cost to Maryland consumers. For more information, click on "Even More Options" on the MRM website to see what other recycling opportunities are available to you.

WEBSITE DIRECTIONS MAP



MRM

Contact us toll free:

888-769-0149

E-mail: info@mrmRecycling.com

LEGAL DISCLAIMERS

Remember - call first and check below for details!

▸ EVEN MORE OPTIONS...

Thanks for visiting MRM. Manufacturers working with MRM in your state provide convenient sites and some brands offer a mailback option as well. Check below for more information and recycling options.

MAILBACK MD: STATE INFORMATION CONTACT MRM

15 23.2 miles

Staples

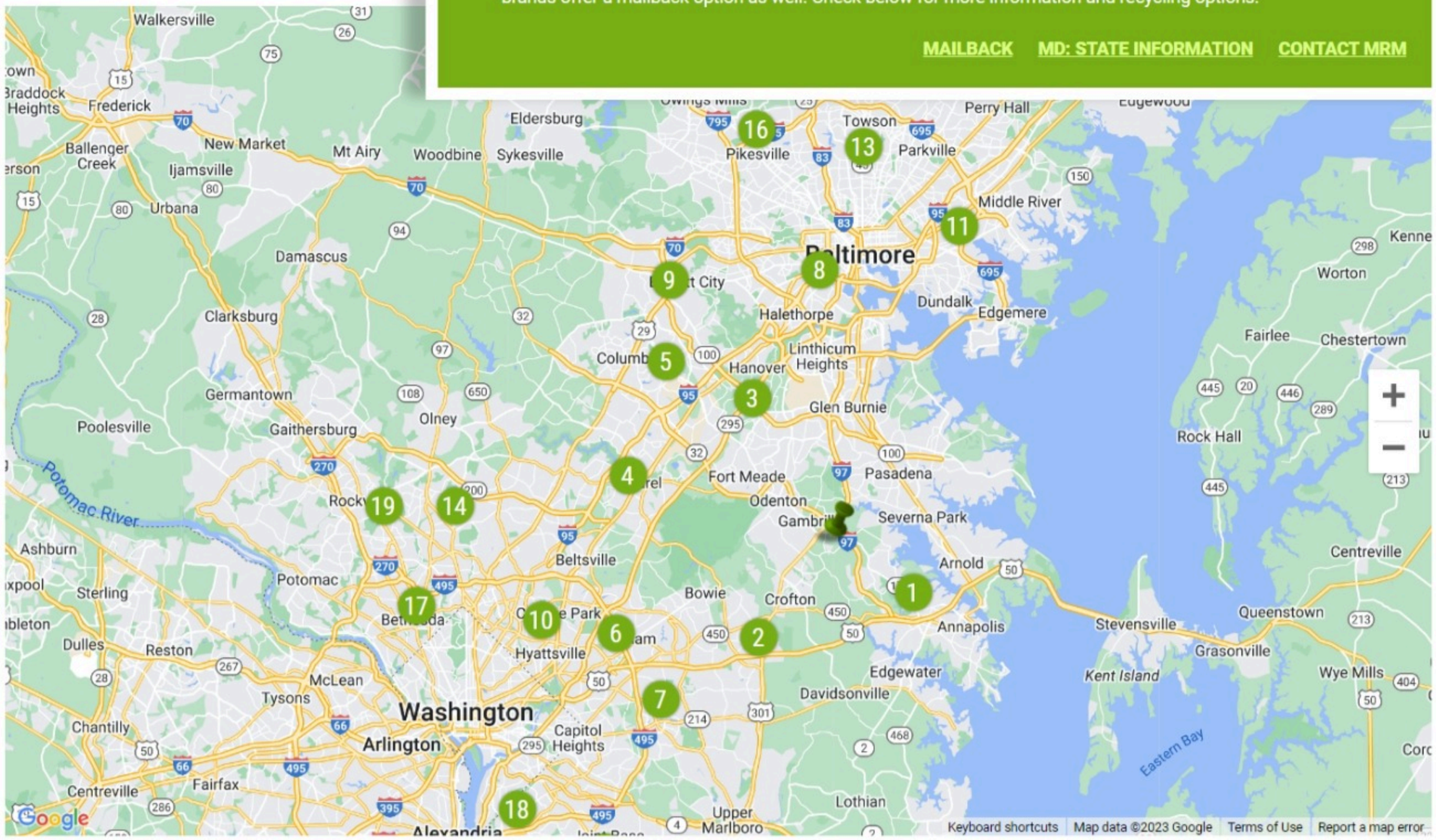
8861 Branch Ave
Clinton, MD 20735

301-856-7027

Hours:
M-F Hours 8:00am-9:00pm Sat Hours 8:00am-8:00pm Sun Hours 10:00am-6:00pm

Site Information
This Site does not accept televisions, please visit the website for more information on accepted devices, accepted devices can be recycled at no cost to Maryland consumers. For more information, click on "Even More Options" on the MRM website to see what other recycling opportunities are available to you.

WEBSITE DIRECTIONS MAP



Remember - call first and check below for details!

▸ EVEN MORE OPTIONS...

Thanks for visiting MRM. Manufacturers working with MRM in your state provide convenient sites and some brands offer a mailback option as well. Check below for more information and recycling options.

MAILBACK MD: STATE INFORMATION CONTACT MRM

16 23.3 miles

Staples

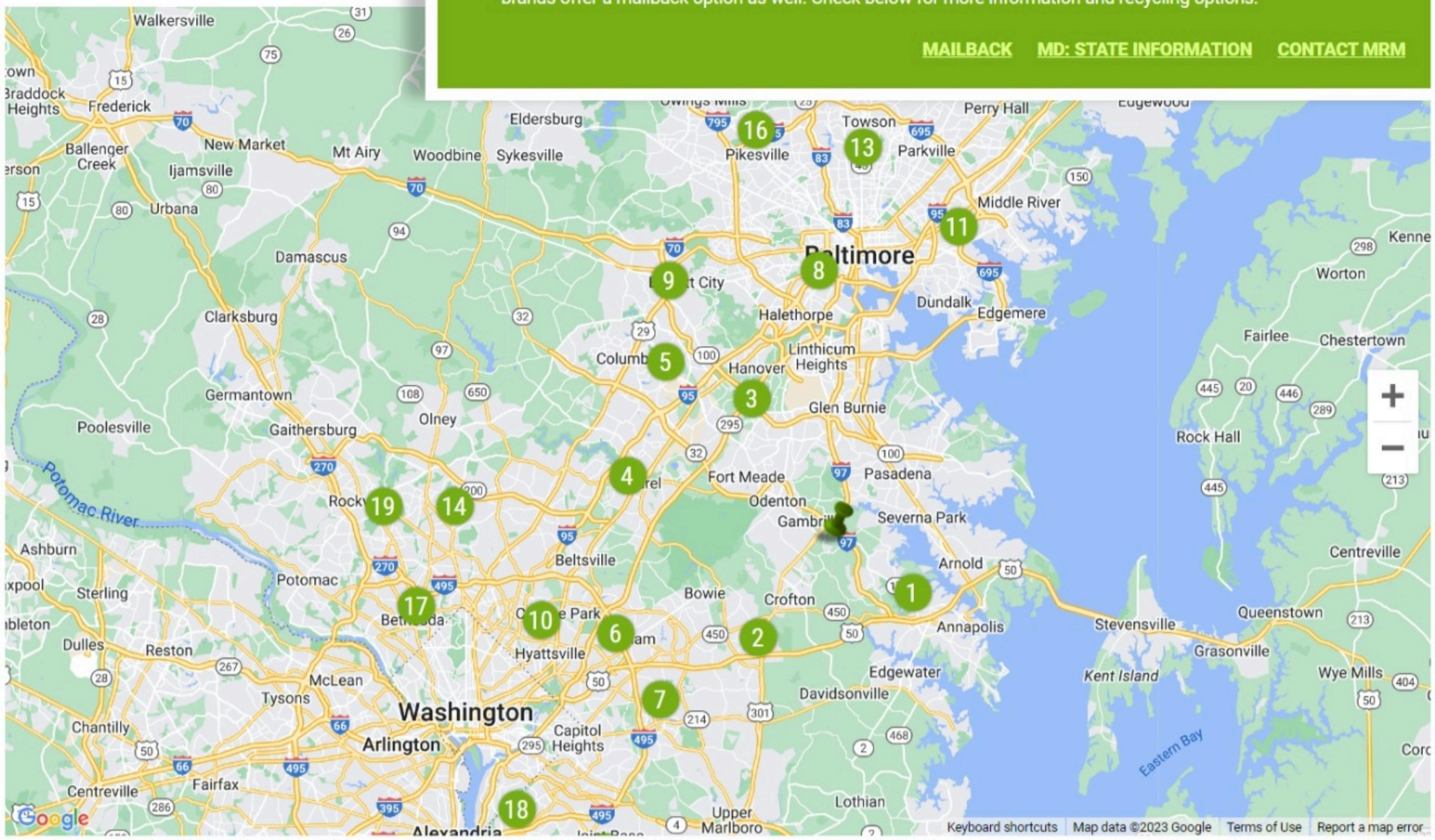
1340-1354 Reisterstown Rd
Pikesville, MD 21208

410-484-0472

Hours:
M-F Hours 8:00am-9:00pm Sat Hours 9:00am-8:00pm Sun Hours 10:00am-7:00pm

Site Information
This Site does not accept televisions, please visit the website for more information on accepted devices, accepted devices can be recycled at no cost to Maryland consumers. For more information, click on "Even More Options" on the MRM website to see what other recycling opportunities are available to you.

