

QUARTERLY PROGRESS REPORT

May 1, 2020 to December 31, 2020

PROJECT TITLE: An Integrated Tool for Local Government to Track Materials Management and Progress toward Sustainability Goals

PRINCIPAL INVESTIGATOR(S): Timothy G. Townsend

AFFILIATION: Professor, University of Florida
Department of Environmental Engineering Sciences

COMPLETION DATE: June 30, 2021 (original Nov 2020)

PHONE NUMBER: 352-392-0846

PROJECT WEB SITE: <https://faculty.eng.ufl.edu/timothy-townsend/research/florida-solid-waste-issues/tool-to-track-progress-toward-smm-goals/>

Work accomplished during this reporting period:

Evaluation of Material Categories Considered in Donation Research

Data was collected for specific material categories that were commonly donated. The data was collected by reviewing online documents for specific business/industries and for calling direct donation industries. For each material category the major players that collect that donated material are summarized below.

- **Food Waste**
 - Data will be collected from the FDEP food donation report (source: <https://floridadep.gov/waste/waste-reduction/documents/2020-food-donation-report>)
- **Furniture**
 - Goodwill
 - Salvation Army
 - Etsy
 - The National Furniture Bank Association
 - *The Repurpose Project*
 - *ESOL Closet*
- **Electronics**
 - EPA Data (source: <https://www.epa.gov/recycle/electronics-donation-and-recycling>)
 - Xerox Data Collected: Worldwide, clients returned 6.1 million cartridges, toner containers, other supply items (4000 metric tons) (2018)

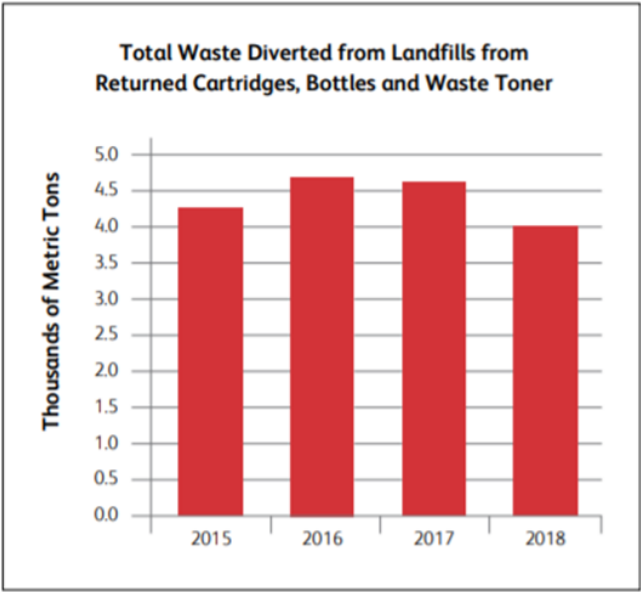


Figure 1: (source: <https://www.news.xerox.com/news/Xerox-2019-Global-Corporate-Social-Responsibility-Report>)

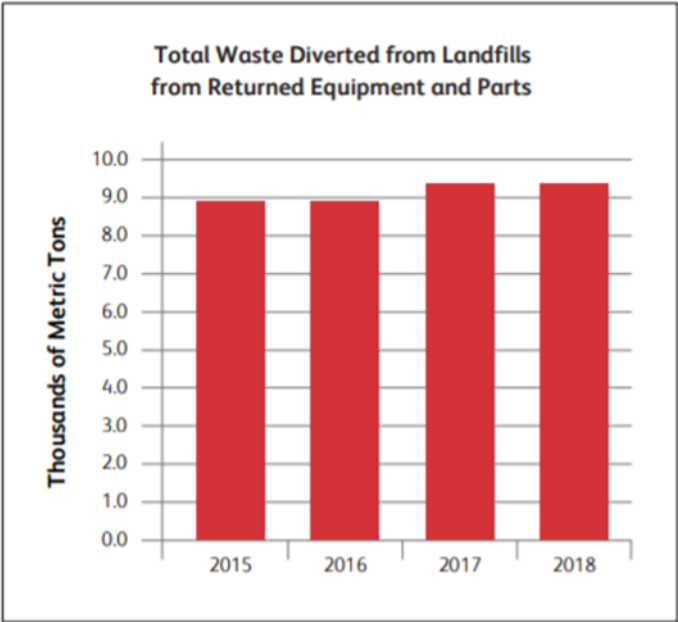


Figure 2: “In 2018, 8,600 metric tons of equipment and parts-related waste were diverted from landfills to recycling at our U.S. Reverse Logistics Center. Globally, that volume rises to 9,400 metric tons” from (source: <https://www.news.xerox.com/news/Xerox-2019-Global-Corporate-Social-Responsibility-Report>)

