

A Guide to Conducting and Analyzing a Food Waste Assessment

March 2014



The information contained on these pages is intended to inform the public and does not establish or affect legal rights or obligations. This applies to all pages in the Guide to Conducting and Analyzing a Food Waste Assessment. Links to non-EPA sites do not imply any official EPA endorsement of, or responsibility for, the opinions, ideas, data or products presented at those locations, or guarantee the validity of the information provided.

Contents

- Introduction 2
- Step 1: Develop Assessment Goals and Target Wasted Food Stream Components 3
- Step 2: Complete Pre-Assessment Questionnaire 4
 - Facility Tour..... 5
- Step 3: Plan the Assessment Process..... 6
- Step 4: Identify and Accomplish Assessment Logistics..... 7
 - Assessment Supplies 7
- Step 5: Conduct Assessment and Collect Data 9
 - Collect the Assessment Waste Sample 9
 - Conduct the Sort 9
 - Sorting Area Layout..... 10
 - Visual Waste Assessment..... 13
 - How to Perform the Visual Waste Assessment 13
- Step 6: Analyze and Report Results 14
 - Analyze Assessment Results 14
 - Share Your Results! 14
- Resources 15
 - General Information 15
 - Feeding Animals..... 15
 - Composting..... 16
 - Webinars..... 16
- Appendix A: Pre-Assessment Questionnaire 17
- Appendix B: Example of Data Recording Worksheet..... 19
- Appendix C: Standard Volume to Weight Conversion Factor Resources 21

Introduction

Wasted food makes up the largest percentage of any one material sent to landfills and incinerators each year in the United States. Wasted food is not just food that may go bad before you've had a chance to eat it. It includes food that perished en route to the supermarket, food preparation scraps and wholesome food such as excess bakery and produce items that can be donated.

Wasted food is a problem because it impacts the economy, our society and the environment. The solution to this problem is reducing the amount of wasted food generated. The food industry, including grocery stores, restaurants, and cafeterias have the opportunity to be major contributors to the solution while reducing costs at the same time. The first step towards reducing wasted food is to perform a food waste assessment. A food waste assessment will identify what is actually being thrown away. By getting to know what you throw away, you can cut down on disposal costs, reduce over purchasing and labor costs, reduce water and energy use associated with food production, and reduce greenhouse gas emissions.

At the end of the assessment, you can easily discover the amount of food that can be diverted for donation or composting. You will also have insights into why the food was being thrown away in the first place.

This guide explains how to conduct a food waste assessment. This information will provide you with the steps necessary to achieve a baseline measurement. You can use this measurement to set goals and track your organization's progress. Consistently tracking food as it moves through your facility will help to reduce costs and target other wasted food prevention strategies. A variety of tools are available to assist with tracking once the initial measurement is established. [EPA's Wasted Food and Packaging Toolkit](#) is one such tool which allows flexibility for the user to track wasted food and related packaging generated at varying levels of detail on a daily or weekly basis.

