

ANR Universal Recycling Materials Management Database & Map Methodology

PURPOSE:

The purpose of this project was to develop a convenient state-wide database and map of business and institution food scrap generators (FSG), materials management facilities, and solid waste management entities in order to facilitate the implementation of Vermont's Universal Recycling law. The database and map were developed to connect residents, businesses, and institutions with solid waste services; and to connect haulers, composters, and food rescue agencies to sources of food and food scraps. The goal is to reduce waste and save natural resources.

PROCESS:

Developing the database required three main steps:

1. Compile and evaluate existing datasets of food scrap generators and solid waste facilities
2. Acquire new and missing data when possible
3. Create a new comprehensive database of food scrap generators and facilities as the basis of a web-based map

ANR compiled multiple datasets to produce a statewide list of food scrap generators, facilities, and solid waste management entities. Specific datasets used are summarized in Table 1 below.

TABLE 1: Summary of Compiled Data Sources

Data set	Source	Type	Format
Food establishments, food manufacturers, hotels, hospitals, schools, supermarkets	VT Dept. of Health (VDH), Stone, & Farm-to-Plate	Contact, location, some seating	Excel spreadsheets
Nursing homes, hospitals, assisted living/residential care facilities, therapeutic community residences	Department of Disabilities, Aging & Independent Living (DAIL) & Farm-to-Plate	Location, # of beds	Excel spreadsheet
Nursing homes, universities, food shelves, senior meals sites	Vermont Sustainable Jobs Fund/Farm-to-Plate	Location	Excel spreadsheet
2009 VT food scrap generator dataset	Stone Environmental	Location, FSG estimates	Access database
Out-of-state/border compost facilities	www.FindAComposter.com	Location	Excel spreadsheet
Compost facilities	DEC	Contact, category	Access & Excel
Transfer stations/Recycling centers that accept food scraps	DEC, DSM Study		Excel spreadsheet
Solid Waste Management Entities	DEC		GIS map
School data	Stone, Farm-to-Plate, Agency of Education, National Ctr. for Education Statistics		Excel spreadsheets, website searches
Hospitals	DAIL & VT Association of Hospitals & Health Systems	Contact, # of beds	Websites
Food Shelves	Vermont Food Bank		Excel
Correctional Facilities	Department of Corrections, Farm-to-Plate	Location, # of beds	Email, Excel spreadsheet

Food Scrap Generator Data

Three main datasets—the Vermont Department of Health’s (VDH) 2013 Food Producers data, Stone Environmental’s (Stone) original food scrap generator list for all towns from their 2009 Vermont Compost/Biogas Data Viewer project (developed with assistance and input from the Central Vermont Solid Waste Management District), and Vermont Sustainable Jobs Fund’s (VSJF) 2013 Farm-to-Plate Food Atlas dataset—were compared and combined to provide the bulk of the food scrap generators (FSG). When a FSG was found in the Stone database and the Farm-to-Plate database, the Farm-to-Plate contact and location information was used because this information was collected more recently and believed to be more accurate. Similarly if seating data for a FSG existed in the Stone database, but was also available from the Department of Health’s most recent data, we relied on VDH’s more recent seating data.

Food Scrap Generator Categorization: The various data sets organized food scrap generators into different categories. For consistency ANR created three levels of categorization (as shown in Table 2 below) basing these categories on what was most similar to the way the data was already organized and categorized. Generally Stone’s generator types were used to maintain more consistency. The Type 3 category was maintained to capture detailed data available within existing datasets for some, but not all FSGs. Therefore some FSGs who have the same Type 2 category may not also have a Type 3 category.