- Best Buy Data Collected: Estimates saving 60 tons of plastic from going into the landfill; Estimated to have collected “2 billion pounds of e-waste” since 2009 (until 2019)(worldwide) (source: <https://corporate.bestbuy.com/wp-content/uploads/2019/06/FY19-full-report-FINAL-1.pdf>)
- Staples Data Collected: “48.7 million pounds of e-waste collected” as of 2020 (worldwide)- (source: https://www.staples.com/sbd/cre/noheader/about_us/corporate-responsibility/environment/)
- LG Data Collected: Used 11,030 tons of recycled plastic material (2018); 21,204 tons of e-waste collected in the US (2018) (source:<https://www.lg.com/global/pdf/Sustainability-Report/2018-2019%20Sustainability%20Report.pdf>)
- Samsung Data Collected: Collected 25,207 tons of e-waste (2018); Used 2,743 tons of recycled plastic (2018) (source: https://www.samsung.com/us/smg/content/dam/s7/home/aboutsamsung/sustainability/report-and-policy/sustainability_report_10242019/Sustainability_report_2019_en.pdf)
- Dell Data Collected: 955,000 metric tons of e-waste recovered worldwide (2018) (source: <https://corporate.delltechnologies.com/en-us/social-impact/reporting/fy19-csr-report.htm#overlay=/content/dam/delltechnologies/assets/corporate/pdf/progress-made-real-reports/dell-fy19-csr-report.pdf>)
- Vizio Data Collected: Recovered 40,000,000 pounds of recycled electronic waste worldwide in 2019 (source: <https://www.prnewswire.com/news-releases/vizios-sustainability-efforts-praised-by-environmental-protection-agency-300984642.html>)
- Sony Data Collected: In fiscal 2018, these collection centers and through compliance channels collected approximately 10,913 tons (24,009 thousand pounds) of used consumer electronics (pg 177) (US) (source: https://www.sony.net/SonyInfo/csr/library/reports/sis4ug000000jyws-att/CSR2019E_PDF_all.pdf)

- **Textiles**

- Goodwill Data Collected:

Managers said that they could not give out information for donation data. Each manager (In Gainesville, Jacksonville, and Pensacola) recommended that to call the corporate number (904-384-1361) which led to a voicemail that stated that the office is closed due to the pandemic. Data from online documents collected:

“In 2018, Goodwill diverted 4 million pounds of usable goods from landfills” (source: <https://www.goodwill.org/annual-report/>)

Recycling of cardboard and e-waste, and hazardous waste management. Also 77 million lbs of diverted waste (source: <https://goodwillwa.org/donate/sustainability-resources/>)

Contact with Florida head representative was made to collected data but because of the pandemic data request will take a few months to process and send.

- **Salvation Army**

Contacted with managers but no data is collected on a per facility basis and must contact corporate office to see if data can be provided or if it is proprietary.

Defined Donation Flow for Material – Example of Goodwill

Generators – individuals or larger establishments which have excess clothing/furniture

Collection receptacles – contactless drop off locations where people can indiscriminately toss their stuff

Service organizations– Goodwill or other thrift stores, organizations which don't require recipients to pay for their stuff

Route 1:

An individual wishes to donate textiles, furniture, or electronics because they are no longer needed or wanted. That individual brings their wares directly to a service organization. In this case, the service organization may have the opportunity to sort through the donated items while the individual is still present. This way, if any items cannot be accepted, they may be returned to the individual. If the individual does not stay while the items are sorted or if the individual cannot take the items back, the service organization may then sort unneeded/unsellable items, usually separating recyclables and e-waste to be sent to appropriate recycling centers. Some unwanted items are shipped overseas. Finally, other unwanted items may be sent to a landfill. The items which are valuable to service organizations may then be priced and put on sale or freely offered to recipients in the community. The customers of thrift or re-use stores are most frequently individuals within a community.