WEBSITE DIRECTIONS MAP



Remember - call first and check below for details!

▸ EVEN MORE OPTIONS...

Thanks for visiting MRM. Manufacturers working with MRM in your state provide convenient sites and some brands offer a mailback option as well. Check below for more information and recycling options.

MAILBACK MD: STATE INFORMATION CONTACT MRM

17 24.6 miles

Staples

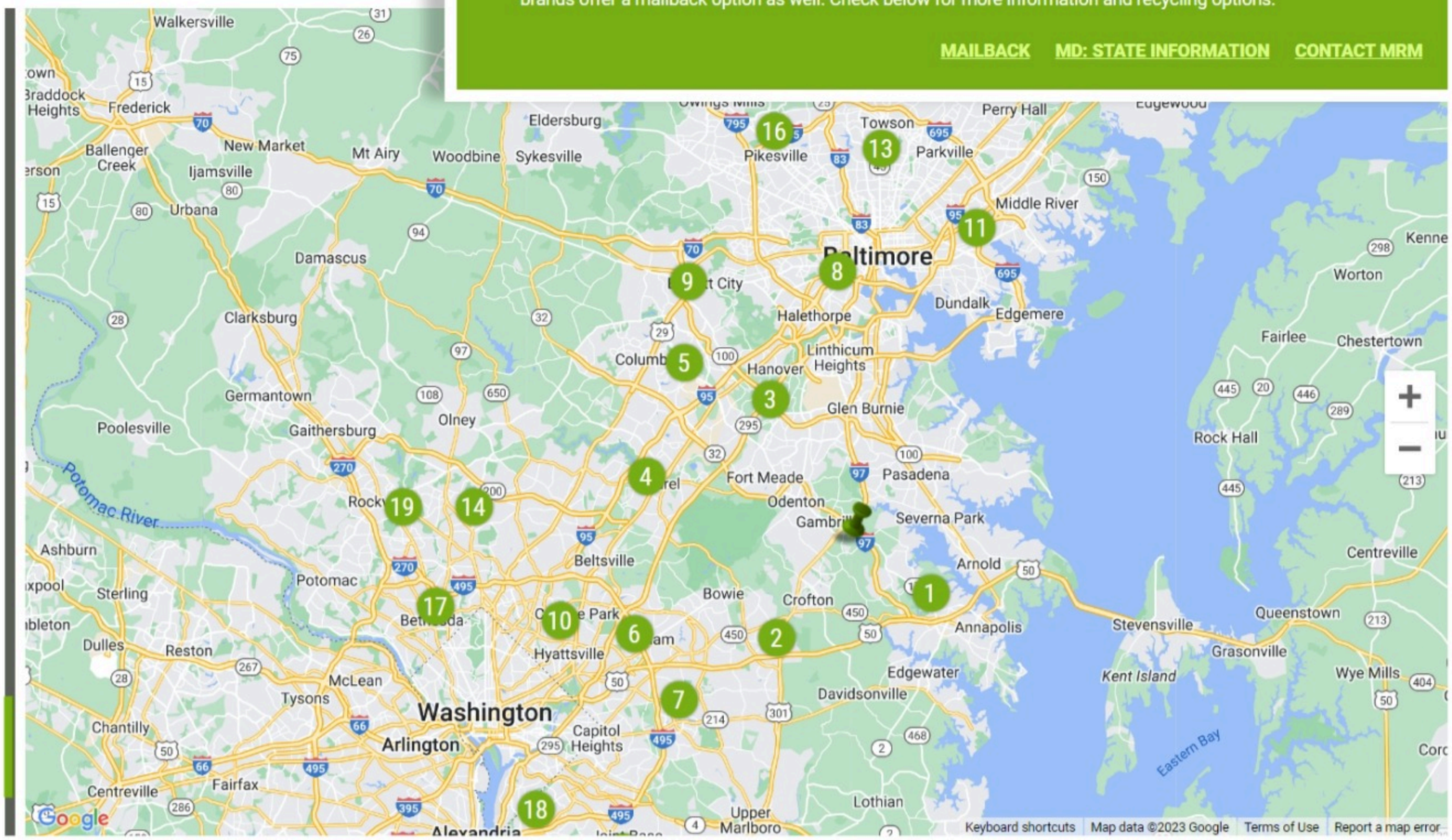
6800 Wisconsin Ave
Chevy Chase, MD 20815

301-652-3174

Hours:
M-F Hours 8:00am-9:00pm Sat Hours 9:00am-8:00pm Sun Hours 10:00am-6:00pm

Site Information
This Site does not accept televisions, please visit the website for more information on accepted devices, accepted devices can be recycled at no cost to Maryland consumers. For more information, click on "Even More Options" on the MRM website to see what other recycling opportunities are available to you.

WEBSITE DIRECTIONS MAP



Remember - call first and check below for details!

▸ EVEN MORE OPTIONS...

Thanks for visiting MRM. Manufacturers working with MRM in your state provide convenient sites and some brands offer a mailback option as well. Check below for more information and recycling options.

MAILBACK MD: STATE INFORMATION CONTACT MRM

18 24.7 miles

Staples

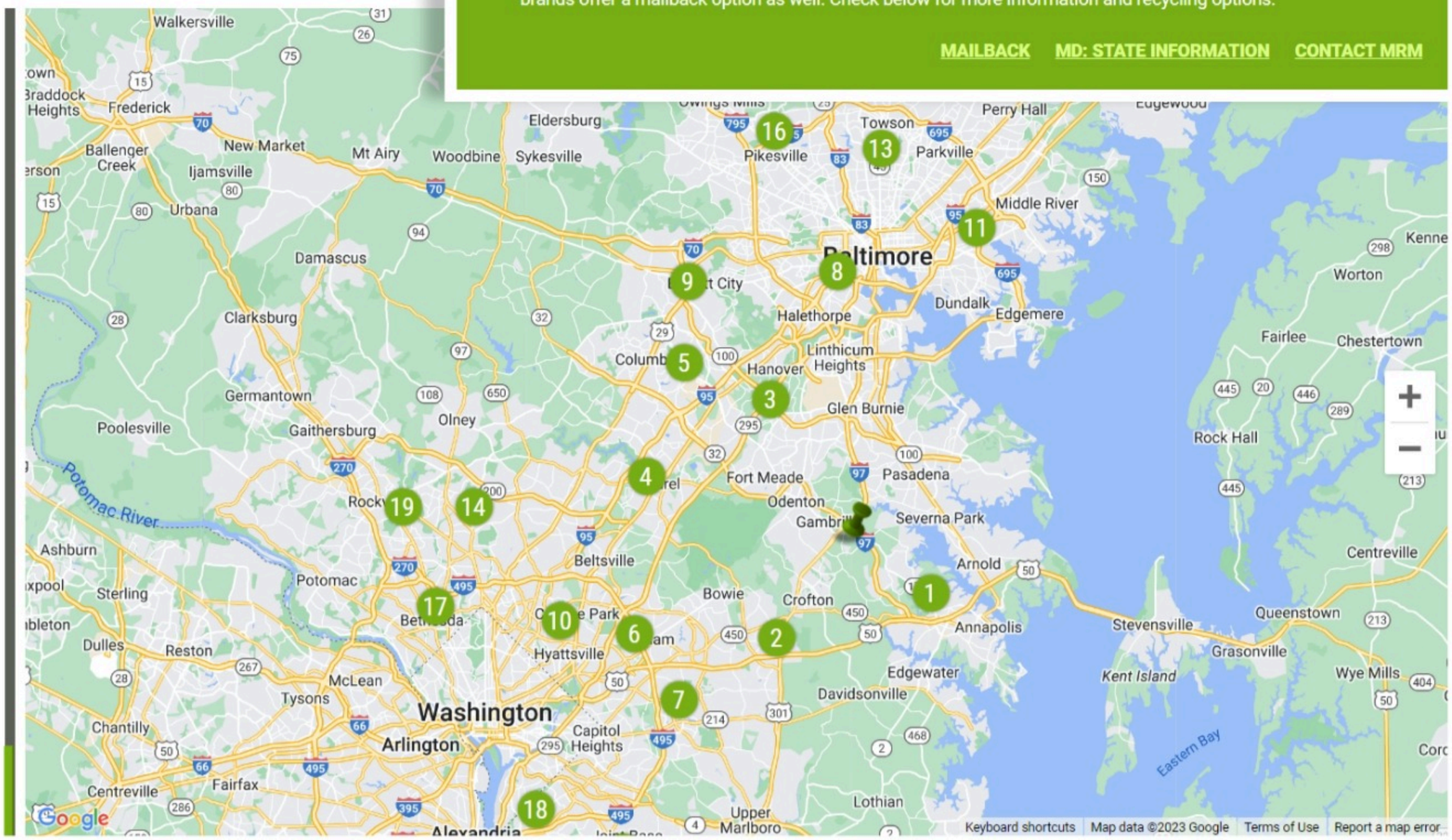
6139 Oxon Hill Road
Oxon Hill, MD 20745

301-749-6567

Hours:
M-F Hours 8:00am-9:00pm Sat Hours 9:00am-9:00pm Sun Hours 10:00am-7:00pm

Site Information
This Site does not accept televisions, please visit the website for more information on accepted devices, accepted devices can be recycled at no cost to Maryland consumers. For more information, click on "Even More Options" on the MRM website to see what other recycling opportunities are available to you.

WEBSITE DIRECTIONS MAP



Remember - call first and check below for details!