TABLE 2: Final Food Scrap Generator Types

TYPE1	TYPE2	TYPE3
Correctional Facility		
Food Establishment	Bakery	
Food Establishment	Camp	
Food Establishment	Caterer	
Food Establishment	Grocery Store	
Food Establishment	Market	Beer, wine, liquor store; Farmers' Market; Online Market; Specialty Foods
Food Establishment	Private Club	
Food Establishment	Restaurant	Bars/Pubs; Cafeteria; Concession; Deli
Food Establishment	Senior meals	
Food Manufacturer	Alcohol	Brewer; Hard Cider; Wine
Food Manufacturer	Bakery	Bread/related products
Food Manufacturer	Dairy	Cheese; Creamery; Ice Cream; Milk
Food Manufacturer	Dairy	Creamery
Food Manufacturer	Feed/Animal Products	Dog/Cat Food
Food Manufacturer	Fruits/Vegetables	
Food Manufacturer	Manufactured Food	Snacks
Food Manufacturer	Meat	
Food Manufacturer	Specialty	Coffee; Fats/Oils; Rendering
Food Manufacturer	Specialty	Fats/Oils
Food Manufacturer	Sweets	
Food shelf		
Hospital		
Nursing/Assisted Living	Assisted Living Facility	

TYPE1	TYPE2	TYPE3
Nursing/Assisted Living	Nursing Home	
Nursing/Assisted Living	Residential Home	
Nursing/Assisted Living	Therapeutic Community Residence	
School	College/University	
School	Elementary School	
School	Elementary/Middle School	
School	High School	
School	K-12	
School	Middle School	
School	PreK	

Calculating Weekly Food Scraps: To estimate weekly food scrap tonnage for each type of generator ANR used formulas and available unit data such as the number of seats in a restaurant, the number of beds at a residential care facility, or the number of students in a school. The Vermont Department of Health (VDH) instructed ANR to ignore the number of meals category in their updated dataset because that field had not been well maintained. VDH's updated 2013 dataset of Food Producers was used to obtain updated seating figures and to include any recently opened businesses. To view the calculations and formulas ANR used to estimate tonnage for each type of generator, review the ***Food Scrap Generator Database Calculations sheet***.

NOTE: Weekly tons of food scraps are **estimates only**. Some generators may have high seating data (for instance an Elks Lodge), but only serve meals once per week or per month. In these cases the estimate of food scrap generation in tons per week will be too high. Similarly some business and institutions are seasonal such as some ski areas and schools. Their annual tonnage will likely be lower than the figures estimated in this database.

Missing Data & Estimates: Seating data was not available for all the generator entries. Generally VDH updates this information as they conduct inspections of food establishments, but many FSGs they provided were missing seating data all together. Additionally, some businesses that generate food scraps do not have seating, such as take-out restaurants and food manufacturers. For most of these FSGs, weekly food scrap tonnage was based on an estimate assigned to the type of generator. These estimates were determined by comparing the food scrap generation estimates calculated for other similar types of FSGs entries with the methodology of Stone Environmental and Central Vermont Solid Waste Management District from their 2009 food scrap generator database and mapping project.

Food manufacturers, grocery stores and markets, senior meal sites, and food shelves are FSGs where no unit data (such as number of seats or beds) was available to estimate food scrap generation rates. Stone Environmental's previous food scrap generation data was used when available for Food manufacturers. Those without any estimate from Stone were left blank because Food manufacturers vary so greatly in the amount of food scraps they generate and there is no unit data available to generate reasonably reliable estimates. Food manufacturers will still be present on the map as generators of food scraps, even though many show no amount of food scraps generated.

Grocery stores, markets, senior meal sites and food shelves were all given a flat estimate. For example all grocery stores are estimated at producing 0.72 tons per week and markets are 0.18 tons per week (1/4 of the grocery store estimate). Review the ***Food Scrap Generator Database Calculations sheet*** for further explanations about the estimates used.

