Materials Management: Data, Analytics and Goals

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Association of State and Territorial Solid Waste Management Officials (ASTSWMO)
August 2017
Overview

• State Measurement Program (SMP)
  • 2015 SMP Summary
  • Analytics Reviews
  • RecycleSearch
  • Discussion
• Goals and Measurement
  • State Goals
  • Discussion
SMP is a Web-based information sharing program on solid waste, recycling and SMM management that includes data and state programmatic information.
2015 SMP Results

32 states and District of Columbia
## 2015 SMP Results

<table>
<thead>
<tr>
<th>Disposed</th>
<th>Recycled</th>
<th>Composted</th>
</tr>
</thead>
<tbody>
<tr>
<td>269.2 million tons with 225 million tons MSW</td>
<td>85 million tons</td>
<td>12 million tons</td>
</tr>
<tr>
<td>(32 states + DC) 237 million people</td>
<td>(22 states + DC) 171 million people</td>
<td>(23 states + DC) 150 million people</td>
</tr>
</tbody>
</table>
Overview of Analytics

This section enables you to:
- Instantly generate valuable reports.
- Efficiently measure my data, and monitor trends, to enhance program performance and waste diversion.

To begin:
- Click a report type from the sidebar to quickly generate analytical reports.
Overview of Analytics

Click on “View All Analytics” To get all of the reports available
Overview of Analytics

STATE MEASUREMENT PROGRAM ANALYTICS

Member: EPA

Analytics:

1. National Template (2013 to 2015 Reports)
   - Comparative Analysis
   - Diversion Components
   - Economic Benefits
   - Environmental Benefits
   - MAPS - Solid Waste Import/Export
   - MAPS - State Snapshot
   - MAPS - Tip Fees
   - Materials Analysis
   - Per Capita
   - Per Household
   - Question 1 to 15

2. SMM Module: Planning Reports
   - Climate Action Plans
   - Local Government Planning and Roles
   - Other Planning Mechanisms and Plan Funding
   - Statewide SMM Planning

3. SMM Module: Key Drivers
   - Composting Goals
   - Key Drivers of State Programs
   - Mandatory Recycling Programs
   - Other Drivers
   - Other Goals
   - Overall Waste Diversion Goals
   - Recycling Goals
   - Solid Waste Management Hierarchy
   - Zero Waste Goals

4. SMM Module: Strategies
   - Current SMM Strategies
   - Environmentally Preferable Purchasing Programs
   - Life-cycle Based Approaches
   - Market Development Programs
   - Pay as you Throw Programs
   - Product Stewardship Programs
   - Source Reduction Programs

5. SMM: Material Specific Strategies
   - Construction & Demolition Debris Programs
   - Electronics Management Programs
   - Materials/Products Targeted with Specific Strategies
   - Organics Management - Anaerobic Digestion Programs
   - Organics Management - Composting Programs
   - Organics Management - Landfill Ban Programs
   - Packaging Programs
   - Scrap Tire Management Programs

National Template (2012)
- Benefit Report
- Diversion Components
- Materials Analysis
- Per Capita
- Per Household
- Question 1 to 15

View All Analytics
Comparative Analysis

State Measurement Program: Comparative Analysis Report

Note: To print this report in PDF format, please use legal size paper and landscape orientation.

Year: 2015

Report:
1. Recycling
2. Composting
3. Construction & Demolition
4. All Reports

State:
- Alabama
- Alaska
- Arizona
- Arkansas

Region:
- Region 01
- Region 02
- Region 03
- Region 04

Export as: XLS, CSV, PDF
Comparative Analysis

COMPARATIVE ANALYSIS

Member: EPA

State Measurement Program: Comparative Analysis Report

Note: To print this report in PDF format, please use legal size paper and landscape orientation.

<table>
<thead>
<tr>
<th>Year</th>
<th>Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>1. Recycling</td>
</tr>
<tr>
<td></td>
<td>2. Composting</td>
</tr>
<tr>
<td></td>
<td>3. Construction &amp; Demolition</td>
</tr>
<tr>
<td></td>
<td>4. All Reports</td>
</tr>
</tbody>
</table>

State:

- Alabama
- Alaska
- Arizona
- Arkansas

1. Select Report
2. Click the drop box for year
3. Click reports you want. The most popular is #4 All Reports.
4. Select states or regions.
5. Generate Report
### Comparative Analysis Report - Recycling