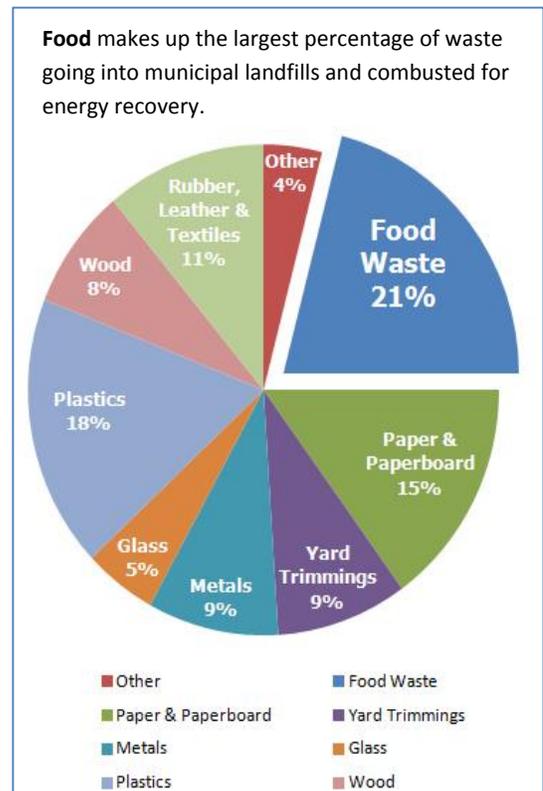


Figure 1 Data from 2011 Municipal Solid Waste Characterization Report

Step 1: Develop Assessment Goals and Target Wasted Food Stream Components

The first step in the assessment is to develop goals. The EPA has developed the Food Recovery Hierarchy to help define the most preferred means of managing wasted food. A primary goal should be to eliminate the need to manage food as a component of the waste stream through source reduction or purchasing less food.

Develop goals based on what questions the assessment should answer. Typical goals include identification of current generation and diversion rates. The following questions can help identify an appropriate goal for the food waste assessment:

Where is the bulk of the wasted food being generated? What materials could be composted, donated, or sent to farmers for animal feed? For example, a grocery store’s goal may be to identify opportunities to reduce wasted food and increase food donations. Targeted materials to consider include non-perishable dry goods, or prepared but unserved food from the deli department.

Choose and clearly define targeted wastes. Also, specify items to “exclude” from your study.

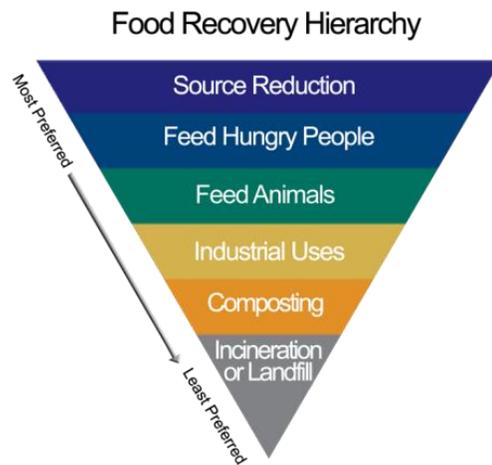


Figure 2. US EPA's Food Recovery Hierarchy

EXAMPLES OF TARGETED WASTES

Target Wastes	Definition
For donation	Excess food including raw and prepared food. Confirm definition of what categories of food the local pantry or shelter is equipped to receive.
For animal feed	Includes fruits, vegetables, and breads. Scraps should be free from contact with any meat or other animal products during preparation. Always use clean utensils and cutting boards. Plate scrapings should not be included. Meat, poultry, fish, gravy, grease from cooking, and dairy products should be kept away from food scraps for animal feed.
For composting	Spoiled produce, produce preparation scraps (potato peels, corn husks, etc.), flower shop trimmings, coffee grounds, and any other organic materials accepted by local composter including compostable plastics CPL #7 "Bio-based" (corn, potato, sugar derivatives, plates, cups, utensils, etc.).
For recycling	Aluminum beverage cans, aluminum foil and foil food trays. Steel food containers. Tin food containers. Bi-metal cans (tin-coated steel). Plastics, including #1 PET & PETE (water and soft drink bottles, peanut butter jars, etc.), #4 LDPE (squeezable bottles, container lids, stretch film, garbage bags, etc.), and #5 PP (yogurt and margarine containers, medicine bottles, bottle caps, etc.).