Correctional Facilities, Hospitals, Nursing Homes, Assisted Living, & Residential Care Facilities: The Department of Corrections and the Department of Aging and Independent Living (DAIL) provided information to ANR on the number of beds in each correctional facility, nursing home, residential care facility and hospital. ANR combined that information

with institution information (name, address, etc) from the Vermont Sustainable Jobs Fund Farm-to-Plate Food Atlas dataset. Any missing “number of beds” information was acquired from the DAIL website, Vermont Associates of Hospitals & Health Systems (VAHHS) website, and individual hospital websites. Stone Environmental’s number of beds figures for these institutions were replaced or not used when more recent data was available from these sources.

To create food scrap generation estimates for correctional facilities, hospitals, and nursing homes we utilized the following formula:

$$(\text{number of beds}) \times (0.5 \text{ lbs. per meal}) \times (3 \text{ meals per day}) \times (7 \text{ days per week}) = \text{lbs. of food scraps generated per week}$$

This 0.5 lbs. per meal figure had been used in some of the calculations by Stone Environmental. Further we compared results against real 2013 data (obtained from the Central Vermont Solid Waste Management District) of the average weekly tonnage of food scraps produced at Central Vermont Medical Center, Woodridge Nursing Home, and Heaton Woods assisted living facility.

Schools: Data on the numbers of students at each school was compiled from the VT Agency of Education website (<http://edw.vermont.gov/REPORTSERVER/Pages/ReportViewer.aspx?/Public/School+Report>), National Center for Education Statistics (NCES) website, and individual school websites. Each school was categorized as elementary (1.13 lbs. per student per week), middle (0.73 lbs. per student per week), elementary/middle (0.93 lbs. per student per week), high (0.35 lbs. per student per week), K-12 (0.72 lbs. per student per week), Pre-K (1.13 lbs. per student per week), or college/university (1.13 lbs. per student per week). ANR utilized figures for pounds of food scraps produced per student, per week from Central Vermont Solid Waste District and Stone Environmental’s 2009 Food Scrap Generator Database methodology. - Most colleges and universities in the database are calculated based on the number of students they have, just like other types of schools. The University of Vermont (UVM) is an exception. Since UVM had multiple dining establishments with seating data from the Vermont Department of Health, we kept those separate entries (rather than combining them) for each of the dining halls due to their significant size in comparison to other smaller colleges and universities in Vermont. We also therefore used their seating data for those dining establishments to calculate the tonnage of food scraps they might produce per week.

Food Shelves: Without seating data or other data for food shelves, ANR was not able to develop a method for calculating food scrap generation levels for these types of generators. After a short conversation with the Sharon food shelf, the estimate of 0.01 tons per week was selected to be a representative estimate for food scrap generation at food shelves. This is likely an over estimate depending on the site, but is reasonable given that the food shelves are highly variable, but generally are small generators, and the Sharon food shelf supported a figure of between 10-20 lbs. per week of food wastage. This same estimate figure was used to represent senior meal sites. On the map food shelves are mapped separately to encourage food donation and food rescue around the state.

Facilities & Solid Waste Management Entities Data

Compost Facilities: ANR used our internal list of compost facilities including physical address when available and types of accepted organic materials. We also researched and included out-of-state compost facilities within approximately 30 miles of Vermont border using www.FindAComposter.com and Google maps.

Transfer Stations and Recycling Centers: ANR’s internal database of approximately 210 solid waste facilities were used to form the list of transfer stations and recycling centers. The term “transfer station” was chosen to represent any solid waste facility that accepted trash. ANR uses “recycling centers” in reference to facilities that only accept recyclables. Any missing solid waste facilities or information was added by referring to the Vermont Solid Waste Facilities list included as Appendix B in the “[Systems Analysis of the Impact of Act 148 on Solid Waste Management in Vermont](#)” conducted by DSM Environmental on behalf of ANR. Transfer stations and recycling centers were only mapped in the first phase

launch of this map, if they accepted food scraps or leaf and yard debris. In the future ANR intends to map all transfer stations and recycling centers.

Solid Waste Management Entities: Solid Waste Management Entities (SWMEs; district, towns, and alliances) were compiled for each town using ANR's most recent data.

For more information on this Map and Database Contact:

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