▸ EVEN MORE OPTIONS...

Thanks for visiting MRM. Manufacturers working with MRM in your state provide convenient sites and some brands offer a mailback option as well. Check below for more information and recycling options.

MAILBACK MD: STATE INFORMATION CONTACT MRM

19 26.1 miles

Staples

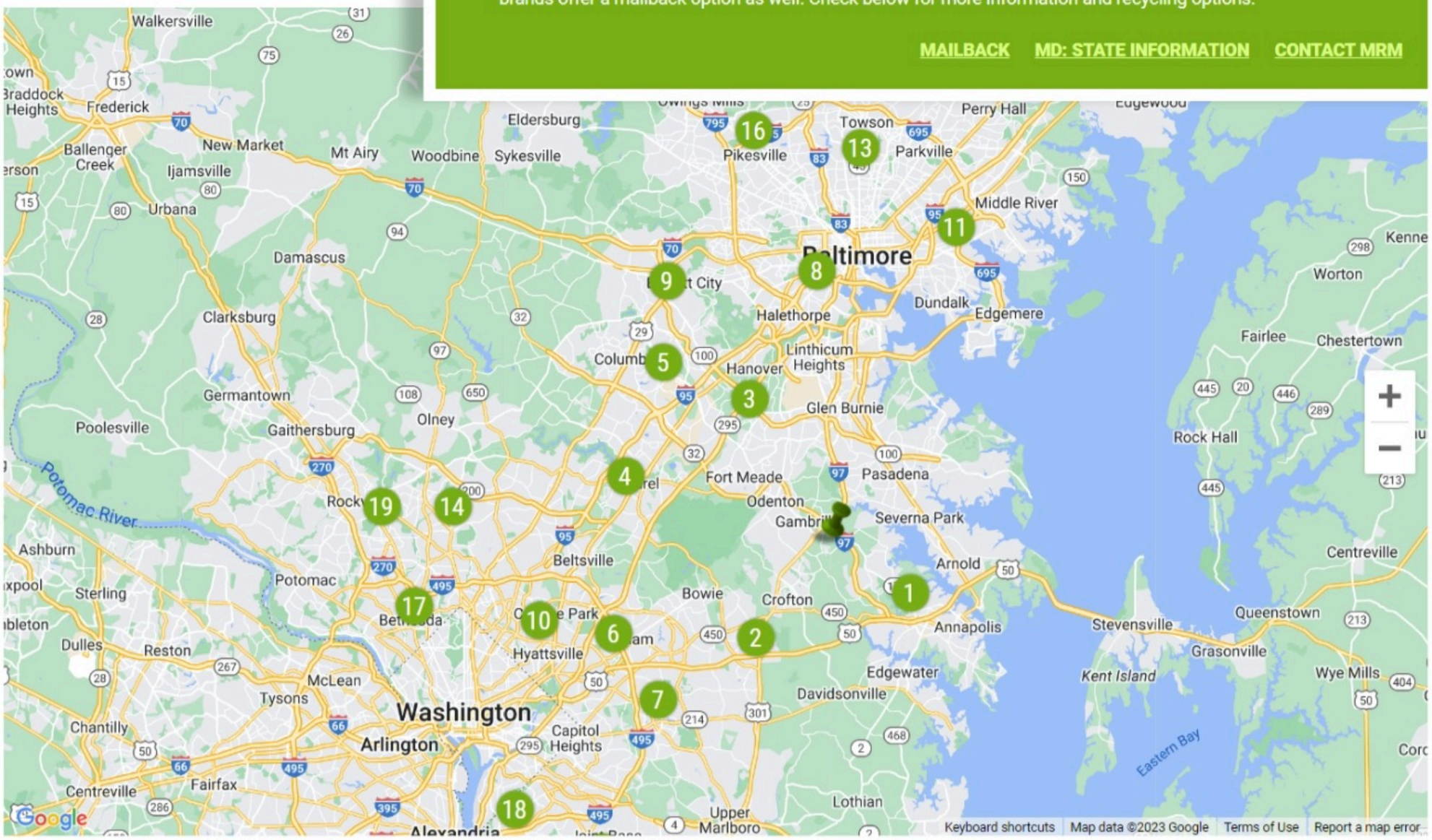
1531 Rockville Pike
Rockville, MD 20852

301-881-6390

Hours:
M-F Hours 8:00am-9:00pm Sat Hours 9:00am-9:00pm Sun Hours 10:00am-7:00pm

Site Information
This Site does not accept televisions, please visit the website for more information on accepted devices, accepted devices can be recycled at no cost to Maryland consumers. For more information, click on "Even More Options" on the MRM website to see what other recycling opportunities are available to you.

WEBSITE DIRECTIONS MAP



Remember - call first and check below for details!

X

- MAILBACK -

In addition to collection sites, MRM may offer mailback in your area. Click below to see if MRM offers mailback for your device.

On the mailback site, enter the brand of your device and your zip code.

If your device is eligible for mailback, you can print a shipping label at no cost to you. Attach the label to any box and drop off with UPS.

Maryland and New York residents are eligible for free packaging.

UPS packages can be dropped off at any location that has regular UPS pick up: a UPS Service Provider, UPS Access Point, UPS Shipping Outlet, UPS Customer Center or a regularly serviced business such as your workplace. A list can be found here: www.ups.com/dropoff

GET LABEL
see if you qualify
You will be redirected to MRM's mailback site

Remember - call first and check below for details!

X

Maryland

State Recycling Information

Manufacturers working with MRM support electronic recycling at drop-off sites across the state and some brands offer a mailback option as well.

If you are a Maryland resident and need packaging to mail your product back to MRM, please call 1-888-769-0149 or email info@mrmrecycling.com. We will mail you the packaging you need at no charge to you.

You may wish to remove personal information and data from devices prior to recycling. This includes data on hard drives, cell phones (especially smart phones), network equipment such as firewalls, routers and switches, USB travel drives, and printers.

Some websites to assist you in wiping your data include, but are not limited to, DBAN and Eraser.

Manufacturers providing free recycling by mail for specific electronic devices with MRM can be found Here.

Nationwide Mailback: Mailback across the country is provided for selected products from these brands

ALCATEL BlackBerry TCL

Remember - call first and check below for details!

X

Manufacturers working with MRM support electronic recycling at drop-off sites across the state and some brands offer a mailback option as well.

If you are a Maryland resident and need packaging to mail your product back to MRM, please call 1-888-769-0149 or email info@mrmrecycling.com. We will mail you the packaging you need at no charge to you.

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Manufacturers providing free recycling by mail for specific electronic devices with MRM can be found Here.

Nationwide Mailback: Mailback across the country is provided for selected products from these brands

ALCATEL onetouch

BlackBerry

TCL CELLPHONES & TABLETS

nook by Barnes & Noble

TOSHIBA NON-TV PRODUCTS

Panasonic PROJECTORS & TOUGH PRODUCTS

Our Commitment to the Environment

VIZIO is committed to reducing electronic waste and promoting safe recycling industry practices. We provide a robust electronics recycling program across the United States ensuring that all our consumers have access to recycling opportunities through collection locations, collection events, or mail back services. We're honored to have our electronics recycling program acknowledged by the United States Environmental Protection Agency.

VIZIO EFFORTS | FIND A RECYCLING CENTER NEAR YOU

Recycle with Ease.

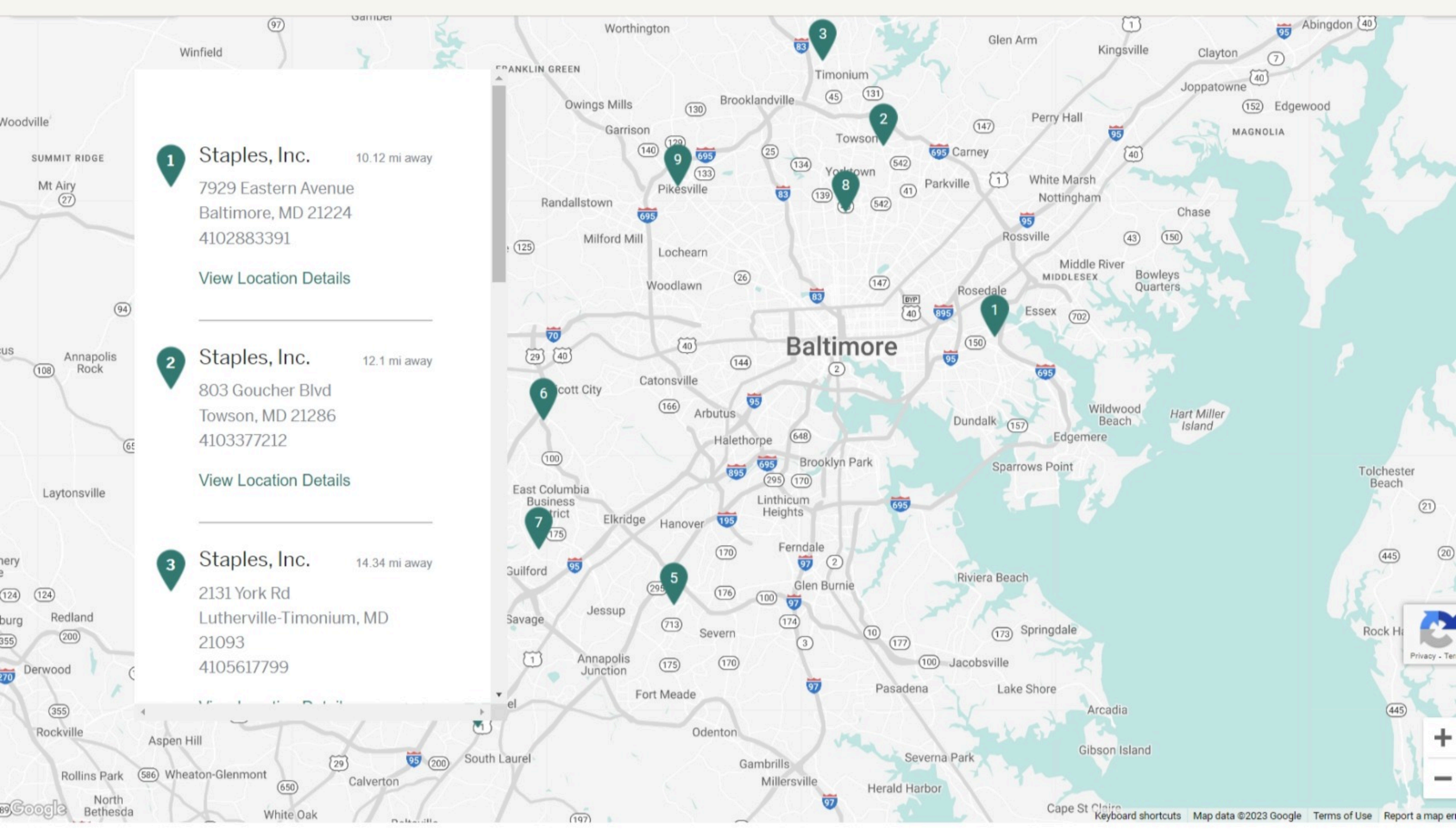
Doing the right thing shouldn't be a hard thing. There are two simple ways you can properly dispose of your used electronics. Drop them off at a local collection site or mail them in. Follow the steps below to get started. For more information or assistance, contact VIZIO Support or call 844-254-8087.