Targeted wastes may need to be refined due to local solid waste management infrastructure and recycling opportunities. Examples of materials typically found might include:

TYPICAL FOOD WASTE ASSESSMENT MATERIALS

Compost	Recycling	Trash (non-recyclable/non-compostable materials)
Vegetable and fruit materials	Bottles, cans, metal, and plastic containers	Food packaging/wrap
Spoiled food products	Cardboard and paper	Plastic gloves
Wet and waxed cardboard	Aluminum	Styrofoam
Paper towels, paper		Twist ties
Wood pieces		Rubber bands
Flowers, plants, soil		Plastic tableware
Coffee grounds and filters		Candy wrappers
Deli and bakery products		Rope, twine
Food preparation scraps		Mixed trash
Grocery and frozen foods		

Design a data recording worksheet form to use during the assessment that is based on targeted materials and observations you want to capture. See Appendix B for an example form which includes not only food waste but other materials you can assess for source reduction and recycling opportunities.

Step 2: Complete Pre-Assessment Questionnaire

The Pre-Assessment Questionnaire will help you understand the true costs of wasted food (see Appendix A as an example). It will also help to identify opportunities for source reduction or donation to a local food bank. Answers to questions such as those that follow will help to better understand the current solid waste disposal practices, recycling opportunities, pollution prevention activities, and local and/or regional regulatory requirements. Ask yourself: *“Does your facility have access to a local food bank that will accept perishable and non-perishable foods? Does your facility have access to an off-site composter? Does your facility have access to a biodiesel collection processing service?”*

Facility Tour

A facility tour is also helpful to understand current waste management practices, types of materials and waste streams, and identify potential opportunities for waste recovery or recycling. Tour the facility and note observations about the facility's waste management practices, disposal and recycling bin utilization, and equipment utilization. Activities and machinery that produce waste should be discussed and recorded during the facility tour. Note generation points and types of waste generated. After the pre-assessment questionnaire has been completed, conduct interviews with facility staff and employees to clarify any of your questions.

Practical Tip

Definitions of the targeted wastes may be refined some after completing Step 2: The Pre-Assessment Questionnaire. For example, while completing the questionnaire you may learn that the compost hauler will not accept compostable plastics CPL#7. At which point you should revise your target waste definition and explore alternatives to compostable plastic that could be reused or recycled.



Figure 3. Identify locations on a facility tour which are generation points for food waste.



Figure 4. Observe and note the types of waste discovered at generation points.

Step 3: Plan the Assessment Process

The food waste assessment represents a “snapshot in time” of the amount of waste your facility has generated. To capture this snapshot, you must determine a sorting method for the assessment based on the goals developed and new insights gathered from the Pre-Assessment Questionnaire. This can include manually sorting a sample of a garbage collection or visual observation and estimation, or a combination of both. A manual sort is ideal, as it will provide you with the most accurate representation of the food materials. However, if you have space and time limitations, a visual assessment may be more appropriate. Whatever your situation, it’s important to tailor the waste assessment and sample size to the needs of the facility. Information on common approaches to conducting waste assessments can be found at <http://www.epa.gov/smm/wastewise/approach.htm>.

Based on your goals, determine the scope (sample size and number) and duration of your waste assessment. Accurate data can be collected from a one week sample; however, a sample can also be collected over the period of one day. A single day’s worth of data can be extrapolated out to represent one week.

At a grocery store, it can be helpful to perform an assessment that includes each department separately as they will have different operating procedures and wastes generated. At a cafeteria or restaurant, there are advantages to separating pre and post-consumer food wastes such as identifying over purchased food, improperly cooked food, and prepared food that is frequently left uneaten.

The following includes suggested steps for the assessment process:

- 1)** Select an assessment sorting method based on generation rates and how targeted wastes are currently collected. Waste analyses can be conducted through a combination of the following methods:
 - a. Manual sorting of all targeted materials in a sample.
This method is preferred as it will provide you with the most accurate measurement of the food materials.
 - b. Visual observation.
If there are time and/or space limitations, a visual observation may be more appropriate.
 - c. Combined manual and visual methods.
This method may be preferable if only a very small sample can be collected. The visual observation can be used to confirm findings during the manual sort.

- 2)** Calculate staffing requirements. On average, two people should be able to sort four 64-gallon waste totes within two to three hours.