#### 2015

<table>
<thead>
<tr>
<th>RECYCLING (LBS/PERSON)</th>
<th>MSW DISPOSAL (LBS/PERSON)</th>
<th>MSW LANDFILL CAPACITY (YEARS)</th>
<th>AVERAGE TIPPING FEE (MSW LANDFILLS)</th>
<th>RECYCLING MANDATE</th>
<th>STRATEGIES</th>
<th>MATERIAL SPECIFIC STRATEGIES</th>
<th>GOALS</th>
<th>TOTAL STAFFING</th>
<th>STATE PROGRAM FUNDING REVENUE ($/CAPITA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>665.6*</td>
<td>1,798.2</td>
<td>No Data Available</td>
<td>42.0</td>
<td>No</td>
<td>Recycling market development</td>
<td>Organics</td>
<td>Overall Waste Diversion</td>
<td>31.0</td>
<td>$1.28</td>
</tr>
<tr>
<td>122.3</td>
<td>2,397.6</td>
<td>No Data Available</td>
<td>No Data Available</td>
<td>No</td>
<td>Recycling market development</td>
<td>Construction and demolition debris</td>
<td>Scrap tires</td>
<td>No Data Available</td>
<td>No Data Available</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Material or product-specific waste prevention or recycling strategies</td>
<td>Electronics</td>
<td>Composting</td>
<td>No Data Available</td>
<td>No Data Available</td>
</tr>
</tbody>
</table>

*Note: The table displays the recycling data and strategies for various areas, along with state program funding revenue per capita.
## Comparative Analysis Report - Composting

### 2015

<table>
<thead>
<tr>
<th>STATE</th>
<th>NUMBER OF COMPOSTING FACILITIES</th>
<th>NUMBER OF ANAEROBIC DIGESTERS</th>
<th>TOTAL COMPOSTING TONS</th>
<th>COMPOSTING REGULATIONS</th>
<th>COMPONENTS Addressed in Composting Regulation</th>
<th>LANDFILL BAN Part of Organics Strategy?</th>
<th>ANAEROBIC DIGESTION Part of Organics Strategy?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>No Data Available</td>
<td>No Data Available</td>
<td>28,866.0*</td>
<td>Yes</td>
<td>Food waste composting</td>
<td>No Data Available</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Yard waste composting</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Other biodegradable waste composting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arizona</td>
<td>No Data Available</td>
<td>No Data Available</td>
<td>No Data Available</td>
<td>No Data Available</td>
<td>No Data Available</td>
<td>No Data Available</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No Data Available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arkansas</td>
<td>No Data Available</td>
<td>No Data Available</td>
<td>36,074.1*</td>
<td>Yes</td>
<td>Yard waste composting</td>
<td>Yard waste</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Food waste composting</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Yard waste composting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Some data is marked as No Data Available.
### Comparative Analysis Report - Construction & Demolition

**2015**

Displaying 34 results

<table>
<thead>
<tr>
<th>STATE</th>
<th>C&amp;D DISPOSAL (LBS/PERSON)</th>
<th>C&amp;D STRATEGY FOR RECYCLING</th>
<th>DOES A C&amp;D LANDFILL BAN EXIST?</th>
<th>C&amp;D LANDFILL CAPACITY (YEARS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mississippi</td>
<td>811.3</td>
<td>Mississippi generates thousands of tons of architectural debris, also referred to as construction and demolition or C&amp;D debris, each year. The U.S. Environmental Protection Agency estimates that architectural debris comprises 25 percent of the nation’s overall waste stream. This waste often contains materials such as lead paint, asbestos, fluorescent light bulbs, light ballasts, treated lumber, and other items that have management restrictions and regulations. To provide assistance and guidance to those involved in the management and disposal of architectural debris, MDEQ has developed a new document entitled “Architectural Debris Disposal Guidance” which integrates state and federal regulations. While the guidance document does not address every possible solid waste material that might be encountered, MDEQ has attempted to include some of the more common components generated when conducting these activities: <a href="http://www.michigan.gov/documents/deq/deq-eq-t...">http</a>.</td>
<td>No</td>
<td>22.0</td>
</tr>
</tbody>
</table>
Diversion Components
## Diversion Rate Components