Find a Drop Off Location

21227

Search →

Or mail it back →



1 Staples, Inc. 10.12 mi away
7929 Eastern Avenue
Baltimore, MD 21224
4102883391
View Location Details

2 Staples, Inc. 12.1 mi away
803 Goucher Blvd
Towson, MD 21286
4103377212
View Location Details

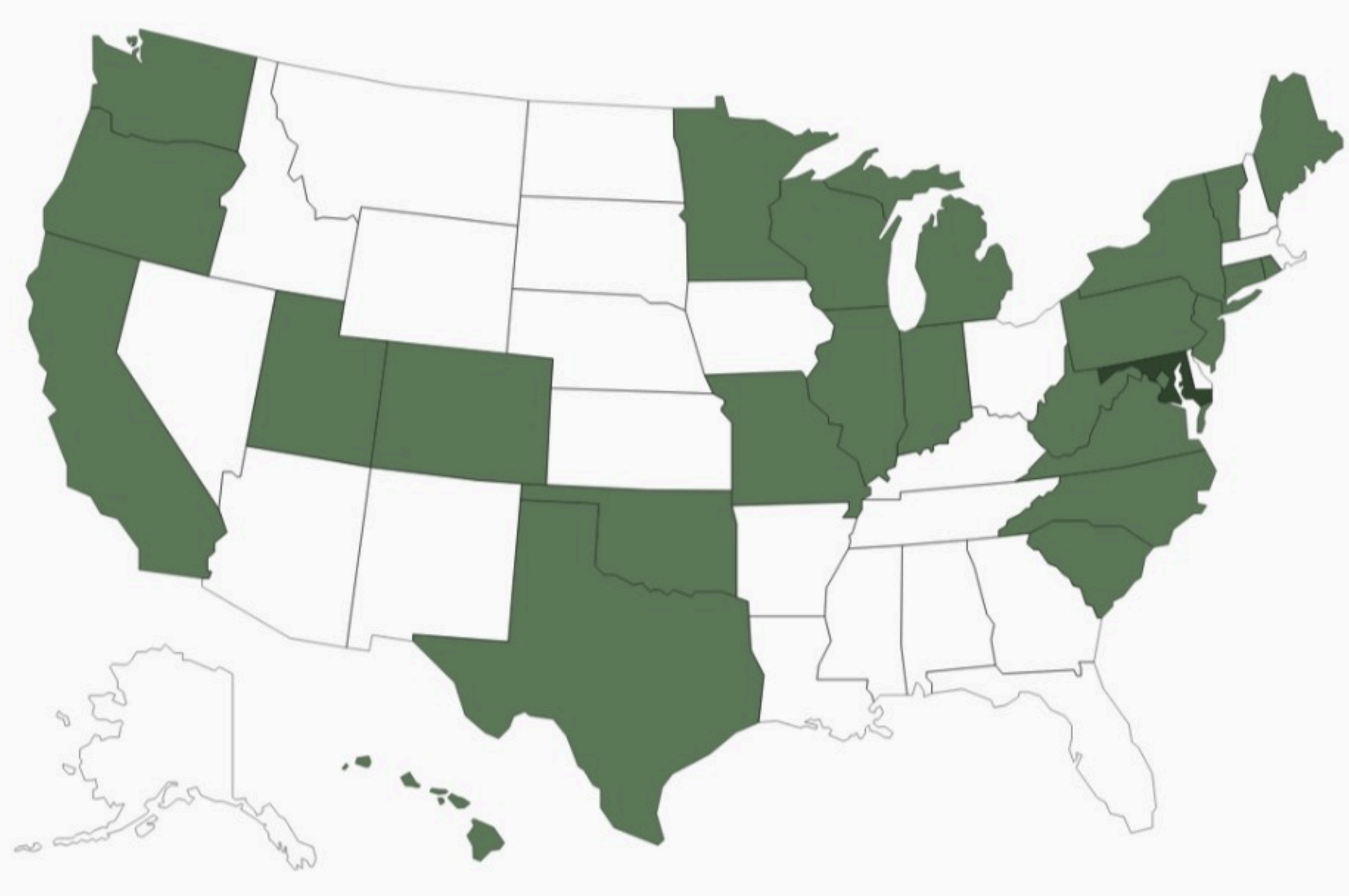
3 Staples, Inc. 14.34 mi away
2131 York Rd
Lutherville-Timonium, MD
21093
4105617799

Packaging Recycling.

VIZIO encourages the recycling of the packaging used for your VIZIO-branded electronic device. Please break down all boxes and recycle eligible materials according to local laws, regulations, and waste management provider's guidelines.

Electronics Recycling in Your State

Below is a list of states with electronic waste laws and information on how consumers in those states can properly dispose of their consumer electronics. If you are looking to recycle your VIZIO product, please visit the top of this page to search for recycling opportunities. To view each state's recycling regulations please click a state within the map.



Maryland

VIZIO provides recycling of VIZIO-branded devices free of charge to the residents of Maryland through a mail back program. The program is offered at no charge to Maryland consumers and includes free shipping and free packaging options. Maryland consumers with questions regarding VIZIO's program or that wish to request free packaging can email vizio@eridirect.com or call 800-374-3473. Consumers may also visit the mail back website here.

VIZIO encourages all Maryland consumers to take additional steps to destroy all personal and confidential data contained on computers, data storage devices, and hard drives. While VIZIO's electronic recycling partners provide data destruction on all products received, it is always a good idea for consumers to consider removing or wiping their data prior to return. The following are some options for destroying data on your device:

- Consult your product's user manual or manufacturer's website for information on factory reset buttons or reconfiguration menus.
- Utilize software programs for data erasure. Examples include but are not limited to DBAN or Eraser.

Visit the Maryland Department of the Environment website for more information.

Discover Our Partners.

Learn more about what our trusted partners are doing for the environment

Greener Gadgets →

ERI →

Dynamic Lifecycle Innovations, Inc. →

Electronic Manufacturers Recycling Management Company (MRM) →

Ecotech Management Inc. →

As a member of the Responsible Business Alliance (RBA), VIZIO fully supports the vision and mission of the RBA:

Vision

A global electronics industry that creates sustainable value for workers, the environment and business.

Mission

Members, suppliers and stakeholders collaborate to improve working and environmental conditions through leading standards and practices.

VIZIO commits to comply to the RBA Code of Conduct in its own operations, progressively implementing the RBA approach and tools in the spirit of the industry's common goals. VIZIO also commits to progressively apply the RBA Code of Conduct to its suppliers, to monitor its application to the best of its ability using RBA practices and tools, and to encourage and support its suppliers to do the same.

California Supply Chain Transparency Act Statement: VIZIO engages in verification activities to identify, assess, and manage the risks of human trafficking in its product supply chain, including annual risk assessments and independent third-party audits of direct suppliers. VIZIO requires its direct suppliers to ensure compliance with all laws regarding slavery and human trafficking of the countries in which they are doing business. VIZIO adheres to the Responsible Business Alliance Code of Conduct and maintains internal accountability procedures for employees and contractors failing to meet company standards regarding slavery and trafficking. Company personnel responsible for compliance engage in self-directed learning on a regular basis to stay updated on human trafficking and slavery, particularly as to mitigating risks within the supply chain of VIZIO products.