- 3) Determine an adequate physical location for the assessment, identifying constraints and work-arounds. The best location for the sort is a large area where toter bins can be overturned. The area should also be well ventilated.
- 4) Set a date for the assessment and develop a preliminary schedule.
- 5) Obtain toters or bins to collect the waste sample. A local hauler may be able to provide some temporarily for a fee. Be sure to cancel pickups that may interfere with the collection of the sample.
- 6) Determine end disposal of all materials following the assessment.
- 7) Develop a contingency plan for inclement weather or other unforeseen circumstances.

Step 4: Identify and Accomplish Assessment Logistics

After planning the assessment, confirm the date, time, and schedule with the assessment team. Based on the assessment process, site configuration/setting, and staffing (Step 3), determine and acquire sorting equipment and participant comfort items. The following is a list of recommended supplies to collect for the assessment.

Assessment Supplies

- 1) Containers for sorted materials and residual refuse:
 - Containers should be sized to hold reasonable weights for lifting, such as 5-gallon buckets. The number of containers should include at least one for each targeted material and multiple containers for those materials likely present in higher quantities. Containers should be clearly labeled as to what material will be collected. See Figure 12 on page 12 for an example.
 - 64 and 32-gallon toters are suitable for collecting the sample, but not for collecting the sorted materials.

Practical Tip

Use separate bins to collect the scraps and wasted food in each department for a close up view of the types of waste generated in each department. For example, a grocery store should collect scraps from the deli separate from the produce department.

2) Miscellaneous sort supplies:

- Impermeable tarps for protecting sort area and/or additional tarps for weather protection of the sample/segregated commodities. Rakes, shovels, tongs, and retractable “safety” razor knives.



Figure 3. Supplies necessary to conduct the sort include a small portable scale, a small rake, tongs, and appropriate attire such as gloves and coveralls.

- 3) Small portable electronic scale(s) with the ability to weigh samples of sorted materials ranging from 1 to 75 pounds, clipboard with data recording worksheets and pencil, and camera for data collection efforts. An example worksheet is enclosed at the end of this guidebook (see Appendix B).**
- 4) Appropriate protective attire should be worn such as sturdy boots, gloves and glove liners, and safety glasses. Coveralls, nuisance dust masks, and hand sanitizer are also recommended.**
- 5) Plenty of water should be provided to prevent sorters from becoming dehydrated. Ensure access to rest room facilities and a telephone in case of emergency. Provide refreshments and a break/rest area (with chairs) if the sort is expected to span a full day. A shade canopy, sunscreen, and insect repellent are recommended for assessments conducted outdoors.**

Step 5: Conduct Assessment and Collect Data

Collect the Assessment Waste Sample

Either the day or week before the manual sort, collect the waste sample in a dedicated collection bin or dumpster. Collect all the waste from a designated department or area for one day in a dedicated dumpster or set of garbage totes.

Storage: To prevent study samples from being accidentally taken away by the waste hauler or being mixed up with prior days' waste, provide separate containers (dumpster or totes) during the collection period. These containers should be labeled by waste stream or collection location and set aside so custodians remember to separate the waste from the collection sample. If possible, pre-sort liquid waste, wet waste (e.g., leftover food, food prep scraps, yogurt, cheese, meats), and dry waste (e.g., packaging, wrappers, plastic wrap). If part of the goal distinguishes between pre- and post-consumer wasted food, utilize labels, different colored trash bins or liners to separate the waste streams prior to assessment. Once collection of the sample is complete, move the containers to the designated sorting area to await sorting.

Food waste to be donated: Collect all food that is being discarded which could be donated into segregated bins. Log the total weight, type of food, and why it was discarded.

