






Waste Measurement Toolkit

User Guide

This Waste Measurement Toolkit *User Guide* provides the resources and step-by-step instructions to use the Toolkit to conduct an *Assessment*. Documents and forms are referred to, in order to guide the user in gathering information to conduct the *Assessment*. Some background information will be provided, followed by 7 steps to follow to conduct the *Assessment*.


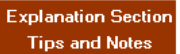
Background Information																																																																
<p>Garbage bin types</p>	<ul style="list-style-type: none"> Garbage is collected in different types of garbage bins (dumpsters) all of which come in different sizes. The manager of the building should know the size of the bins. The bin size is often stated on the garbage pickup invoices or is located on a metal plate on the bin. If it cannot be found on either, contact the hauler. 																																																															
 <p>Roll Off Bin</p>	 <p>Front Load Bin</p>	 <p>Compactors</p>																																																														
<p>Recycling container types and garbage bag volumes</p>	<ul style="list-style-type: none"> Recycling containers have more varied sizes and types which are often dependent on the material being collected. The person conducting the <i>Assessment</i> (assessors) will use the examples of container dimensions below to help estimate the volume of the recycling containers that were measured. The garbage bins above show the terminology of height, depth, length. 																																																															
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Waste Measurement Toolkit documents	The Waste Measurement Toolkit is made up of 3 sections: <i>Information, Forms/Resources, and Data Entry/Reports</i> . In each section there will be various documents to use. See below for the listing of these documents. Also, refer to the diagram in Step 4 (Page 4) to determine which <i>Form</i> to use when conducting the <i>Assessment</i> .		
	Information	Forms/Resources	Data Entry/Reports
	<ul style="list-style-type: none"> ✓ Introduction ✓ User Guide ✓ Literature Search ✓ Assumptions <p>PDF Documents</p>	<ul style="list-style-type: none"> ✓ Waste Form ✓ Recycling Form ✓ Tenant Recycling ✓ Garbage Bag Recording Form ✓ Recycling Tenant Summary ✓ Garbage Bag Summary ✓ Pre-assessment Interview ✓ Custodial Schedule ✓ Calculation examples <p>Excel Document</p>	<ul style="list-style-type: none"> ✓ Date 1, 2, 3, 4 ✓ Observations Report ✓ Baseline Summary ✓ Recycling Trends <p>Excel Document</p>
Waste / Recycling categories	Waste and recyclables are broken down into categories and sub-categories to represent the material composition.		
	<p><u>Category:</u> Waste</p> <p><u>Subcategory:</u> -Garbage (washroom, lunchroom, desk, shipping / receiving) -Wood (lumber, sawdust) -Glass (mixed glass, light bulbs) -Plastic (mixed, rigid, recyclable bottles) -Paper (mixed, cardboard) -Metals (iron, mixed) -Organics (landscaping, branches) -Individual / Miscellaneous items (chairs, textiles, pails)</p>	<p><u>Category:</u> Recycling</p> <p><u>Subcategory:</u> -Paper -Beverage Containers -Electronics (monitors, laptops) -Glass -Wood -Metal -Plastic -Organics -Individual / Miscellaneous items</p>	
Garbage collection Methods	<p>1) Garbage collected in black bags (e.g. office buildings): Garbage is collected after hours in black garbage bags from the building floors which are emptied into the garbage bin (generally front load). As such, when looking in the dumpster only black garbage bags are seen.</p> <p>2) Loose garbage thrown into a bin (e.g. manufacturing, light industrial): The warehouse garbage containers are emptied directly into the garbage bins (generally roll-offs). When looking in the dumpster a mix of garbage is seen.</p>		
Single and multiple tenant	<ul style="list-style-type: none"> ▪ Waste and recycling programs managed by the Property Management company and used by all tenants is referred to as base building services (e.g. garbage collection, recycling of fluorescent light tube, office paper, cardboard collection, etc.). ▪ A single tenant is one organization occupying a building. The assessment of recycling information in a single tenant building comes from a single source and often part of the base building services. ▪ Multiple tenants are more than one organization occupying a building. In a multiple tenant building individual tenants may have their own recycling / reuse programs separate from base building services. 		