### 2015

Displaying 34 results

<table>
<thead>
<tr>
<th>STATE</th>
<th>MATERIALS AND ACTIVITIES</th>
<th>DIVERSION SECTOR REPORTING</th>
<th>TYPE OF DISPOSAL TONNAGE REPORTED</th>
<th>TYPE OF IMPORT/EXPORT DATA</th>
<th>TYPE OF ENERGY RECOVERY REPORTED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Recycling: Unspecified, Only a Total Provided</td>
<td>No Data Available</td>
<td>MSW Landfill</td>
<td>Unspecified Import</td>
<td>Anaerobic Digesters</td>
</tr>
<tr>
<td></td>
<td>Composting: Unspecified, Only a Total Provided</td>
<td></td>
<td>WTE Facility</td>
<td>Unspecified Export</td>
<td>Other Technologies</td>
</tr>
<tr>
<td></td>
<td>Reuse: No Data Available</td>
<td></td>
<td></td>
<td></td>
<td>Waste to Energy</td>
</tr>
<tr>
<td></td>
<td>Beneficial Use: Unspecified, Only a Total Provided</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recycling: Aggregate, All Tires, Asphalt Shingles, Autobodies, Batteries, Commingled, Electronics, Glass, HHW, Metals, Paper, Plastics, Textiles, Used Oil, Wood</td>
<td></td>
<td>Commercial</td>
<td>No Import Data Available</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Composting: Food &amp; Yard, Other Organic</td>
<td></td>
<td>Industrial</td>
<td>No Export Data Available</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reuse: No Data Available</td>
<td></td>
<td>Institutional</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beneficial Use: Other</td>
<td></td>
<td>Residential</td>
<td>No Export Data Available</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Facilities in State</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Additional Notes

- The table displays the materials and activities that are diverted, along with the type of diversion for each category.
- California and Colorado are highlighted, showing specific data for each state.
Most popular report is the Economic Benefits All Reports.
### Economic Benefits – Landfill Cost Avoidance

#### 3. Landfill Cost Avoidance

<table>
<thead>
<tr>
<th>STATE</th>
<th>RECYCLING (TONS)</th>
<th>TIPPING FEE (AVERAGE)</th>
<th>LANDFILL COST AVOIDANCE ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Actual</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alabama</td>
<td>1,616,963.0*</td>
<td>$42.00</td>
<td>$67,912,446.00</td>
</tr>
<tr>
<td>Arkansas</td>
<td>2,789,866.5*</td>
<td>$39.03</td>
<td>$108,888,491.06</td>
</tr>
<tr>
<td>California</td>
<td>29,772,500.0</td>
<td>$54.00</td>
<td>$1,607,715,000.00</td>
</tr>
<tr>
<td>Colorado</td>
<td>3,625,039.0*</td>
<td>$30.22</td>
<td>$109,548,678.58</td>
</tr>
<tr>
<td><strong>Extrapolated</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arizona</td>
<td>417,387.0</td>
<td>$45.45</td>
<td>$18,970,239.15</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>33,460.0</td>
<td>$45.45</td>
<td>$1,520,757.00</td>
</tr>
<tr>
<td>Florida</td>
<td>13,832,886.0</td>
<td>$45.45</td>
<td>$628,704,668.70</td>
</tr>
<tr>
<td>Georgia</td>
<td>868,784.2</td>
<td>$45.45</td>
<td>$39,486,240.98</td>
</tr>
</tbody>
</table>
Environmental Benefits

Environmental Benefits come from WARM with 3 equivalencies

State Measurement Program: Environmental Benefits (State Report)

Type of Benefit:
- Domestic Equivalencies
- Fuel Equivalencies
- Natural Resources Equivalencies

Choose Year: 2015

Group: All Groups

Generate Report
## Environmental Benefits Analysis (Domestic Equivalencies)

### 2015

<table>
<thead>
<tr>
<th>MATERIALS</th>
<th>MTC02E</th>
<th>PASSENGER VEHICLES</th>
<th>HOMES WORTH OF ELECTRICITY</th>
<th>HOMES WORTH OF ENERGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iowa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food Scraps &amp; Yard Trimmings (combined)</td>
<td>14,441.96</td>
<td>3,040.41</td>
<td>1,986.51</td>
<td>1,316.50</td>
</tr>
<tr>
<td>Total:</td>
<td>-418,322.40</td>
<td>-88,067.87</td>
<td>-57,540.91</td>
<td>-38,133.31</td>
</tr>
<tr>
<td>Kansas</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food Scraps &amp; Yard Trimmings (combined)</td>
<td>24,337.00</td>
<td>5,123.58</td>
<td>3,347.59</td>
<td>2,218.51</td>
</tr>
<tr>
<td>MSW Landfill, MSW</td>
<td>-348,638.42</td>
<td>-73,397.56</td>
<td>-47,955.77</td>
<td>-31,781.08</td>
</tr>
</tbody>
</table>
## Environmental Benefits – Fuel Equivalencies