Conduct the Sort

- 1) Conduct a comprehensive on-site safety briefing, including discussion of emergency procedures and equipment (first aid and eye wash) and ingress and egress routes. Verify that all participants are wearing appropriate attire that is suitable to weather condition. Appropriate attire may include the following:
 - Safety glasses
 - Long sleeves if necessary, and pants and/or coveralls
 - Sturdy boots (steel-toed if appropriate); no sandals or tennis shoes
 - Heavy gloves (glove liners should be worn underneath)

Review key safety rules for sorting activities:

- Use rakes, shovels, and tongs to handle waste materials whenever possible.
- Do not open any containers found in the refuse sample.
- Do not touch suspicious materials, including any materials with suspected biohazards (blood/body fluids staining, human/animal wastes, etc.), syringes, and other potentially hazardous materials (unknown oils, chemicals, etc.). Move these materials to the

Practical Tip

It is important to collaborate with staff involved in the sample collection period. Communicate assessment plans and goals to all departments and post signage announcing the assessment. Getting as many employees educated and on board is a key element to performing a successful food waste assessment.

designated “hazardous/special waste” bin using a shovel.

- Take rest and refreshment breaks as needed, but do not drink or eat in the sorting area.
- Comply with all local and Occupational Safety and Health Administration (OSHA) regulations.

- 2) Set up sorting area by arranging tables with disposable table covers or a tarp on the ground. Arrange labeled bins for diverted material collection as planned (i.e. organics, metals, plastics, trash).



Figure 4. Set up sorting area by arranging tables with disposable table covers or a tarp on the ground. Arrange labeled bins for diverted material collection as planned (i.e. organics, metals, plastics, trash).

Sorting Area Layout

The sorting area is designed around the inflow of waste to be sorted, and the outflow of the same waste after it is weighed. The following provides steps for setting up the sorting area.



Figure 7. Place containers separated by waste category surrounding each table or across the tarp

- a) Designate a staging area for the waste waiting to be sorted.

- b) Sort waste on a table or on a large tarp on the ground. The number of tables used depends on the number of sorters. One table fits approximately four to six sorters. Place containers separated by waste category surrounding each table or across the tarp. The number of containers is based on the number of categories the waste will be separated into.



Figure 9. Label containers by the waste source and materials each will contain.

- c) Label each of these containers by the source and types of wasted materials it will contain. After waste is sorted, each container is then weighted, and data is recorded. See Step 6 for tips on weighing the containers.
- d) Designate an area for material that has been sorted, weighed, and is ready for disposal.
- 3) Bring the collected waste sample in totes to the sorting area.
- 4) Conduct a sorting training session for sort participants. Present sorting bins and equipment, explain and demonstrate sorting procedures, describe examples of targeted materials, and answer any safety questions. Designate a team leader who should provide guidance on specific questions regarding the proper segregation of recoverable items. Any difficult to categorize materials will be set aside for the team leader to make a determination regarding categorization.
- 5) The goal is to move as many organic and recyclable materials as possible from the refuse being surveyed, but with safety being most important.

Practical Tip

Observations of each type of targeted material collected can be helpful in realizing opportunities for source reduction. For example, a sorting bin labeled "Food Scrap – Deli" may include stale bread. This observation may lead to the department manager ordering less bread, identifying alternative uses, such as making croutons or donating the bread to a food bank.

- Place clearly labeled material containers conveniently around the sample.

- Use rakes to spread loose refuse so that individual materials/items are released from compacted piles. Remove clearly accessible items first. As you pick up each item, move it to a sorting bin, always being attentive to potential hazards such as broken glass, sharp edges, needles, biohazards, etc. These hazardous items should be moved with a shovel to the specially designated containment bin. Once a loose refuse pile has been cleared of its organics and recyclables, it should be shoveled into a bin and weighed as “residual waste.”

- Materials contained in a garbage bag should be carefully moved to a flat surface, and the bag sliced open across its longest length with a utility knife so that contents are clearly visible. Look first to assess for the presence of hazards before reaching in to pull out organics and recyclables. Opened edges of bags can be gripped and bags tipped in different directions to move items within the bag into better view and/or position for removal. Individual bags that have been cleared of organics and recyclables can be carefully picked up by their edges to move the residual refuse to a bin, and then weighed as “residual waste.”