Attachment 7

Northeast Maryland Waste Disposal Authority Commodity Market Research

(Pulled from 2023 Request for Proposals Evaluation Memorandum)

Appendix 6

Summary of Market Conditions

Certain downstream CRT markets have stabilized since the CRT market crash from approximately ten years ago. CRT glass is now being used in construction as an aggregate replacement and in concrete products, by lead smelters [including Teck Resources in British Columbia, Doe Run in Missouri and Korea Zinc in South Korea], X-ray products, as well as in tile manufacturing outlets. Universal Recycling Technologies (URT) continues to be a major downstream outlet for CRTs, processing the leaded glass into a powder used in overseas ceramic tile manufacturing at several plants across the U.S. They recently opened a 198,000-square-foot plant in Texas, as of December 2022 [https://resource-recycling.com/e-scrap/2022/12/07/urt-opens-a-198000-square-foot-plant-in-texas/]. Additionally, COM2 Recycling Solutions is recycling about 46,000 pounds of CRT glass per shift into ceramic frit [https://resource-recycling.com/e-scrap/2022/12/14/key-crt-recycling-pipeline-is-no-longer-active/]. Lastly, some recycled CRT glass is used for other niche products like X-ray shielding glass blocks [https://allgreenrecycling.com/crt-recycling/]/

This market shift for CRT recycling has not made the CRT recycling process cost neutral or revenue positive for jurisdictions, but has led to a reduction in earlier higher costs due to limited markets at the time. [redacted]

So, there is evidence to support this overall trend in improved electronic material markets. It is important to note that the Proposers who have their own trucking staff or strong contracts for trucking (and/or local routes) are doing well in this market. Other companies with not as reliable transportation or farther routes are likely seeing higher costs to source this Service. [redacted]

In recent developments, however, strong markets in the Other Acceptable Materials commodities are clearly strongly offsetting costs associated with the CRT/Flat Screen markets. Additionally, a positive trend in downstream plastic and metal market pricing supports why Proposers were able to propose more competitively, as their bales for these materials are seeing higher revenues and are now better supporting the traditionally more expensive processes for CRT and Flat Screen TV and Monitor component recycling.

For background, an article from 2017 reported that "an increasingly wide range of plastic resins have been used in consumer electronics, including acrylonitrile butadiene styrene (ABS), high impact polystyrene (HIPS) and

expanded polystyrene (EPS)…But not all devices utilize just one resin and this complicates recovery efforts. …CRT monitor housings generally contain PC/ABS, but CRT TV housings often consist of HIPS. Meanwhile, flat panels often use a mix of PC/ABS and HIPS. Printers can have up to four or five different plastics in their construction…while the fronts and backs of TVs and monitors are often made with two different resin types…E-plastics are a tough category due to the variety and complexity of the original recyclable that they are derived from…Mixed plastics [is] one of the lowest and least valuable of materials categories, and one of the most common materials streams derived from electrical and electronic equipment…a 2016 report by the National Center for Electronics Recycling states…The incredibly low value of this material underscores the challenges in assuming profitable recycling for all devices…According to the report, mixed plastics found in TVs, computers and printers had little to no recovery value. Electronic recycling companies largely echo that sentiment…the value of mixed e-plastics today ranges…from zero to a couple of cents…per pound."

ACRONYM SOUP

A variety of plastics have been used as key components in electronics. The list below shows the most common e-plastic types.

ABS - Acrylonitrile butadiene styrene
EPS - Expanded polystyrene
HIPS - High impact polystyrene
PA - Polyamide
PC - Polycarbonate
PC-ABS - Polycarbonate-acrylonitrile butadiene styrene
PPE - Polyphenylene ether
PS - Polystyrene
PPO - Polyphenylene oxide

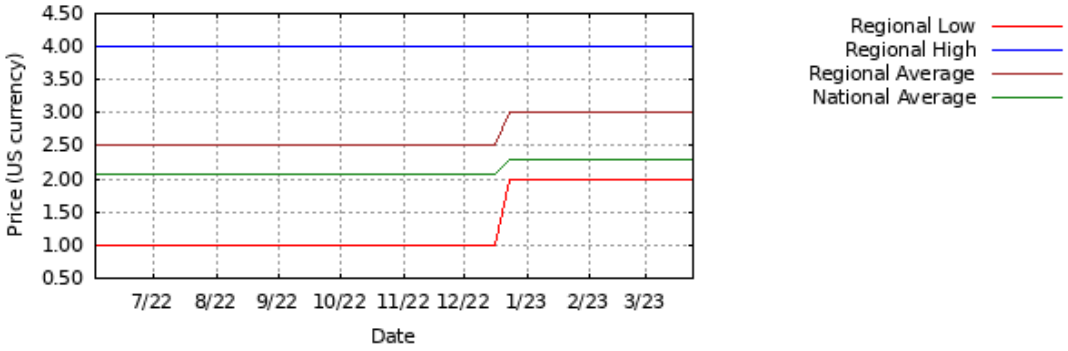
[E-plastics explained (resource-recycling.com)]

The Asia Pacific acrylonitrile butadiene styrene (ABS) market is projected to register gains at over 6% through 2032, led by the rapid adoption of ABS in consumer items and the construction sector in developing nations, such as China, India, Indonesia, and South Korea [https://www.gminsights.com/industry-analysis/acrylonitrile-butadiene-styrene-ABS-market#:~:text=Asia%20Pacific%20acrylonitrile%20butadiene%20styrene%20market%20is%20projected,such%20as%20China%2C%20India%2C%20Indonesia%2C%20and%20South%20Korea.].

The High Impact PolyStyrene (HIPS) market is also seeing growing trends in demographic data through 2029. "The global HIPS market size is projected to grow from USD million in 2022 to USD million in 2029…The analysis in this report tracks the global value of executive phases in over 20 high-growth areas, with North America, Europe, and Asia being the most attractive regions for potential partners…In terms of market value, the High Impact PolyStyrene (HIPS) Market dominated the U.S. market, accounting for more than all revenue in that year. Meanwhile, in North America, it represented a significant portion of the overall market share. The High Impact PolyStyrene (HIPS) Market framework is expected to maintain its dominance in the market in the years to come." [https://www.marketwatch.com/press-release/high-impact-polystyrene-hips-market-growing-trends-and-demographic-data-to-2029-2023-03-27].

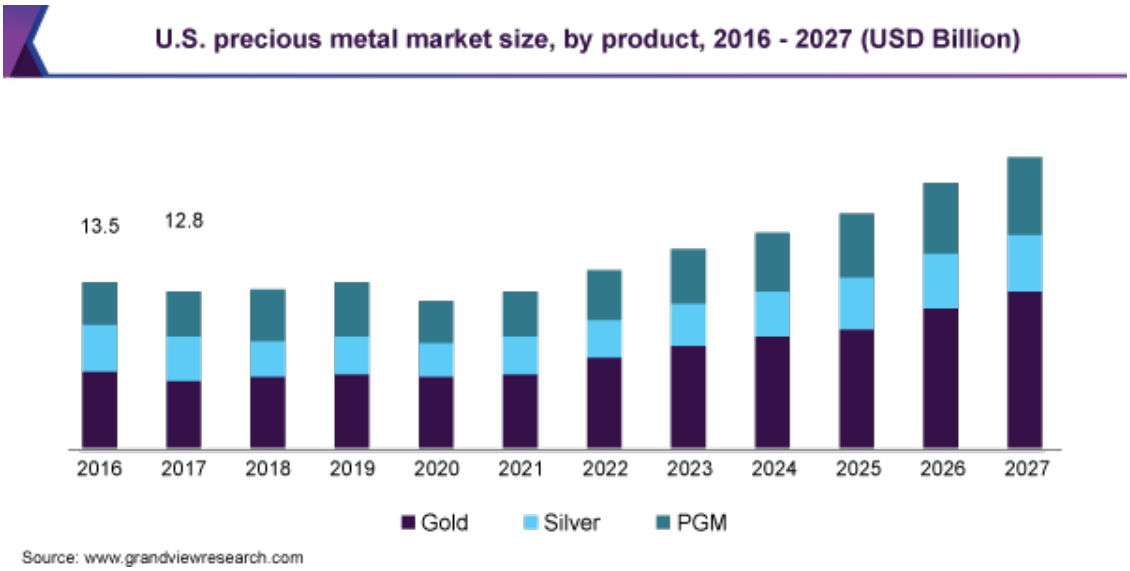
Additionally, The New York (NE USA/Maritimes) Plastics Polystyrene EPS has also picked up in value, as seen in the below chart. The regional average is now at ¢3.00/lb (baled and picked) compared to ¢2.00/lb (baled

and picked) back in 2019 (the last RFP timeframe).
[https://www.recyclingmarkets.net/secondarymaterials/chart.html?gid=61&city=NEW+YORK+%28NE+USA%2FMaritimes%29].



Lastly, regarding the valuable precious metals inside computers and electronics, most of which have circuit boards and other components inside that still contain many types of precious metals including gold, palladium, platinum and silver. In modern electronics, silver is the most commonly used of all the precious metals, followed by gold, then palladium, platinum, rhodium and iridium. The markets for these precious metals have since improved since 2019 (the last RFP timeframe), as seen below:

"The global precious metal market size was valued at USD 182.1 billion in 2019 and is expected to grow at a compound annual growth rate (CAGR) of 9.0% in terms of revenue from 2020 to 2027," with a revenue forecast of USD 362.1 billion in 2027. "Demand for the product in jewelry application is likely to emerge as an influential factor for the industry growth over the forecast period…[specifically] the wedding market space of China and India is…likely to present numerous growth opportunities for the gold jewelry." "Silver is [also] likely to dominate the market…owing to its wide usage across the industrial and jewelry sector, [while the precious metals market] segment growth is largely attributed to the growth of the electrical and electronics sector, wherein majority of silver commodity is used for various purposes." Lastly, the automotive industry is heavily reliant on platinum and palladium, and it is assumed that the current shortage of vehicles in the market (due to COVID-19 long term impacts) will continue to fuel the strong demand for these metals in order for car manufacturers to catch up on supply.