### Environmental Benefits Analysis (Fuel Equivalencies)

**2015**

<table>
<thead>
<tr>
<th>MATERIALS</th>
<th>MTC02E</th>
<th># OF GALLONS OF GAS</th>
<th># OF PROpane CYLINDERS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maine</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commingled (mixed) Recyclables</td>
<td>1,131,318.44</td>
<td>127,544,355.79</td>
<td>47,138,268.16</td>
</tr>
<tr>
<td>Food Scraps &amp; Yard Trimings (combined)</td>
<td>5,484.05</td>
<td>618,269.06</td>
<td>228,501.94</td>
</tr>
<tr>
<td>MSW Landfill</td>
<td>-115,921.55</td>
<td>-13,068,946.32</td>
<td>-4,830,064.74</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td>1,020,880.93</td>
<td>115,093,678.53</td>
<td>42,536,705.36</td>
</tr>
<tr>
<td><strong>Maryland</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commingled (mixed) Recyclables</td>
<td>18,666,843.22</td>
<td>2,104,491,907.32</td>
<td>777,785,134.08</td>
</tr>
<tr>
<td>Food Scraps</td>
<td>12,248.94</td>
<td>1,380,939.85</td>
<td>510,372.35</td>
</tr>
<tr>
<td>MSW Landfill</td>
<td>-994,195.15</td>
<td>-112,085,134.93</td>
<td>-41,424,797.78</td>
</tr>
<tr>
<td>Other Organic Materials</td>
<td>23,568.44</td>
<td>2,657,096.19</td>
<td>982,018.47</td>
</tr>
<tr>
<td>Yard Trimings</td>
<td>78,728.89</td>
<td>8,875,861.82</td>
<td>3,280,370.60</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td>17,787,194.35</td>
<td>2,005,320,670.24</td>
<td>741,133,097.71</td>
</tr>
</tbody>
</table>

---

The table above provides a detailed analysis of environmental benefits in terms of fuel equivalencies. It compares different materials, such as commingled (mixed) recyclables, food scraps, yard trimmings, MSW landfill, and other organic materials, in the states of Maine and Maryland. The data includes MTC02E, gallons of gas, and propane cylinders, highlighting the environmental impact and potential savings from recycling and waste management initiatives.
<table>
<thead>
<tr>
<th>MATERIALS</th>
<th>MTC02E</th>
<th>ACRES OF FOREST PRESERVED</th>
<th>ACRES OF FOREST STORING CARBON</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Massachusetts</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSW Landfill, Burned at Waste-to-Energy Facility, MSW, C &amp; D, Other Non-hazardous Waste</td>
<td>-920,454.63</td>
<td>-7,107.21</td>
<td>-754,471.01</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td>-920,454.63</td>
<td>-7,107.21</td>
<td>-754,471.01</td>
</tr>
<tr>
<td><strong>Michigan</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronics</td>
<td>30,077.14</td>
<td>232.24</td>
<td>24,653.39</td>
</tr>
<tr>
<td>Food Scraps</td>
<td>2,441.76</td>
<td>18.85</td>
<td>2,001.44</td>
</tr>
<tr>
<td>MSW Landfill, Burned at Waste-to-Energy Facility, C &amp; D Landfill, Non-hazardous Industrial Landfill</td>
<td>-3,167,602.77</td>
<td>-24,458.36</td>
<td>-2,596,395.72</td>
</tr>
<tr>
<td>Tires</td>
<td>56,849.57</td>
<td>438.96</td>
<td>46,598.01</td>
</tr>
<tr>
<td>Yard Trimmings</td>
<td>48,196.70</td>
<td>372.15</td>
<td>39,505.49</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td>-3,030,037.60</td>
<td>-23,396.17</td>
<td>-2,483,637.38</td>
</tr>
</tbody>
</table>
Solid Waste Imports

State Measurement Program (2015)

Solid Waste Import Tonnages (All Solid Waste)

CHANGING HOW WE THINK ABOUT OUR RESOURCES FOR A BETTER TOMORROW

www.epa.gov/smm
Solid Waste Imports

State Measurement Program (2015)
Solid Waste Import Tonnages (All Solid Waste)

Click on state for more detailed information

Ohio: 3,247,230 Tons
Solid Waste Imports

State Measurement Program (2015)
Solid Waste Import Tonnages (All Solid Waste)

Ohio Import Tonnages - Total 3,247,230
Solid Waste Import Tonnages (All Solid Waste)
MAPS - State Snapshot