Figure 10. As each container is filled, it should be taken to the weigh station for weighing.

- As each container is filled, or reaches a fill level that can be easily lifted, it should be taken to the weigh station for weighing.
- 6) To ensure data quality and consistency, it is recommended that one person be dedicated to weighing sorted materials and residual refuse (reading the scale); manually recording data on the data worksheet; and ensuring that the process is well-documented by photographs. Refer to Appendix B for an example data recording worksheet.
- Locate the weigh station adjacent to the sorting area. The weight of each empty sort container should be recorded prior to sorting. This is known as the tare weight.
 - Record visual observations on the data worksheet regarding unique discoveries, specific material descriptions (especially in mixed material categories), contamination, and overarching impressions of entire assessment activity.
 - Use photographs to document the delivered sample, assessment activities, and individually-sorted quantities to confirm findings.

- 7) Once all the materials have been weighed, move the materials to a dumpster or container for pick up by the waste hauler.
- 8) Conduct final gathering and cleanup of sorting equipment in a manner that ensures the sorting area is returned to its original condition in a safe manner.

Practical Tip

It is important to record both weight and volume measurements. Recording volume is important in determining how the waste is managed such as bin type and size, collection frequency, and transport. Weight is important for measuring landfill diversion.

Visual Waste Assessment

If a manual sort cannot be conducted due to space or logistical constraints, a visual, or qualitative assessment can be performed. A visual estimation can be done by observing loads of trash for a period of time, noting the percentage observed to be wasted food, and comparing that to the actual weights of dumpsters or compactors for the same period. Standard metrics can also be used to estimate the amount of divertible waste.

How to Perform the Visual Waste Assessment

- 1) Photographs should be taken to document waste types or used when other constraints (such as odor or business hours) sharply limit field-sampling time.
- 2) For "in-bin" visual characterizations, solid waste in dumpsters/bins can be visually inspected by personnel standing outside the dumpster/bin on a stepladder. Do not remove bags/material from the dumpster or bin. Use a rake or other equipment to break open bags and expose materials for visual characterization.
- 3) Visually inspect the container and estimate volumes for targeted materials. Convert estimated volumes to weights using standard conversion factors. Links to standard conversion factors are provided in Appendix C. For materials with no published conversion factor, a sample can be weighed and volume measured to develop a conversion factor.

More information and resources on performing visual and walk-through waste assessments can be found at <http://www.epa.gov/smm/wastewise/approach.htm#walk>.

Step 6: Analyze and Report Results

Analyze Assessment Results

- 1) Reviewing the data collection sheet, determine the composition of the waste stream sample, calculate and analyze the results, evaluate verbalized and visual observations, and interpret the results.
 - a. Subtract container tare weights from weight of sample within container
 - b. Convert any volume measurements to weights (see Appendix C)
 - c. Compute percentages of each material in each sample
 - d. Review observations and confirm all with photographs and documentation
 - e. Determine the composition of the overall waste steam

- 2) Prepare the final report that displays assessment results, relates the results to assessment goals, and provides recommendations for wasted food recovery.

Your baseline measurement is an important snapshot of data that should reflect your facility's waste generation pattern and serves as the marker for future measurement and analysis. Use [EPA's Wasted Food and Packaging Toolkit](#) to continue tracking trends in types and amounts of food waste generated at your facility.

Use the [Food Waste Management Cost Calculator](#) to determine cost effective diversion activities. If composting is an option, communicate with your waste hauler to determine costs or solicit bids from various local food waste hauling services.

Share Your Results!

Share your results with your colleagues and facility management to identify ways to reduce and divert wasted food. Learn how to join the Food Recovery Challenge, part of EPA's Sustainable Materials Management Program, by visiting <http://www.epa.gov/smm/foodrecovery/joinnow.htm>.