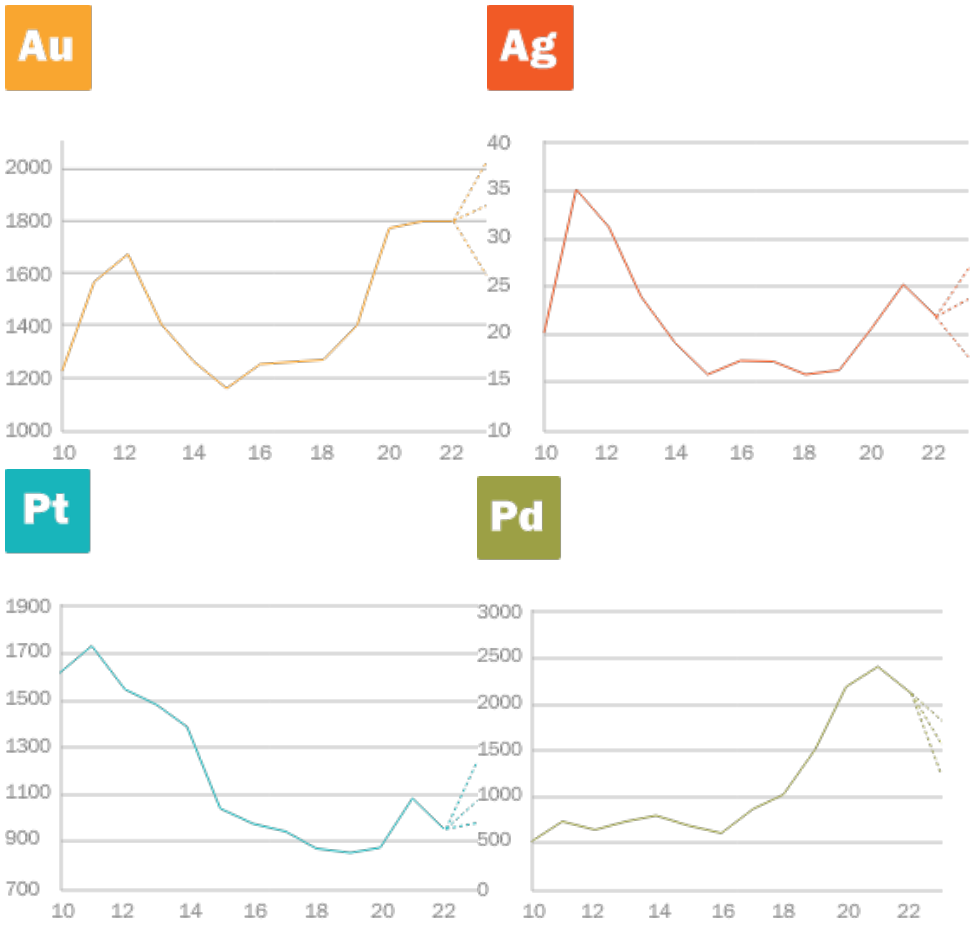


[https://www.grandviewresearch.com/industry-analysis/precious-metals-market].

Another source states that "the global Precious Metal Recycling market was valued at USD 21140 million in 2019 and it is expected to reach USD 32800 million by the end of 2026, growing at a CAGR of 6.4% during 2021-2026"

[https://futures.tradingcharts.com/news/futures/Precious_Metal_Recycling_Market_Size__Trends_and_Forecast_2028_427602437.html].

Lastly, the top three drivers assumed by analysts for influencing gold prices in 2023 include 1) the U.S. dollar and Federal Reserve System monetary policy (i.e., trust in the dollar and perceived strength in this currency and the Federal Reserve System specifically , 2) inflation and 3) geopolitical factors Gold and silver are forecasted at 3.3% and 8.8% growth by the end of calendar 2023 compared to average prices in 2022, respectively, while platinum is expected to increase 12.5% against 2022 prices .



[https://www.lbma.org.uk/forecast-survey-2023/at-a-glance].

Computer components with the highest precious metal content by weight include:

- Computer CPU's (processors) - Gold / Silver / Palladium
- Memory (RAM) & Circuit Board Fingers / Connectors / Pins - Gold
- Circuit Boards (Motherboards) - Gold / Silver
- Hard Drives - Palladium / Platinum (on HD platters)
- Discrete Electronic components - Palladium / Silver (Capacitors)
- Whole Computers - Gold / Silver / Platinum / Palladium

Precious metals found inside electronics:

- Gold - Printed Circuit Boards, Computer Chips (CPU), connectors / fingers
- Silver - Printed Circuit Boards, Computer Chips, keyboard membranes, some capacitors
- Platinum - Hard Drives, Circuit board components
- Palladium - Hard Drives, Circuit board components (capacitors)
- Copper - CPU heat sinks, wiring and cables, Printed Circuit Boards, Computer Chips
- Nickel - Circuit board components
- Tantalum - Circuit board components (some capacitors)

- Cobalt - Hard Drives
- Aluminum - Printed Circuit Boards, Computer Chips, Hard Drives, CPU heat sinks
- Tin - Printed Circuit Boards, Computer Chips
- Zinc - Printed Circuit Boards
- Neodymium - Hard Drives (magnets)

Complete list of chemical elements used in manufacturing electronics:

Silicon, Magnesium, Radium, Barium, Niobium, Osmium, Cobalt, Manganese, Titanium, Hafnium, Tungsten, Germanium, Gold, Silver, Copper, Mercury, Bismuth, Gallium, Zinc, Iron, Sulfur, Phosphorus, Cadmium, Palladium, Tantalum, Platinum, Aluminum, Carbon, Lead, Nickel, Boron, Chromium, Terbium, Potassium, Francium, Cesium, Sodium, Lithium, Indium, Calcium, Nitrogen, Oxygen , Cadmium, Arsenic, Chlorine, Helium, Neodymium, Selenium and Tin.

[Valuable Metals used in Computers - Vintage Computer Chip Collectibles, Memorabilia & Jewelry (chipsetc.com)].

Attachment 8

Excerpt from Northeast Maryland Waste Disposal Authority Internal Research on Electronics Recycling EPR/Product Stewardship Policy (dated 6/13/2016)

To date, many municipal and retailer electronics recycling programs have closed in the state, due to a lack of funding. EPR/product stewardship would provide funding from manufacturer and/or consumer outlets to sustain those electronics recycling programs. There are specific environmental benefits to implementing EPR/product stewardship, such as the reduction or elimination of landfilling electronic material as well as increased recycling rates for the state, as seen in Washington and Oregon (similar to the Connecticut law, further discussed below).[1] Economic benefits include millions of dollars of cost savings to local governments, as seen in Washington and Oregon,[2] as well as expanding the electronics recycling industry as a whole. An increase in funding, thus increased electronics recycling activity, would directly encourage an influx of jobs in the state, as seen New York,[3] Oregon and Washington.[4] Additionally, "the state-wide systems created program efficiencies and drove pricing for services lower" in states with strong EPR/product stewardship laws.[5]

Throughout the Country there has been strong support for electronics EPR and product stewardship legislation, as seen by the 25 varying state laws enacted.[6] Importantly, these laws reflect "the rights of states and cities to say that the manufacturers of toxic products need to be responsible for their products when consumers are ready to discard them…States began passing recycling laws because there is no federal takeback law (and little likelihood of a strong federal law being adopted) and because voluntary industry programs are not effective. Local governments are increasingly challenged by the costs of managing products with toxic materials when they hit the waste stream...While many of these electronics companies have voluntary recycling programs, most of them don't actually collect significant volumes of e-waste. The exception is where strong state laws make them do it…The industry complains about the 'patchwork of state solutions', but the truth is that if their voluntary takeback programs were better, states and cities wouldn't be passing these laws." [7] The Basel Action Network (BAN) has clarified that "the real problem is the refusal by electronics manufacturers to internalize the true costs of electronics recycling services into their sales prices," thus they are unwilling to assist in the recycling efforts.[8] With the absence of manufacturer and municipal funding, many free recycling outlets have

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[1] Northwest Product Stewardship Council, Preliminary Analysis of E-Cycle Programs in Washington and Oregon, Pages vii, 21, 29, Date Accessed 3/15/2016 http://productstewardship.net/PDFs/productsElectronicsEcycleWAORReport.pdf

[2] Electronics Takeback Coalition, Washington E-Waste Law Will Save Millions for Local Government, Date Accessed 3/15/2016 http://www.electronicstakeback.com/wp-content/uploads/EPR-Laws-Cost-Savings-for-Local-Government.pdf

[3] NY Department of Environmental Conservation, Electronics Recycling Job Creation in New York, Page 16, Date Accessed 3/11/2016 http://www.dec.ny.gov/docs/materials_minerals_pdf/ewaste.pdf

[4] Northwest Product Stewardship Council, Preliminary Analysis of E-Cycle Programs in Washington and Oregon, Pages v –vi, 19, 27, 28, Date Accessed 3/15/2016 http://productstewardship.net/PDFs/productsElectronicsEcycleWAORReport.pdf

[5] Northwest Product Stewardship Council, Preliminary Analysis of E-Cycle Programs in Washington and Oregon, Pages v –vi, 19, 26, 28, Date Accessed 3/15/2016 http://productstewardship.net/PDFs/productsElectronicsEcycleWAORReport.pdf

[6] Electronics TakeBack Coalition, Date Accessed 1/28/2016: http://www.electronicstakeback.com/wp-content/uploads/Compare_state_laws_chart.pdf

[7] Electronics TakeBack Coalition, Why State EPR Laws Exist, Date Accessed 2/24/2016 http://www.electronicstakeback.com/2009/11/05/electronics-industry-lawsuit-attacks-states%E2%80%99-rights/

[8] Environmental Leader, Why Best Buy Changed its E-cycling Law, Date Accessed 3/14/2016 http://www.environmentalleader.com/2016/02/03/why-best-buy-changed-its-e-waste-recycling-program/#ixzz42t77kxTq

disappeared.[9] In states like Maryland with little funding to municipalities, "manufacturers should [instead] be helping Best Buy foot the bill for the public recycling program, at least enough to allow the retailer to break even."[10] Until that happens, Best Buy and other retailer programs will remain inaccessible to the public due to high recycling costs, while many municipal programs will remain closed.