Program: STATE MEASUREMENT PROGRAM

Select Map

- Recycling Tonnages

Year

- 2015

Generate Report
Disposal Tonnages

Arizona
- Recycling Tonnages: 417,387*
- Composting Tonnages: No Data
- MSW Disposal Tonnages: 8,185,378*
- Recycling per Household: 289
- Composting per Household: No Data
- MSW Disposal per Household: 5,660
Recycling Per Household

State Measurement Program (2015)
Recycling per Household (by State)
MAPS – Tip Fees

Program: STATE MEASUREMENT PROGRAM

Year
2015

Generate Report
RecycleSearch

- Publicize agency programs, links, and contacts
- Publish reports directly from the SMP
RecycleSearch - Reports

Select a report to view:

**Economic Benefits** - This dynamic report includes a summary of each state’s recycling, composting and MSW tons of all disposal methods (excluding transfer stations and imports), the population and pounds per person by recycling, composting and disposal by state, the total landfill cost avoidance of recycling (with recycling tonnage and state average tipping fees) and a generalized recycling impact per state based upon the data submitted (2013-2015).

**Environmental Benefits - Domestic Equivalencies (2015)** - This report includes a snapshot of the estimated greenhouse gas emission reductions, passenger vehicles taken off the road, homes worth of electricity use per year saved and homes worth of energy use per year for each state based upon the commodities detail included in each state data submittals.

**Key Drivers of State Programs** - This report summarizes the key drivers for each participating state’s waste prevention, recycling, and/or materials management program.

**MAPS - Solid Waste Import/Export** - Maps are dynamic - hover over a state to get details on Solid Waste Imports and Exports (2013-2015).

**MAPS - State Snapshot** - Maps are dynamic - hover over a state to get the top six facts for each state in State Snapshot (2013-2015)

**MAPS - Tip Fees** - Maps are dynamic - see average tip fee gate changes for each state (2013-2015).

**Question 1 to 15** - A dynamic report that allows you to generate a number of tables for each question of the 15 questions contained in the State Measurement Template (2013-2015).

**Summary of Pay-As-You-Throw Programs 2014** - This report summarizes policies and programs that promote or require Pay-as-you-throw at the local level.
TENNESSEE ANNUAL PROGRESS REPORT

Overview of the Reporting Process: Like other states, Tennessee uses Re-TRAC Connect, a web based service that does not require specialized software to be installed on the user's computer, in order to request and collect data for annual reports. This service simplifies the process of submitting data for the APR and allows users to readily generate charts and graphs and create customized reports so they can monitor program and trends.

The Solid Waste Management Act of 1991 states that the Tennessee Department of Environment and Conservation (TDEC) “shall make available on its website, by January 1 of each year, the forms and information to be used by the regions to file an Annual Progress Report (APR).” It also states that “each region shall submit the annual report to the commissioner by March 31 for the immediately preceding calendar year... which will include data on the following: collection, recycling, transportation, disposal, public costs, and any other information that the board, by rule, deems relevant to solid waste planning and management.” Furthermore, regions are also required to submit an APR on the implementation of their approved Municipal Solid Waste Regional Plans in conjunction with the annual report.

Why Local Solid Waste Management Reporting Matters: The 1991 Solid Waste Management Plan identified the following solid waste issues: uncertainty regarding solid waste capacity, lack of a materials management approach (including lack of capacity in recycling, collection and processing), inadequate garbage collection infrastructure, and lack of information about the cost of solid waste management. Reporting has played and will continue to play a key role in addressing all of these issues.

Reporting allows TDEC to: assess how regional plans tie into the State Plan; better understand how regions are implementing their plans; determine which regions are meeting established goals; understand why regions may not be meeting current goals; better set goals and expectations; and consider changes in waste management costs and waste capacity needs.

Current annual report can be found at here.
Tennessee RecycleSearch Profiles

Tennessee Annual Progress Report

Activities: Recycling, Waste Reduction, Landfill Disposal
Sectors: All Sectors Combined

Davidson
Recycling: 4,602.00 Tons
Waste Reduction: 7,813.10 Tons
Landfill Disposal: 255,025.00 Tons
Total: 267,440.10 Tons
Tennessee RecycleSearch Profiles

TENNESSEE ANNUAL PROGRESS REPORT
Tennessee Department of Environment and Conservation

RECYCLING, DIVERSION AND DISPOSAL TREND REPORTS
TN trend reporting for 2012-2014.