Resources

General Information

EPA's National Sustainable Materials Management Program, Sustainable Food Management/Food Recovery Challenge: www.epa.gov/smm/foodrecovery

USDA's Food Waste Challenge: <http://www.usda.gov/oce/foodwaste>

Tools and Calculators

EPA Food Waste Management Tools:

http://www.epa.gov/wastes/conserves/foodwaste/fd-tools_rescrs.htm

EPA Waste Assessment Approaches:

<http://www.epa.gov/smm/wastewise/approach.htm>

Food Donation

According to the U.S. Department of Agriculture, around 14 percent of American households do not get enough food to live active, healthy lifestyles. What makes this sad fact even harder to digest is this- a significant portion of the food tossed into our nations' landfills is wholesome, edible food. By redirecting that unspoiled food from the landfill to our neighbors in need, an organization can support its local community; reduce its environmental impact, and save money. You can find resources to support feeding people, not landfills through surplus food donations on EPA's website.

<http://www.epa.gov/waste/conserves/foodwaste/fd-donate.htm>

Feeding Animals

Diverting food to feed animals reduces disposal costs because farmers or companies will often take food scraps for less money than landfill hauling fees. You can find resources to support feeding animals through wasted food donations on EPA's website.

<http://www.epa.gov/foodrecovery/fd-animals.htm>

Composting

More food reaches landfills and incinerators than any other single material in municipal solid waste (MSW). In 2012 alone, more than 36 million tons of food waste was generated, with only five percent diverted from landfills and incinerators for composting. Learn how you can turn your food waste to compost on EPA's website.

<http://www.epa.gov/waste/consERVE/composting/>

Use [Find-A-Composter](#) to locate a composting facility in your area.

Webinars

EPA Sustainable Food Management Webinar Series:

<http://yosemite.epa.gov/R10/ECOCOMM.NSF/climate+change/sustainablefoodwebinars>

Appendix A: Pre-Assessment Questionnaire

Purchasing Costs

1. What is your average purchasing cost per pound for non-perishables?
2. What is your average purchasing cost per pound for pre-consumer prepared/whole foods?
3. What is your average purchasing cost per pound for foods that comprise trim and plate waste?

LeanPath, Inc. estimates that median cost across all food categories is \$1.17 per pound which may be used as a default if costs per pound data are not available for your facility.

Non-Perishable Food

4. Does your facility have access to a local food bank that will accept non-perishable foods?

Pre-Consumer Prepared/Whole Foods, Trim Waste, and Plate Waste

5. Food Recovery: Does your facility have access to a local food rescue service that accepts prepared meals?
6. Feeding Animals: Do you have access to a local farm that accepts food scraps to feed animals?
7. Does your facility have the ability to compost outdoors at your site? If so, are you willing to add food scraps to your composting system?
8. Are you willing to purchase and operate an in-vessel composter at your facility? If yes, please answer the secondary questions below:
 - a. Will your business be required to pay for capital or energy costs for an in-vessel composting?
 - b. Will your facility be required to pay for the labor costs associated with in-vessel composting?
 - c. Will you finance the initial cost of the composter or will you buy it outright?
Based on available data, a composter costs approximately \$39,000.
9. Do you have access to off-site composting? If yes, please answer the secondary questions below:
 - d. Do your food scraps and storage capabilities meet the requirements of your local off-site composter?
 - e. How much, if anything, are you paid per pound, for compost you are able to sell?

Yellow Grease

10. Does your facility have access to a biodiesel collection or processing service? If yes, please answer the secondary questions below:
 - a. Does your yellow grease waste and storage procedure meet the requirements of the biodiesel collection or processing service?
 - b. Does the biodiesel collection or processing service offer pick-up that you are eligible for? Is there a fee for pick up? If so, how much is the charge per week?

- c. How much, if anything, are you paid per week for diverting your yellow grease waste to the biodiesel collection or processing service?