The *Waste Measurement Toolkit Assessment (Assessment)*

As assessors read through this document they might find it beneficial to refer to the diagram in Step 4 and the list of documents in the background information section for added clarity.

Step 1: Increase Awareness	
Buy-in	<ul style="list-style-type: none"> ▪ Get the commitment from management, staff, tenants, custodial staff and property management (the team). Explain why the <i>Assessment</i> is important for operations and how it could improve the overall environmental impact from the company. Consider using key points from the <i>Introduction</i> document. ▪ Consider introducing the <i>Assessment</i> process during regular tenant and office meetings.
Involve the right people	<ul style="list-style-type: none"> ▪ Choose enthusiastic people that: <ul style="list-style-type: none"> - are familiar with waste activities, - know the building operations and key tenant contacts - are involved in recycling initiatives in the company - can dedicate time to this project ▪ If your organization doesn't have the time or resources consider hiring Clean Calgary Association for facilities in the Calgary area. <ul style="list-style-type: none"> - Clean Calgary staff will efficiently navigate through the <i>Assessment</i> process with the assistance of on-site personnel to collect waste and recycling data from your company.

Step 2: Initial Meeting	
Collecting background information	<ul style="list-style-type: none"> ▪ Before conducting an <i>Assessment</i>, a variety of information about the building is required ▪ Use the Pre-Assmt Interview form to collect information when meeting with the involved parties. Meetings should be conducted among the building operator, building manager and/or other team members (i.e. custodial management). ▪ The completed form will provide a clear picture of the <i>Assessment's</i> "how, what, when and where", including the garbage collection method. The appropriate number of <i>Assessments</i> can be recommended from this information (if this has not already been determined).
How many assessments and frequency	<ul style="list-style-type: none"> ▪ Large organizations with multiple tenants that have seasonal variation or projects that cause the garbage and recyclable composition fluctuate should consider a greater frequency of <i>Assessments</i> over the year to provide a better averaged baseline. ▪ The <i>Toolkit</i> is designed for 4 <i>Assessments</i>. The frequency depends on the organization; either 4 in a month or one every quarter. ▪ Increased <i>Assessment</i> frequency enhances the reliability of an organization's yearly performance measures. ▪ One assessment could be done if an organization is confident that the assessment day is indicative of their year round operations.
Set the date/time for the assessment	<ul style="list-style-type: none"> ▪ Consider a day that reflects normal business operations; a day when the assessment will be less disruptive to tenants; and when the loading dock will be accessible.
Review the Data Entry/ Reports worksheets	<ul style="list-style-type: none"> ▪ Open up the <i>Data Entry/ Reports</i> section, review the worksheets and become more familiar with the documents and <i>Forms</i> that are mentioned in the upcoming steps. ▪ For tips and definitions in the worksheets; Date(1) / Date(2) / Date(3) / Date(4) see the Tip  symbol. For more detailed information and additional pointers, see the section: 

Step 3: Pre-assessment Communications

Logistics meeting

- The date of the *Assessment* has been determined, the purpose of the logistics meeting is to coordinate efforts with on-site staff (custodial staff) to arrange for the analysis of the material during the *Assessment*. This requires the garbage and recycling collection methods to be discussed. This step will vary with company types and cleaning methods, therefore *Assessment* methods may need to be adjusted accordingly.

Loose garbage thrown in a bin:

- The bin must be at least 75% full before the *Assessment* is conducted.
- Consider having a sample (24 hrs) of the waste 'staged' for detailed analysis.

Garbage in black bags :

- To analyze this waste, preparation is necessary. Every company will have unique requirements.
- Explain to involved personnel:
 - 2 days (prep night) before the *Assessment* date the custodial staff must insert clear bags in the pre-assigned garbage bins.
 - the day before the *Assessment* (pickup night) the collected clear bags are to be stockpiled at a pre-determined location.
- The [Custodial Schedule](#) form provides the background regarding this task. All bags will be assessed to account for the variability of garbage types.

