



# WASTE MANAGEMENT STRATEGY TOOLKIT

**The mission of the Greater Cincinnati Green Business Council is to inspire the business community to deliver a better social, economic and environmental future**

The Greater Cincinnati Green Business Council has created this Waste Management Strategy toolkit to support Greater Cincinnati business participation in sustainability efforts, waste reduction efforts, and operational cost savings.

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## INTRODUCTION

What is waste? A standard definition for 'waste' is useless consumption or expenditure; use without adequate return; an act or instance of wasting. All businesses look to eliminate waste. This toolkit specifically focuses on solid waste.

There are many steps and many approaches that can take in the journey to achieving zero waste. So of where you are in your waste reduction journey, know is great opportunity for improvement and many you can learn from at each step of the process. This help you navigate this journey in a way that makes the for your business today and provide a guide to you for

Approximately 2/3 of the waste in the local landfills is commercial sector, and while some businesses have implemented waste management plans, there is still opportunity to improve those programs and expand new businesses. One of the goals designed to impact is to reduce residential/commercial waste to landfill by 2020. (For more information, see the Green Cincinnati approved in June 2013.)

From a commercial perspective, the approach to waste management should be thought of as any other core business process. To improve, an overall strategy must first be developed. The strategy will help you get a better understanding of your current situation; prioritize your opportunities based on what is right for your business, and provide tools and resources to help you establish a course of action.

Because no single waste management approach is suitable for managing all waste streams in all circumstances, the EPA developed a hierarchy ranking the most environmentally sound strategies for non-hazardous solid waste. The hierarchy places emphasis on reducing, reusing, and recycling the majority of wastes.

(<http://www.epa.gov/osw/nonhaz/municipal/hierarchy.htm>)



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This toolkit is designed to provide a high level strategic plan for waste management. Subsequent toolkits and/or appendices will be developed to address specific components within the plan. Each of the components can be addressed independently, but the greatest impact will come from integrating multiple pieces of your plan to create a comprehensive waste management strategy. When fully implemented, and with full employee engagement, a company can set its sights on “Zero Waste” as an aspirational goal.

A comprehensive Waste Management Strategy should address the following key components:

- Sustainable Purchasing (Sourcing/Source Reduction)
  1. Consumables
  2. Hazardous Materials
  3. Furniture/Durable Goods
  4. Facility Alterations Purchasing
  5. Employee Engagement Strategy
- Waste Management
  1. Re-Use
  2. Recycling/Composting
  3. Hazardous Waste Management
  4. Facility Alterations/Renovation Waste
  5. Employee Engagement Strategy

These components are based, in part, on the three tactics of EPA’s waste hierarchy: Reduce, Reuse, Recycle. They also draw heavily on the knowledge base of the U.S. Green Building Council in their reference guide for LEED for Existing Buildings - Operations and Maintenance. The reference guides created by the USGBC have had the benefit of review by the 16,000+ USGBC members and the subject matter experts that work specifically on assigned topics. In addition, the members of the Greater Cincinnati Green Business Council have pooled their knowledge and experience in creating a view of the components that incorporates best practices in these areas.

## A COMPREHENSIVE WASTE MANAGEMENT STRATEGY



The graphic represents the components of a comprehensive waste management strategy, and is designed to help companies plan and implement their strategy. It is characterized by two key sections: Sustainable Purchasing, which focuses on the upstream decisions you make on sourcing and source reduction, and Waste Management, which focuses on the downstream decisions you will make on disposal of waste. Employee Engagement is a critical component of a strategy and should be incorporated at every step of the way. The gradation represents the 'average' impact of each of the tactics (darker = greater impact) based on

## **Understanding Your Waste Streams**

The best place to start on a comprehensive strategy is to understand where you are today. A waste audit is a detailed analysis of your building's waste stream. It can help you identify what types of recyclable materials and waste your office generates and how much of each type is currently recovered for recycling or sent to landfill. Using the data collected during a waste audit, your organization can identify ways to reduce waste and enhance its recycling efforts and determine the potential for cost savings. A waste audit also sets the baseline from which activity, impact, and cost can be measured. Auditing waste is a relatively simple process, consisting of four basic steps:

1. Plan your audit – define your objective, gather the people and other resources (including sorting bins, personal protective equipment, etc.)
2. Collect the waste – plan what waste will be collected and where it will be stored
3. Sort the waste – sort the materials into the various types of waste and record your results
4. Analyze the data – what does the data tell you about your opportunities?

Your local solid waste district can provide guidance on conducting an effective waste audit.

## **SUSTAINABLE PURCHASING**

Sustainable purchasing is an important component of waste reduction, and considers the relative environmental, economic, social, and health impacts of the choices available for materials, supplies, and services.