Recycling Trends (Tons)
Member: County, Response Status: Any Status, Group: Any Group, Sectors: Residential - (Public government collected), Commercial - (Retail, and office), Industrial - (Manufacturing sectors), Institutional - (Universities, hospitals, correctional facilities, non-local government), Commercial/Industrial, Commercial/Institutional, Commercial/Institutional/Industrial, All Sectors, Special Event - (Festivals, events, once a year activities), Other - (Call TDEC case by case)

2013: 518,817.80
Paper
Click to View Report: Material
Upcoming SMP Dates

Aug 28, 2017 — SMP Session at Resource Recycling

Sep 5, 2017 — State reporting for 2016 opens

Dec 1, 2017 — Deadline state reporting for 2016

Feb 27-Mar 1, 2018 — National Measurement Summit
State Measurement Program (SMP)

Questions & Discussion
Key Drivers of State Programs

- Goals: 45
- Hierarchy: 30
- Mandates: 25
- Other: 10

CHANGING HOW WE THINK ABOUT OUR RESOURCES FOR A BETTER TOMORROW

www.epa.gov/summ
State Goals

What are your state goals?
State Goals

Key Variants

• Definitions
  – Diversion
  – Recovery
  – Zero Waste
  – Disposal
  – Recycling

• Scope
  – Materials Included/Excluded (MSW, Solid Waste, C&D)
  – Management Methods Included/Excluded (Source Reduction, Waste to Energy)
Evolution of Philosophy

Waste Management

Recycling

Integrated Waste Management

Sustainable Materials Management

www.epa.gov/smm
While philosophy has evolved, our goals have not

Recycling Rate = 35%
Goal is set at one tier – Recycling

What about:
• Generation
• Landfilling (Zero Waste)
258,460,000 Tons of Waste Generated in 2014

- Recycling: 135,920,000; 52%
- Combustion with Energy Recovery: 66,380,000; 26%
- Composting: 33,140,000; 13%
- Landfill: 23,020,000; 9%

Note: Recycling and Composting combined equal 89,400,000 tons (35% of all waste generated)
Waste Hierarchy

*Landfilling after composting, recycling and combustion with energy recovery. Includes combustion without energy recovery.
# Measuring SMM

## U.S. Top Ten Most Impactful Goods and Services

<table>
<thead>
<tr>
<th>Rank</th>
<th>Goods &amp; Services</th>
<th>HHCan</th>
<th>HHNonCan</th>
<th>HHResp</th>
<th>EcoTox</th>
<th>GWrm</th>
<th>OzDepl</th>
<th>Smog</th>
<th>Acid</th>
<th>Eutro</th>
<th>Energy</th>
<th>Land</th>
<th>Water</th>
<th>Matl</th>
<th>Waste</th>
<th>Rank Value</th>
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<tr>
<td>1</td>
<td>Electric power generation, transmis...</td>
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<td>14.3</td>
<td>1.3</td>
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<td>11.7</td>
<td>15.8</td>
<td>1.2</td>
<td>12.8</td>
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<td>14.4</td>
<td>2.0</td>
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<tr>
<td>2</td>
<td>Residential permanent site single- ...</td>
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<td>3.7</td>
<td>3.5</td>
<td>2.2</td>
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<td>4.6</td>
<td>2.3</td>
<td>&lt;1</td>
<td>4.1</td>
<td>5.9</td>
<td>16.1</td>
<td>9.2</td>
<td>22.0</td>
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<tr>
<td>3</td>
<td>Animal (except poultry) slaughterin...</td>
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<td>&lt;1</td>
<td>2.8</td>
<td>&lt;1</td>
<td>2.3</td>
<td>&lt;1</td>
<td>1.1</td>
<td>3.9</td>
<td>4.3</td>
<td>1.1</td>
<td>15.4</td>
<td>3.2</td>
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<td>&lt;1</td>
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<td>&lt;1</td>
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<td>&lt;1</td>
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<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>3.7</td>
<td>16.8</td>
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<tr>
<td>5</td>
<td>Waste management and remediation se...</td>
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<td>12.2</td>
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<td>&lt;1</td>
<td>&lt;1</td>
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<tr>
<td>6</td>
<td>Greenhouse, nursery, and floricultu...</td>
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<td>&lt;1</td>
<td>3.3</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>14.1</td>
<td>&lt;1</td>
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<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>14.5</td>
<td></td>
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<tr>
<td>7</td>
<td>Food services and drinking places</td>
<td>3.9</td>
<td>3.3</td>
<td>3.2</td>
<td>3.1</td>
<td>3.4</td>
<td>2.1</td>
<td>2.8</td>
<td>3.1</td>
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<td>4.0</td>
<td>5.6</td>
<td>1.0</td>
<td>6.7</td>
<td>14.2</td>
</tr>
<tr>
<td>8</td>
<td>Light truck and utility vehicle man...</td>
<td>5.9</td>
<td>9.6</td>
<td>1.2</td>
<td>5.0</td>
<td>2.1</td>
<td>3.1</td>
<td>1.9</td>
<td>1.2</td>
<td>&lt;1</td>
<td>1.7</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>2.6</td>
<td>13.5</td>
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<tr>
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<td>4.7</td>
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<td>1.7</td>
<td>3.4</td>
<td>&lt;1</td>
<td>3.7</td>
<td>13.4</td>
</tr>
<tr>
<td>10</td>
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<td>&lt;1</td>
<td>1.3</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>8.9</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>9.9</td>
<td></td>
</tr>
</tbody>
</table>
Material vs Product