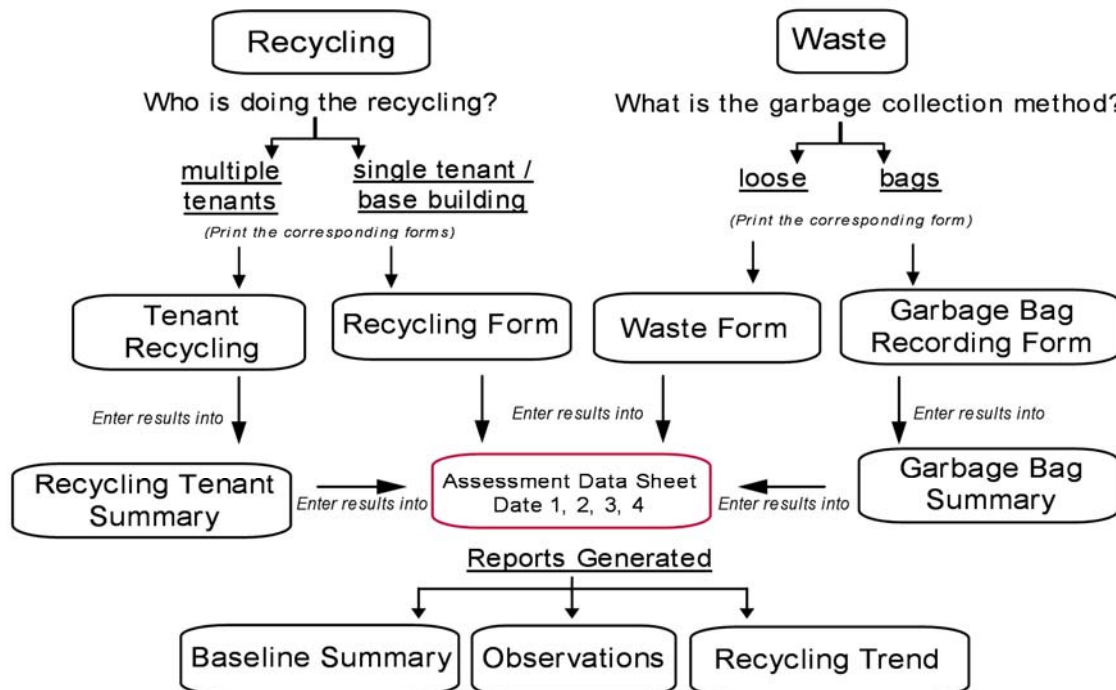
Recycled materials (also diverted materials i.e. monitors going to surplus)

- Single tenant buildings will have this information collected the day of the *Assessment* by the assessor and with the help of on-site personnel.
- Buildings with multiple tenants or multiple floors will circulate the [Tenant Recycling](#) form via the property manager to the tenants to collect the information.

Step 4: Conducting the Assessments

Print off forms

- Use the diagram below to determine which *Forms* need to be printed and what to do with the collected data.
- Remember multiple forms (i.e. both recycling forms) may be required if an organization has multiple tenant and base building recycling initiatives.



<p>Assess loose garbage</p>	<ul style="list-style-type: none"> ▪ This step will vary with company types and cleaning methods, therefore <i>Assessment</i> methods may need to be adjusted accordingly. ▪ As the bin fills with loose garbage, have an assessor observe the material types and make comments using the Waste Form . ▪ The garbage assessment consists of analyzing the bin prior to its removal/emptying, when the bin is as full as possible. A sample (24 hr) of waste may also be staged for observation. (This is discussed as part of Step 2 or 3). ▪ Assessors estimate the percentage of material types in the bin, including notes and observations made while the bin was filling. The total garbage must add up to 100%. (do not count air space – the fullness of the bin will be recorded and adjusted in the formulas). ▪ When multiple garbage bins are on site the garbage still must equal 100% taking into account ALL garbage bins. Record the volume of each bins and the total, estimate the percentage of material that would fill this total volume. ▪ Enter operational nuances in comments and observation sections (i.e. 6th floor undergoing renovation, a manufacturing process change or excessive material type x).
<p>Assess garbage bags</p>	<ul style="list-style-type: none"> ▪ This step will vary with company types and cleaning methods, therefore <i>Assessment</i> methods may need to be adjusted accordingly. ▪ The pre-meeting with custodial staff is complete and the cleaning style is known which will affect composition of bags. ▪ Fill out the appropriate columns (composition) for each clear bag in the GarbageBagRecordingForm . For example a bag might have the following composition of garbage (40% washroom, 40% desk waste, 20% coffee room). The total waste composition of the sample bag must add up to 100%. ▪ Note the fullness of the bag and fill in the comments section for abundant or unique items identified (i.e. excessive paper and coffee cups, binders, clothing etc.) ▪ Number the bags with a marker that corresponds to the sample bag number on the <i>Form</i>. This is useful when assessors need to confirm their estimation of garbage compositions or fullness. ▪ Record the dimensions of all different sized empty bags. The information is recorded into GarbageBagSummary and the dimensions are used to estimate the bag volume.
<p>Assess single tenant recycling</p>	<ul style="list-style-type: none"> ▪ This step will vary with company types and cleaning methods, therefore <i>Assessment</i> methods may need to be adjusted accordingly. ▪ Using the Recycling Form , assessors review each category with on-site personnel and observe the materials being recycled and diverted. ▪ Assessors estimate the container volumes using the Calculation Examples form and record the frequency of removal/emptying.
<p>Assess multiple tenant recycling</p>	<ul style="list-style-type: none"> ▪ This step will vary with company types and cleaning methods, therefore <i>Assessment</i> methods may need to be adjusted accordingly. ▪ Property Managers will circulate via email the Tenant Recycling form to collect recycling data from tenants. Certain fields in the form need to be filled in with building specific information prior to circulation. ▪ The email form should be distributed a week before the <i>Assessment</i> for data collection and information spot check on the day of the assessment.

