



# **South Carolina Food Waste Generation Report**

**Prepared by South Carolina Department of Commerce**

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**South Carolina**  
**Department of Commerce**

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# South Carolina Food Waste Generation Report

This project was created to assess who South Carolina's food waste generators are, where they are located and to provide a resource map using the data collected that could be used by government and businesses to understand where and how much food waste is being generated. This map can help market development for composting and organics management by providing the location and category of generators to develop or increase composting. Entities interested in developing sites for composting, anaerobic digestion or other forms of organics management could use this information in determining what location would be the most efficient to place a facility that can take in the appropriate amount of food waste from surrounding areas.

To facilitate this project, data was collected and formed into a database that separated each generator by various categories. After using various sources to create a list of all the food waste generators in the state, formulas from the Massachusetts Food Waste Generators Report were used to calculate the estimated amount of organic waste created by each generator category.

This study was conducted with three goals:

1. Create a database of the food waste generators in South Carolina under multiple generator categories including:
  - Correctional Institutions
  - Restaurants
  - Supermarkets
  - Groceries
  - Colleges
  - Private Schools
  - Hospitals
  - Nursing Homes
  - Manufacturers/Processors
  - Wholesalers/Distributors
  - Public Schools
  - Resort/Conference Facilities
2. To create an assessment of the availability of organic waste from commercial and industrial sources.
3. To provide information for Geographic Information System (GIS) technology to map food waste generators

## Summary of the Data Collected

**Table 1**

Summary of South Carolina's Food Waste Generation from Generators Analyzed			
Generator Category	Number of Establishments	Total SSOM Generation (tons/yr)	SSOM Generation Per Establishment (tons/yr)
Correctional Institutions	29	3,788	131
Restaurants	2,451	131,937	54
Supermarkets	524	81,261	155
Groceries	211	16,076	76
Colleges (Residential)	43	12,082	281
Colleges (Non-Residential)	18	1,225	68
Independent Schools	2	27	14
Hospitals	77	7,447	97
Nursing Homes	665	12,071	18
Manufacturers/Processors	371	243,376	656
Wholesalers/Distributors	584	85,848	147
Resorts/Conference Facilities	119	7,259	61
Private Schools	77	991	13
Public Schools	1,177	21,934	19
<b>Total</b>	<b>6,348</b>	<b>625,322</b>	

Through the research data shown in **Table 1**, it is estimated that the state of South Carolina has approximately **625,322 tons** of organic food waste from these food waste generator categories. The findings of the research show that a large portion of the organic food waste that is being created in South Carolina is a result of the manufacturers and the food processors. It is important to note the average generation per establishment to see which generators are producing a large amount of waste per establishment. Residential colleges were a market with a significant amount of waste per year in a central location. The average Source Separated Organics Material (SSOM) tons of waste per year for these entities were also skewed with the larger universities contributing more to the waste stream than some of the smaller enrollment schools. It should be considered that most of these universities and private/public schools are producing the majority of their waste during the school year and see a drop-off in generation during the summer.

**Table 2**

Summary of South Carolina's Food Waste Generation from Generators Analyzed		
Generator Category	Number	Minimum Size Included in Database
Correctional Institutions	29	All identified establishments included
Restaurants	2451	>=10 employees
Supermarkets	524	>10 employees (convenience stores excluded)
Groceries	211	>10 employees (convenience stores excluded)
Colleges (Residential)	43	All identified establishments included
Colleges (Non-Residential)	18	All identified establishments included
Independent Schools	2	All identified establishments included
Hospitals	77	All identified inpatient establishments included
Nursing Homes	665	All identified establishments included
Manufacturers/ Processors	371	>=5 employees
Wholesalers/Distributors	584	>=5 employees
Resorts/Conference Facilities	119	All identified establishments included
Private Schools	77	>200 students
Public Schools	1177	All identified establishments included
<b>Total</b>	<b>6348</b>	

**Table 2** shows the requirements and minimums that the data collected was filtered through. The different requirements and minimums were used and determined in order to eliminate potential businesses that were either too small to be contributing significant waste, or businesses that were not in business. By creating these minimum requirements, the average results for the various generators were able to depict a more accurate average for each category of generator. The generators that were excluded from the study are believed to not be of significance for the goal and meaning behind the report in aiding South Carolina's food waste recovery. Each manufacturer and distributor should be evaluated individually to determine the amount of valuable food waste collectable. The value of 656 tons/year in **Table 1** under Manufacturers is greatly inflated due to large food manufacturers that have a much greater waste stream than the average manufacturer. There is no discrete formula used for the manufacturers and distributors due to multiple variables. Some of the problems with evaluating these generators include:

- If the food waste is generated in packaged containers, the process of removing the packaging can post a challenge, for the food waste must not be contaminated with other materials.
- There is no easy way to predict food waste from sales, employment, or other measure due to the variety of products and the differences in production processes.

## Formulas

**Table 3** exhibits the different formulas used to calculate the total SSOM generation (tons/yr) for each generator category. The total SSOM generation for each category was then divided by the number of businesses or institutions in that category to determine the average SSOM generation per generator. Many of the formulas were collected from the Massachusetts' Food Waste Generation Study. The formula for private schools and public schools was formed by using the non-residential college equation and adapting that equation to the average number of days that these schools are in class as well as other variable factors such as attendance rate.