Waste Hauling Costs

11. How are your hauling fees calculated (by weight, flat fee, per pull, or included in rent)?

Depending on how you pay for hauling services, please respond to the appropriate group of questions below:

By Weight

How much are you charged per ton hauled?

Are you charged an annual rental fee for your hauling container(s)? If yes, how much is your annual rental fee? Would reducing your tonnage of food waste reduce your annual hauling container rental fee? If so, how much would the annual hauling container rental fee be reduced by if you did not dispose of any food waste?

Flat Fee

What is your waste removal fee per year?

Can you reduce this fee by reducing your tonnage of food waste? If yes, how much would your annual waste removal charge be reduced if you employed alternative management methods to handle all of your food waste and did not dispose any food waste?

Per Pull

How much are you charged per pull?

How many pounds of food waste would require one pull?

Are you charged an annual rental fee for your hauling container(s)? If so how much is the annual fee? Also would reducing your tonnage of food waste, reduce your annual hauling container rental fee? If so, how much would your annual hauling container rental fee be reduced by if you did not dispose of any food waste?

If applicable, is there any additional amount paid per ton hauled?

Included in Rent

What is your total waste removal fee per year (comingled paper, food, etc.), minus recycling fee? If your facility is only one component of operations, what are the charges from food service only?

Can you negotiate with the landlord to reduce this portion of the rent by reducing the tonnage of food waste? If yes, how much is the annual rent reduced if you employed an alternative management method to handle all of the food waste and did not dispose any food waste?

Appendix B: Example of Data Recording Worksheet

Assessment Location & Date:			Weather:	
Materials	Materials & Container Weight Combined (lbs)	Tare = Empty Bin Weight (lbs)	Calculated Material Weight	Comments
WASTED FOOD				
FOOD FOR DONATION				
<i>Food for Donation Subtotal</i>				
COMPOSTABLE MATERIALS				
<i>Compostable Materials Subtotal</i>				
DIVERTED FOOD MATERIALS (e.g., Yellow grease to biodeisel, food scraps to farmers)				
<i>Diverted Materials Subtotal</i>				

RECYCLABLES				
GLASS				
exclude: plate glass, mirrors, ceramics, dishes & glassware, etc.				
GLASS BOTTLES & JARS				
<i>Glass Subtotal</i>				
PLASTICS				
exclude: bags, containers not labeled with a recycling symbol, etc.				
PLASTIC CONTAINERS #1-7				
<i>Plastics Subtotal</i>				
METALS				
ALUMINUM/TIN/STEEL CONTAINERS & FOIL				
<i>Alum/Tin/Steel/Foil Subtotal</i>				
PAPER				
exclude: paper with plastic or waxed coatings, paper towels/tissues/napkins, etc.				
CORRUGATED CARDBOARD				

Cardboard Subtotal				
MIXED PAPER (newspapers, magazines, junk mail, office paper, paperboard cartons, paper bags, etc.)				
Mixed Paper Subtotal				
GRAND TOTAL				

Appendix C: Standard Volume to Weight Conversion Factor Resources

Please use the following list to find conversion factors that best fit your needs. This includes standard resources available and additional conversion factors to consider.

US EPA Standard Volume to Weight Conversion Factors
http://www.epa.gov/waste/consERVE/tools/recmeas/docs/guide_b.pdf

King County Product Conversion Table
<http://your.kingcounty.gov/solidwaste/business/documents/Conversions.pdf>

State of Massachusetts Volume to Weight Conversions for Recyclable Materials
<http://www.mass.gov/dep/recycle/approvals/dsconv.pdf>

Recyclemania Volume to Weight Conversion Estimates
<http://recyclemaniacs.org/sites/default/files/documents/Volume-weight-conversions.pdf>

DATA SUMMARY		
	Weight	%
Wasted Food		
Recyclables		
Residual Refuse		
Total Sample		100%



U.S. Environmental Protection Agency
Office of Solid Waste and Emergency Response
www.epa.gov/osw
EPA-530-F-15-003