**MATERIALS**

- Yard trimmings: 23.6%
- Paper & paperboard: 49.7%
- Other: 6%
- Wood: 2.9%
- Plastics: 3.5%
- Glass: 3.3%
- Metals: 8.8%

*In percent by weight of total recycling and composting

**PRODUCTS**

- Yard trimmings: 21,080,000, 24%
- Food: 1,940,000, 2%
- Other Misc. Nondurable Goods: 9,710,000, 11%
- Clothing and Footwear: 1,900,000, 2%
- Newspapers: 5,200,000, 6%
- Durable Goods: 9,750,000, 11%
- Other Paper and Paperboard Packaging: 2,210,000, 2%
- Corrugated Boxes: 27,280,000, 31%
- Wood packaging: 2,570,000, 3%
- Plastics Packaging: 2,120,000, 2%
- Other Paper and Paperboard Packaging: 700,000, 1%
- Steel Packaging: 1,580,000, 2%

*In percent by weight of total recycling and composting
Measurement Focus: Tons

Material Landfilled

Paper and Paperboard: 20,000 Tons
Glass: 5,000 Tons
Ferrous Metals: 10,000 Tons
Aluminum: 5,000 Tons
Other Nonferrous Metals: 1,000 Tons
Plastics: 30,000 Tons
Rubber and Leather: 10,000 Tons
Textiles: 15,000 Tons
Wood: 10,000 Tons
Food: 35,000 Tons
Yard Trimmings: 10,000 Tons

CHANGING HOW WE THINK ABOUT OUR RESOURCES FOR A BETTER TOMORROW

www.epa.gov/smm
Measurement Focus: Recycling Rates

Material Recycling Rate

- Paper and Paperboard
- Glass
- Ferrous Metals
- Aluminum
- Other Nonferrous Metals
- Plastics
- Rubber and Leather
- Textiles
- Wood
- Food
- Yard Trimmings

Changing how we think about our resources for a better tomorrow

United States Environmental Protection Agency

www.epa.gov/smm
Measurement Focus: Value ($)

Material Commodity Values/Ton

<table>
<thead>
<tr>
<th>Material</th>
<th>Value ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDPE</td>
<td>$874.00</td>
</tr>
<tr>
<td>PET</td>
<td>$390.00</td>
</tr>
<tr>
<td>Steel</td>
<td>$122.00</td>
</tr>
<tr>
<td>Aluminum</td>
<td>$1,526.00</td>
</tr>
<tr>
<td>Newspapers</td>
<td>$51.00</td>
</tr>
<tr>
<td>Corrugated Cardboard</td>
<td>$106.00</td>
</tr>
<tr>
<td>Mixed paper</td>
<td>$56.00</td>
</tr>
<tr>
<td>Glass</td>
<td>$21.00</td>
</tr>
</tbody>
</table>

CHANGING HOW WE THINK ABOUT OUR RESOURCES FOR A BETTER TOMORROW

www.epa.gov/smm
Measurement Focus: GHGs

GHG emissions/ton recycled

- Paper and paperboard: 3.12 MMTCO2E/ton
- Glass: 0.28 MMTCO2E/ton
- Steel: 1.81 MMTCO2E/ton
- Aluminum: 9.11 MMTCO2E/ton
- Other nonferrous metals: 4.34 MMTCO2E/ton
- Plastics: 1.00 MMTCO2E/ton
- Rubber and Leather: 0.38 MMTCO2E/ton
- Textiles: 2.36 MMTCO2E/ton
- Wood: 2.46 MMTCO2E/ton
- Food, Other: 0.18 MMTCO2E/ton
- Yard trimmings: 0.15 MMTCO2E/ton

www.epa.gov/smm
Goals and Measurement

Questions & Discussion
Waste Reduction Model (WARM)

• WARM is a national tool based on data that represents the national average and common practices across the country. WARM can be tailored to local or regional situations.