Step 5: Paper to Electronic Data

Entering the data in the *Data Entry* section

- In the section *Data Entry/Reports* save the document (e.g. Company x - Waste Assessment - Date).
- Worksheets are best viewed at a 75% zoom.
- Data should be entered into [Date\(1\)](#) worksheet for the first *Assessment*. If subsequent *Assessments* within the same year are performed the data should be entered into the following worksheets [Date\(2\)](#) / [Date\(3\)](#) / [Date\(4\)](#), there is a limit of 4 assessment per year, per document. Data will automatically be calculated and transferred to [Baseline Summary](#)
- Waste and Recycling *Forms* should be similar to the *Data Entry* section and transfer easily. Refer to the flow chart in Step 4 to transfer data to appropriate *Forms*.
- [GarbageBagRecordingForm](#) transfers to [GarbageBagSummary](#) which gets entered into the garbage section of [Date\(1\)](#) worksheet.
- [Tenant Recycling](#) transfers to [TenantRecyclingSummary](#) which gets entered into the recycling section of [Date\(1\)](#) worksheet.

Step 6: Baseline Summary and Recycling Trends

Reporting

- Data from [Date\(1\)](#) worksheet is automatically calculated and transferred to the [Baseline Summary](#) worksheet.
- The [Baseline Summary](#) provides an overview of waste and recyclable rates and composition. Tables and pie charts are produced for each *Assessment* conducted. Additional tables and charts are produced as other *Assessments* are conducted, including an *Average Assessment* summary.
- To determine changes in recycling rates among *Assessments* the [Recycling Trend](#) provides a high level trend analysis of the recycling rate, including observational comments to explain changes to the rates (e.g. seasonal variations, vacancy rates).
- The [Observations Report](#) records the observations during the *Assessment* in one report. This information would be taken from the comments sections in Date 1, 2, 3, 4 worksheets.
- These documents can be used to present company results, determine strategic waste reduction initiatives to implement and establish company goals.
- **Note:** Reports will take a moment to generate as the program calculates the graphs.

Step 7: Continued evaluation

Review assessment information

- The software program is designed to accommodate four *Assessments*, suggested to take place in quarterly intervals.
- The data from these *Assessments* provides waste and recycling rates and their composition.
- The Recycling Trend report shows the differences among *Assessments* due to seasonal difference or changes in recycling programs, and can be used to measure ongoing performance, determine strategic waste reduction initiatives to implement and establish company goals.
- If Clean Calgary Association performed the *Assessment* your company will also receive a *Recycling Report* which contains recommendations and referrals to begin or improve additional waste diversion opportunities.

Feedback

- The Waste Measurement Toolkit is a template measurement system. An organization may have special materials that are not listed. Document this information and contact Clean Calgary Association to be considered in future Toolkit versions.