Route 2:

An individual wishes to donate textiles or furniture (rarely electronics in this route) and brings their items to a collection receptacle operated by a service organization. These receptacles are collection bins often located in central community locations which are more accessible to people than the service organization may be. Such locations include at public schools, churches, libraries, and gas stations. Service organizations will then travel to the receptacles and collect the donations from there. These donations are often of lower quality, as the anonymity associated with this type of donation often leads to individuals being less selective in what they choose to donate. One service organization surveyed, while being able to provide quantitative information, noted that these donations are more likely to be sent to landfill or shipped overseas than when donations are brought directly to service organizations. After sorting through the donations, the service organization determines whether to place the item on sale or distribute it to community members for free (whichever their service model is), send it overseas, recycle, or landfill it.

Route 3:

A business or manufacturer has excess or unsold goods. Service organizations then have the opportunity to purchase these goods at a much lower price than the goods would be sold for by the primary producer. These goods are not considered source reduced.

Route 4:

A hotel, school, or office or similar entity conducts renovations. The furniture and other usable construction materials removed in the process of renovation may then be donated to a service organization.

Goodwill Manasota provided the most detailed information on the donation process and the only quantitative data on the accepted donations and landfilled items from the store. In addition to the options

listed for what happens to items when received, Goodwill has another option for goods that are not of high enough value to be sold in their regular stores. Goodwill “by-the-pound” stores may go by different names depending on their region, but are essentially locations with textiles or other goods which are not priced and sold individually but instead are sold to costumers based on mass of items purchased. These are items which either went to their main stores and did not sell, or items which were too low quality to even make it to normal stalks yet could still conceivably be sold.

Electronic donations may go through another process. Organizations may, instead of refurbishing electronics to resell, break down items to remove valuable parts such as copper and gold within the hardware and sell these items for money.

Identified missing material categories

We examined recent waste composition studies, researched product and materials trends, and spoke with waste management professionals to identify what additional materials to include beyond the traditional 18 materials reported in the FDEP annual solid waste report. See Table 1.

Table 1. Identified missing material categories for tool.

Original FDEP Categories	Does the material have a new category? (Y-Yes, N-No)	New Categories	Notes
Newspaper	N		
Glass	N		
Aluminum Cans	N		
Plastic Bottles	Y	HDPE and PET	Category broken apart using assumptions
Steel Cans	N		
Corrugated Boxes	N		
Office Paper	N		
Yard Trash	N		
Other Plastics	Y	Mixed plastics	Only name change
Ferrous Metals	Y	Mixed metals	Sum of the three categories
White Goods	Y		
Non Ferrous Metals	Y		
Other Paper	Y	Mixed paper and magazines/third-class mail	Category broken apart using assumptions
Textiles	Y	Clothing and footwear	Only name change
C&D Debris	Y	Dimensional lumber, asphalt shingles, gypsum drywall, concrete, asphalt pavement	Category broken apart using assumptions
Food Waste	N		
Miscellaneous	Y	Mixed MSW, electronics, and furniture	Category broken apart using assumptions
Tires	N		
Process Fuel	N		

Open Public Meeting for SWANA Hinkley Center Symposium

We conducted a meeting for public stakeholders via the SWANA Hinkley Center for Solid and Hazardous Waste Management Symposium on zoom on October 13th, 2020. The presentation is included on the project website.

Work planned for the next reporting period:

Development of Source Reduction Measurement Methods

We will create a method to estimate source reduced masses based on industry reports, solid waste reports, and sales data as mentioned by the stakeholder group.

Create Actual Worksheet/Spreadsheet Tool

We will review the existing WasteCalc and HC18/19 LCI tool and see how to harmonize them, as well as add the other deliverables listed in the project tasks.

Create Missing Categories LCI Factors

We will use LCA models and literature to develop the LCI factors for source reduction and any other end-of-life treatment methods for all the material categories.

Metrics:

Name	Rank	Department	Professor	Institution
Malak Anshassi	PhD Student	Environmental Engineering	Dr. Townsend	University of Florida
Eleanora Brown	Undergraduate Student	Environmental Engineering	Dr. Townsend	University of Florida