• WARM calculates and totals GHG emissions of baseline and alternative waste management practices, including source reduction, recycling, combustion, composting, anaerobic digestion and landfilling.

• The model calculates emissions in metric tons of carbon equivalent (MTCE), metric tons of carbon dioxide equivalent (MTCO2E), and energy units (million BTU) across a wide range of material types commonly found in municipal solid waste (MSW).

• WARM recognizes **54 materials** from paper to plastic to organics.
### WARM Overview

1. Describe the baseline generation and management for the waste materials listed below. If the material is not generated in your community or you do not want to analyze it, leave it blank or enter 0. Make sure that the total quantity generated equals the total quantity managed.

<table>
<thead>
<tr>
<th>Material</th>
<th>Tons Recycled</th>
<th>Tons Landfilled</th>
<th>Tons Composted</th>
<th>Tons Anaerobically Digested</th>
<th>Tons Generated</th>
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<td>Aluminum Cans</td>
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<td>Steel Cans</td>
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<td>Copper Wire</td>
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</tbody>
</table>

2. Describe the alternative management scenario for the waste materials generated in the baseline. Any decrease in generation should be entered in the Source Reduction column as a negative value. Make sure that the total quantity generated equals the total quantity managed.
WARM openLCA version

Same functionality as WARM version 14

Database vs. Excel spreadsheet

Interoperable data

Flexible for future updates
Waste Reduction Model (WARM)

1. Scenarios
2. Further Characteristics
3. General Information
4. Calculation

Please enter data in short tons (1 short ton = 2,000 lbs.) and refer to the User’s Guide if you need assistance.

Baseline Scenario: Describe the baseline generation and management for the MSW materials listed below. If the material is not generated in your community or you do not want to analyze it, leave it as 0.

Alternative Scenario: Describe the alternative management scenario for the MSW materials generated in the baseline.

Each input row will be validated to sum up correctly. The tons generated in the baseline scenario must match the tons generated in the alternative scenario.

A row is valid if the sum of tons entered in the Baseline Scenario columns, as shown in the Tons Generated column, is equal to the sum of tons entered in the Alternative Scenario columns. For example, if the Baseline Scenario assumes that 100 tons of aluminum cans are landfilled, this is the Tons Generated value. To generate valid results, all values entered in the Alternative Scenarios columns must add up to 100 tons to equal the Tons Generated value.

### Baseline Scenario

<table>
<thead>
<tr>
<th>Material</th>
<th>Tons Recycled</th>
<th>Tons Landfilled</th>
<th>Tons Composted</th>
<th>Tons Composted</th>
<th>Tons Anaerobically Digested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum Cans</td>
<td>0</td>
<td>100</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Aluminum Ingot</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Steel Cans</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Copper Wire</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material</th>
<th>Tons Source Reduced</th>
<th>Tons Recycled</th>
<th>Tons Landfilled</th>
<th>Tons Composted</th>
<th>Tons Anaerobically Digested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum Cans</td>
<td>50</td>
<td>50</td>
<td>0</td>
<td>0</td>
<td>N/A</td>
</tr>
<tr>
<td>Aluminum Ingot</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>N/A</td>
</tr>
<tr>
<td>Steel Cans</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>N/A</td>
</tr>
<tr>
<td>Copper Wire</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Future for WARM 2017-2019

WARM openLCA version 15
- Updated electronics categories
- Update key emissions factors, similar to previous version updates
- Maintain Excel version at this time
- Draft memo for improving construction and demolition categories

Addition of Economic factors
- Develop a new capabilities, which will calculate economic benefits of management practices

Future Improvements
- Continue to build out economic modeling
- WARM data could feed into other models and the Federal LCA Data Commons
- Multiple impacts, beyond MTCO2E, MTCE and BTU to water, eutrophication and others included in the SMM Tool
Measurement Matters: State Conversation

4th Annual Meeting @ Resource Recycling Conference
August 28, 2018
9:00 AM to 12 noon
Lakeside Room, Hyatt Regency
Minneapolis, Minnesota
Save the Date

Measurement Matters

Summit
Feb 27-March 1, 2018
Chattanooga, TN

www.epa.gov/smm
Thank you!

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