Manufacturers and the CTA have issued support for the California model: "as CalRecycle is aware, a robust California -based electronics recycling infrastructure is currently in place for covered devices due to implementation of California's Electronic Waste Recycling Law. That program is funded by an advanced recovery fee ("ARF") imposed at retail sale. It is imperative that any funds generated through the ARF for covered electronic devices remain dedicated exclusively to the implementation of the California Electronic Waste Recycling Law. CalRecycle should ensure that Electronic Waste Recycling funds–paid for by California consumers -are not raided to help finance increased recycling infrastructure for other products and remain dedicated to the collection and recycling of covered electronic products…there is already a successful electronic waste recycling program in effect in California that is supported through the imposition of an advanced recovery fee during retail sale. These funds have been sufficient to support the development of a robust California recycling infrastructure for covered electronic waste."[11]

[9] *Ibid.*
[10] *Ibid.*
[11] CalRecycle, Consumer Electronics Association, Date Accessed 1/28/2016: http://www.calrecycle.ca.gov/75Percent/Comments/WAlcorn.pdf
Waste 360, Manufacturer Support for CA Model, Date Accessed 3/11/2016 http://waste360.com/e-waste/producer-responsibility-or-government-liability-regulating-e-waste?NL=WST-03&Issue=WST-03_20160311_WST-03_56&sfvc4enews=42&cl=article_3&utm_rid=CPEQW000001139292&utm_campaign=6988&utm_medium=email&elq2=6ba40c1466af4b5d97ded9e16b38f750

Texas Landfill Reopening After Fire from Lightning Strike
JUL 21, 2023

Casella Waste Systems Could Reopen Hardwick, Mass. Landfill with Zoning Approval
JUL 21, 2023

Earthworks Discloses Projected Value of Cortina Project in California
JUL 21, 2023

Environmental Hearing Board Dismisses Legal Action Against Encina
JUL 21, 2023

POLL

What type of waste do you feel is having the most environmental impact?

- Food waste/organics
- Plastics
- E-waste
- Other

VOTE

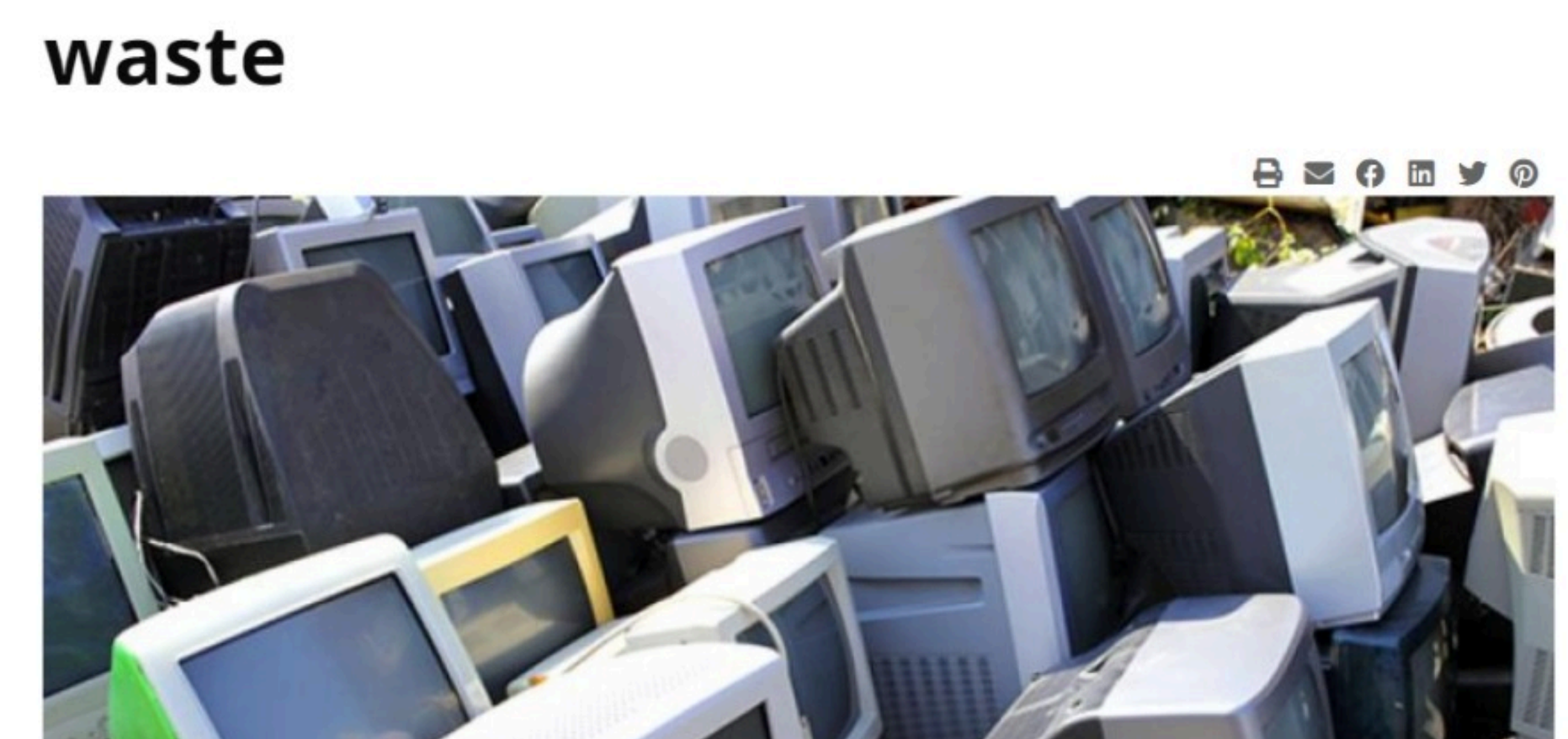
J.F. Lehman & Company Acquires Heritage-Crystal Clean for $1.2 Billion
JUL 20, 2023

Holy Smokes! Should We Allow "Bad" Operators to Operate?
JUL 11, 2023

Zero Waste Groups Kickstart Solar Panel Recycling in California
JUL 14, 2023

Pyrolysis to Treat/Dispose Medical Waste: How Does it Fair Against Alternative Methods?
JUL 12, 2023

