

# QUARTERLY PROGRESS REPORT

January 1, 2020 to April 30, 2020

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

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**COMPLETION DATE:** November 1, 2020

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

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## Work accomplished during this reporting period:

### *Defining Source Reduction*

Source reduction aims to divert materials from the landfill by decreasing the volume of materials used in production and purchased by consumers as well as reducing the toxicity of the material.

Source reduction, as well as reuse, has many benefits when prioritized in waste management. Source reduction significantly reduces costs associated with waste handling and disposal from the avoidance of costly processes such as recycling, municipal composting, landfilling, and combustion. Source reduction also conserves resources and reduces pollution, including greenhouse gases that contribute to global warming.

Source reduction encompasses consideration of the full life cycle of the waste. Source reduction activity could occur at any of the stages of the life cycle of the waste, or from start to finish. Design, manufacture, use, and disposal are all periods in which source reduction methods can be implemented in consideration of reducing the impact of that waste's life cycle.

Source reduction is closely linked with life cycle assessment methods. To truly reduce the environmental impact of a waste product there must be a full analysis of all the aspects in which the waste has an effect. Life cycle assessments help inform the most productive source reduction action that can and should take place and look at a product not as the sum of its parts but the parts themselves to see the balance of materials and energy used or discharged during the entire life of the product/package.

### ***Source Reduction Measurement Methods***

As previously stated, a major obstacle to widespread source reduction is the ability to follow, track, and announce its results, and thus its impacts. In order to encourage source reduction it must be seen as successful and productive, and this is achieved through quantifiable information which may be difficult to receive. Potential steps to quantifying source reduction through tracking of waste include:

1. Taking inventory of waste
2. Monitoring quantity and composition of waste generated
3. Calculating costs avoided from not needing to remove the waste that was not produced
4. Calculating the costs avoided from not purchasing the items contributing to waste

Currently the Florida Department of Environmental Protection (FDEP) does not require source reduction efforts to be tracked, therefore data is limited on what is accounted for in the solid waste annual reports. Through conversations with FDEP we identified food waste and textiles to be the main materials source reduced via donations and accounted for in the reports.

### ***Material Categories to Estimate Source Reduced Masses***

The ability to measure the amount of waste prevented and the process in doing so will depend on the category of waste being tracked. There are different categories of Municipal Solid Waste (MSW) that carry different lifespans, and a differing lifespan impacts what route to take when measuring source reduction. For the purposes of the information that follows, two categories of waste are below.

#### **I. Packaging Products**

Packaging products are meant to be consumed over a short time period and are defined by the EPA as products with a lifetime of less than 3 years. They are collected as garbage and make up around 20% of the total waste generation.

Some examples of non-durable goods are:

- Paper/Paperboard Packaging Products
- Plastic Packaging Products

- Glass Packaging Products
- Metal Packaging Products

## II. Durable

Durable goods are meant to be consumed over an extended time period and are defined by the EPA as products used for at least three years. Durable goods are not incorporated in the typical collection of Municipal Solid Waste and are often times more complicated to handle (bigger, bulkier, etc) but can be of any size, and can range across many categories.

Some examples of durable goods are:

- Furniture
- Carpets and Rugs
- Vehicle Tires
- Electronics
- Lead Acid Batteries
- Major/ Small Appliances

## III. Construction and Demolition Debris

Construction and demolition (C&D) debris materials are those that were generated from construction and demolition activities associated with homes, buildings, roads, and bridges.

## IV. Organics

Organics materials are not typically source reduced like materials mentioned above via consuming less, instead it is through generating less waste. Specific materials include food waste and yard trimmings.

### ***First Stakeholder Working Group Meeting Recap***

The stakeholders met in Tallahassee at the FDEP facility on January 10<sup>th</sup>, 2020. The presentation is included on the project website. The key take-aways are shown below:

- The group agreed the tool will provide assistance to county recycling coordinators and solid waste directors who want to easily measure their waste management program's environmental footprints.
- The group mentioned that the water use and greenhouse gas emissions lifecycle impact metrics will be most useful in waste management program decision-making.
- The group discussed how this information can be incorporated in waste policy making, specifically with regards to the fact the 75% recycling goal is set to sunset this year (2020) and recommendations are needed to alter the goal.
- The group mentioned that using a sales data, such as the units sold, can be adapted to form an estimate for the mass of a material consumed for multiple years; this can be used to estimate source reduced masses.
  - The group mentioned that organizations like Goodwill Industries, Salvation Army, and food donation organizations can be contacted to identify the scope of source reduced textiles and food waste.

### **Work planned for the next reporting period:**

#### ***Development of Source Reduction Measurement Methods***

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

#### ***Identify missing material categories***

We will examine recent waste composition studies, research product and materials trends, and speak with waste management professionals to identify what additional materials to include beyond the traditional 18 materials reported in the FDEP annual solid waste report.

**Metrics:**

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