**Table 3**

<b>Food Waste Generation Estimate Formulas by Generator Category</b>
<p><b>Hospitals</b></p> <p style="text-align: center;"><b>Food waste (lbs/yr) = N of beds * 5.7 meals/bed/day * 0.6 lbs food waste/meal * 365 days/yr</b></p>
<p><b>Nursing Homes and Extended Care Facilities</b></p> <p style="text-align: center;"><b>Food waste (lbs/yr) = N of beds * 3.0 meals/bed/day * 0.6 lbs food waste/meal * 365 days/yr</b></p>
<p><b>Colleges and Independent Boarding Schools</b></p> <p><b>Residential Institutions</b></p> <p style="text-align: center;"><b>Food waste (lbs/yr) = 0.35 lbs/meal * N of students * 405 meals/student/yr</b></p> <p><b>Non-Residential Institutions</b></p> <p style="text-align: center;"><b>Food waste (lbs/yr) = 0.35 lbs/meal * N of students * 108 meals/student/yr</b></p>
<p><b>Private Schools</b></p> <p style="text-align: center;"><b>Food waste (lbs/yr) = 0.35 lbs/meal * N of students * Attendance Rate* 180 meals/student/yr</b></p>
<p><b>Public Schools</b></p> <p style="text-align: center;"><b>Food waste (lbs/yr) = 0.35 lbs/meal * N of students * Attendance Rate *180 meals/student/yr</b></p>
<p><b>Correctional Facilities</b></p> <p style="text-align: center;"><b>Food waste (lbs/yr) = 1.0 lb/inmate/day * N of inmates * 365 days/yr</b></p>
<p><b>Resorts/Conference Facilities</b></p> <p style="text-align: center;"><b>Food waste (lbs/yr) = 1.0 lbs/meal * N of meals/seat/day * N of seats * 365 days/yr</b></p>
<p><b>Supermarkets and Groceries</b></p> <p style="text-align: center;"><b>Food waste (lbs/year) = N of employees * 3,000 lbs/employee/yr</b></p>
<p><b>Restaurants</b></p> <p style="text-align: center;"><b>Food waste (lbs/year) = N of employees * 3,000 lbs/employee/yr</b></p>

## Sources for Food Waste Generation

The Hoover Database was the primary resource for the data collected regarding the companies. However, the Hoover Database did not include many of the categories of information needed, so other external sources were used. Sources below are listed by the category in which data was collected for.

**General Resources-** Formula reference and other information was used through the Massachusetts Food Waste Generators Report and the Food Residual Generation Report in Connecticut - <http://www.mass.gov/eea/docs/dep/recycle/priorities/foodwast.pdf>, [http://www.ct.gov/deep/lib/deep/compost/compost\\_pdf/ct\\_food\\_residual\\_generator\\_report\\_2012.pdf](http://www.ct.gov/deep/lib/deep/compost/compost_pdf/ct_food_residual_generator_report_2012.pdf)

**Correctional Institutions-** The number of inmates and the list of facilities were provided by the South Carolina Department of Corrections. Several of these institutions are located next to each other but operate separately depending on the level of security for the inmates in each institution.

**Restaurants-** The list of restaurants and number of employees was obtained using SIC codes through Hoover Database. These were then filtered to meet required criteria. A large number of registered restaurants under the Hoover Database consisted of only 1-5 employees, resulting in many of these restaurants to not be included in the research in order to maintain the goal of the research and provide businesses that would be valuable for a composter to locate.

**Supermarkets and Groceries-** The list of supermarkets and groceries was obtained through multiple SIC code searches through Hoover Database; these results were then examined to determine if they met the required criteria to be considered for the research. Convenience stores, including gas stations, were then sifted out resulting in the businesses that are constantly contributing to the food waste stream.

**Colleges-** The list of colleges were obtained through Hoovers Database. Each university website was then used to determine residency provided and student enrollment. It was determined to create two separate categories for colleges, residential and non-residential, to show the large difference in amount of waste generated per university. This differential provides a clearer picture as to the opportunity for composting near these universities.

**Independent and Private Schools-** South Carolina's Information Highway was used to collect the list of private schools then this list was filtered to meet the required number of students to be included in the study - <http://www.sciway.net/edu/k12/k12private.html>. As previously stated, it is important to understand that these schools are producing the majority of their waste during the school calendar year.

**Hospitals-** The hospitals data set list of hospitals in South Carolina was collected from the American Hospital Directory - [http://www.ahd.com/states/hospital\\_SC.html](http://www.ahd.com/states/hospital_SC.html). Each hospital needed to have beds in which food was served to patients.

**Nursing Homes-** The data from the nursing homes was collect using the South Carolina Office on Aging and South Carolina Healthy Connections - <http://www.nfbl.sc.gov/>

**Manufacturers/Processors-** The list of manufacturers and processors was obtained through multiple SIC codes using the Hoover Database. The formulas from the Massachusetts and Connecticut reports were then used to calculate the waste generation.

**Wholesalers/Distributors-** The list of wholesalers and distributors was obtained through multiple SIC codes using the Hoover Database. The formulas from the Massachusetts and Connecticut reports were then used to calculate the waste generation.

**Resorts/Conference Facilities-** The list of resorts and conference facilities was collected through the Hoover database. The number of seats and meals were then estimated using information from the Massachusetts and Connecticut reports.

**Public Schools-** The information regarding public school headcounts and information collected to develop a formula were found on the South Carolina Department of Education page.