Producer Responsibility or Government Liability: Regulating E-waste

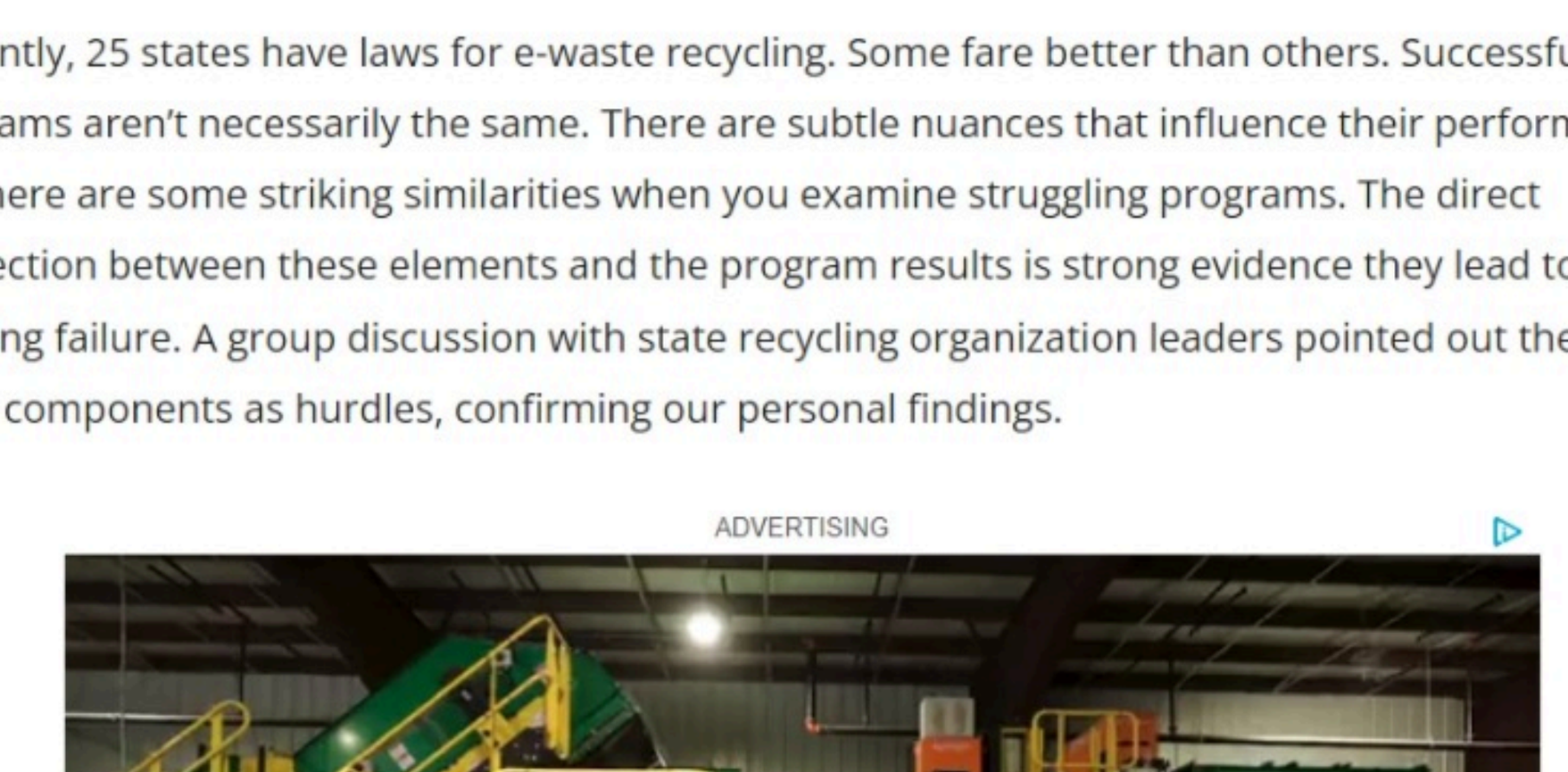


Michele Nestor | Mar 10, 2016

Sometimes, seemingly practical solutions to routine issues can have devastating outcomes. Look at the decisions that led to the Flint water crisis. Starting with Michigan statutes allowing all-empowering intervention, state policies were designed to focus primarily on economic measurements. Ironically, by failing to consider other equally important related indicators, Flint experienced the collapse of the water delivery infrastructure along with long-term and indeterminable cost to trust and public health.

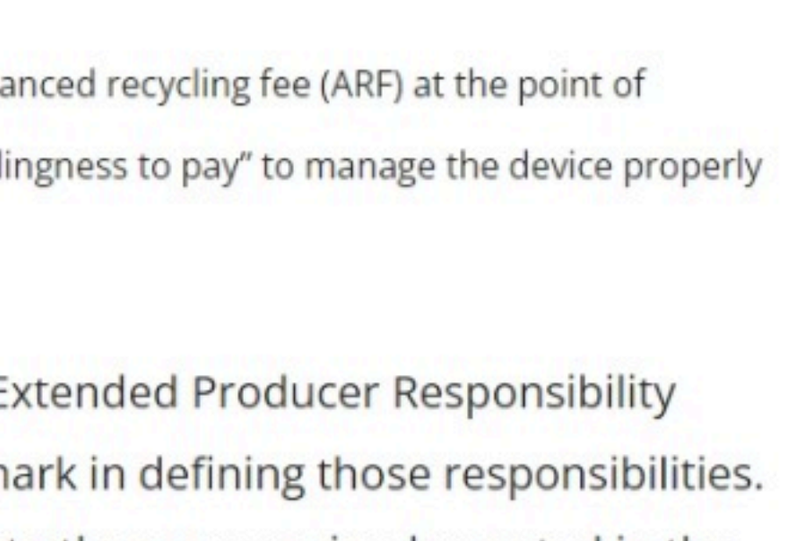
Something similar is afoot when it comes to e-waste. If current headlines are any indication, shortcomings common to a number of state e-waste laws have surfaced as the latest recycling crisis.

Currently, 25 states have laws for e-waste recycling. Some fare better than others. Successful programs aren't necessarily the same. There are subtle nuances that influence their performance. But there are some striking similarities when you examine struggling programs. The direct connection between these elements and the program results is strong evidence they lead to pending failure. A group discussion with state recycling organization leaders pointed out these same components as hurdles, confirming our personal findings.



The states reconsidering their current e-waste laws have experienced results contrary--or at least not complementary--to their original intent. There is mounting fear that without some near term fixes the e-waste infrastructure in broad geographic areas could implode. CRT glass management is the Achilles heel.

The fact is many of our e-waste laws are the source of unrealistic goals, service inequities and inadequate compensation. How does this happen? To make it easier to understand where the pitfalls may exist, let's look at some successful, but contrasting program structures



To be fair, commodity prices and limited outlets made these bad situations even worse. To say challenges with e-waste recycling are not due to commodity prices and market outlets alone is equally fair. Some accuse manufacturers of capitalizing on the ambiguities and flaws in the e-waste programs. That could be, but there's nothing wrong with complying with the letter of the law.

California stands alone with a model that requires consumers to pay an advanced recycling fee (ARF) at the point of purchase. This type of program eliminates many end-of-life headaches. "Willingness to pay" to manage the device properly when it is time to discard it becomes a moot point.

All of the other state e-waste laws are supposedly based on Extended Producer Responsibility (EPR). But states where problems are prevalent missed the mark in defining those responsibilities. It is safe to say, none of the state EPR programs comes close to the program implemented in the state of Washington, where manufacturers pay the full cost of collecting, transporting and recycling of every covered device returned during the year. There is no disposal ban. Manufacturers have to ensure there is at least one collection site in every county and one in every city with a population of 10,000. To date they have collected over 301 million pounds at no added cost to the consumer.

What are the biggest mistakes?

Plenty of other combinations exist, but we voted these as the worst culprits: poorly defined service or convenience criteria; disposal bans combined with capped goals; market share versus return share financial commitments; lack of mechanisms to assure just compensation to program collectors and recyclers.

Disposal bans immediately accelerate the amount of items collected in a program. That's a good thing, right? A disposal ban can also be a recipe for disaster. When a disposal ban lacks convenient, year-round producer sponsored outlets for the material, illegal dumping and public outcry follow.

That brings us to the next program killer: recovery goals. E-waste laws tend to establish a manufacturer's annual recovery goal on the weight of their sales from the previous one to three years. Verifying those goals must be a challenge for state program managers. Market data for consumer electronics is the best-guarded secret since the recipe for Coca Cola. You have to dig deep and inconsistencies are common.

Currently 70 to 80 percent of the devices returned for collection in e-waste programs are old CRT monitors or televisions weighing between 32 pound and 64 pounds. The pounds per unit of all types of electronic devices across the board have been decreasing steadily. This we know from owning them. It's one thing to acknowledge that televisions weigh less than 10 years ago, but the evolution of the electronic waste stream itself is a more important trend.

People are buying fewer televisions versus other smaller, lighter, multi-functional devices. According to 2014 estimates from the Consumer Technology Association (CTA, previously the Consumer Electronics Association), 39 million LCD televisions were sold in the USA. Compare that to 2014 sales of 152 million smartphones and 89 million tablets. It's easy to see that disposal bans on televisions and monitors manufactured 10 to 20 years ago coupled with market share goals based on devices weighing less than a pound are dreadfully skewed.

Disposal bans combined with capped market share goals virtually guarantee the flow of material needed with little effort by the manufacturer. In programs where goals are capped manufacturers are absolved from paying for the remaining devices collected. Local communities from New Jersey to Chicago have been picking up the tab for the excess just to prevent illegal dumping. The state of New York is poised to reimburse its communities approximately $10 million until it can correct the situation. Likewise, in a capped market share program each pound processed by recyclers loses value since they end up processing more than the program reimbursements. Recyclers, unable to sustain the losses are closing their doors.

According to 2009 data submitted by CTA to the Maine Department of Environmental Protection average operational costs for state recycling

mechanisms should be written into the laws.

It should come as no surprise that manufacturers prefer California's model above all others. After all, the consumer foots the bill, at least once, maybe twice. CTA has argued for years that charging consumers directly for recycling costs them less than if they paid indirectly through higher product prices. Let's assume that manufacturers are smart enough to incorporate the cost of recycling into their products. We have to admit we wondered, with an advanced recycling fee, *IS* the price of purchasing electronic devices cheaper in California than in other states?

What do you think?

Michele Nestor is the President of Nestor Resources Inc., based in the Greater Pittsburgh area, and chair of the board of directors, of the Pennsylvania Recycling Markets Center, Penn State, Harrisburg. She helps private and public sector organizations develop strategic plans to survive in a transitioning marketplace.

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NEED TO KNOW

Texas Landfill Reopening After Fire from Lightning Strike

landfill fire 2 MR1540.jpg

Marko Beric / Alamy Stock Photo

Pecos, Texas has announced that its landfill will be reopening to the public next week, following a fire at the site earlier this month.

Jul 21, 2023

Pecos, Texas has announced that its landfill will be reopening to the public next week, following a fire at the site earlier this month.

Residential and commercial waste will be accepted at the Pecos landfill again starting July 24th. Earlier this month, the landfill caught fire when it was struck by lightning which was made worse by the harsh storm conditions.

The fire at the site burned out naturally and caused no injuries or structural damage. The landfill was closed after the fire for precautionary measures and in adherence to safety regulations.

"We appreciate the patience and understanding of our community during this time and look forward to serving you once again.," the city stated in a Facebook post, "Despite the challenges posed by the incident, our dedicated team has worked tirelessly to restore the landfill to full functionality."

Read the full article here.

RELATED

Next Article

According to 2009 data submitted by CTA to the Maine Department of Environmental Protection average operational costs for state recycling programs range from $0.18 to $0.30 per pound. The 2014 Washington State annual report documents costs including administration at $0.26 per pound. Recyclers in Pennsylvania, where the goal is capped, have been offered less than $0.10 cents per pound in many instances. This explains why just compensation mechanisms should be written into the laws.