Examples of sustainable products include:

- Materials with recycled content reduce use of natural resources, increase markets for recycled products, and reduce waste to landfills.
- Products with third party certifications (ENERGY STAR, Green Seal, Forest Stewardship Council, Program for the Endorsement of Forest Certifications, Green-e, etc.) imply a smaller environmental impact than products that lack such certifications.
- Products made from renewable resources are typically viewed as more sustainable and rapidly renewable products would be most preferred.
- Purchases of products sourced regionally typically require less energy to transport and benefit the local social and economic community.

Source reduction is another important component. Any time the volume and type of waste generated can be reduced it is likely going to have significant impact on waste reduction and the bottom line. For example, purchasing materials with less packaging can reduce waste generated and in many cases will also reduce the cost and handling of the product. To identify these types of opportunities, companies may elect to perform life cycle analyses or a waste audit to track waste generation and identify specific sources of waste that could be reduced

Companies should consider developing a purchasing policy, supported by leadership that reflects the organization's environmental, economic and social values through the products and services purchased.

This policy can serve as a guideline for all those involved in purchasing decisions and provide a consistent path to reaching waste reduction goals.

## WASTE MANAGEMENT

### Re-use/Salvage/Donation

When waste cannot be eliminated at its source, look for ways to reuse the material. This way, the material is diverted from the landfill and the costs (both financial and environmental) to purchase comparable materials can be avoided. For example, packaging materials from inbound shipments can be reused for packing outbound shipments or sent back to the vendor for reuse in a closed loop system.

Also, a large proportion of waste generated by manufacturing can be transformed into byproducts and reused by companies looking to secure recycled material streams in place of virgin materials. In Ohio, the Ohio By-Product Synergy Network is a non-profit organization that helps match under-valued waste or by-product streams with potential users.

### Recycling

When waste cannot be reused, find ways to recycle it. This will reduce waste to landfill, reduce the need for natural resources and virgin material, and support jobs in the recycling industry. In addition, recycling items that are regulated or could contain hazardous materials (e.g., certain lamp bulbs or batteries) helps prevent toxins from entering the environment.

For some types of recycling, the waste material can actually become a commodity to help offset waste disposal fees. For example, companies that produce reasonable quantities of office paper or cardboard waste might be able to separate that material and turn it from an expense into a revenue stream.

Common types of recycling:

- a. Single Stream – typically the recycling vendor will provide a list of acceptable materials (paper, plastics, cardboard, metals) that can all be placed into the same bin. The sorting is handled at the vendor processing center.
- b. Paper and Cardboard – According to the EPA, paper and paperboard made up more than 27 percent of municipal solid waste in an average American landfill, more than any other material. Clean office paper and cardboard can usually become a commodity and generate a revenue stream to offset expenses if you have reasonable volume and are willing to separate the materials. (Depending on volumes, other materials such as plastics, metals and wood can also become a commodity.) See Appendix 1 for more details.
- c. Source Separation – Sorting materials at the point of generation can reduce contamination and increase the market price of these materials. Accordingly, firms with large quantities of the same material prefer “source separation” to “single stream” programs.
- d. eWaste – Due to technological advancement, electronic products can quickly become obsolete, creating a large surplus of unwanted electronic products, or “e-waste”. Disposing of e-waste in landfills can release toxins into the environment (such as lead and mercury). Recycling these materials with certified e-waste recyclers (look for local e-waste recyclers that have R2 and e-Stewards certifications) keeps the toxins out of the landfills and allows some component materials to be recycled.

## Composting

If your workplace produces a significant amount of organic waste, such as food waste, yard waste, or compostable food containers, adding composting to your waste management strategy could provide financial benefits and support your company's waste reduction goals. There are various options available for small to large companies. Detailed information can be found in the [Workplace Composting Toolkit](#), a resource developed by the Greater Cincinnati Green Business Council ([www.gcgbc.org/toolkits](http://www.gcgbc.org/toolkits)).

## Hazardous Materials Waste Management

As referenced above, certain materials contain toxins that should be kept out of the landfills. Hazardous waste is defined as any waste possessing characteristics that make them flammable, reactive, corrosive, or toxic. These wastes are regulated due to their hazardous nature. It is important to understand your waste streams, know if they are regulated, and to find out ways to reduce or recycle these wastes in a way that is safe for the environment as well as for the health and safety of your employees.

## Facility Construction/Alteration/Renovation Waste Management

Construction projects generate a significant amount of waste. The latest EPA estimate<sup>1</sup> (2003) was a total of 170 million tons per year, 61% of which is from the non-residential sector. Of the 170 million tons, the estimated recovery rate was 48%. Construction waste can include bricks, concrete, metal, furniture, hazardous materials, drywall, carpet, asphalt, roof shingles, doors, windows, and more<sup>2</sup>. Finding ways to reduce, reuse, and recycle these materials provides multiple advantages; it helps the environment by extracting less and throwing less waste in landfills, and creates green jobs. Some local non-profits will take usable building materials for reuse. Recycling certain materials such as scrap metal could generate revenue, which could benefit your project budget or company bottom line. Always review your project to see where you can reduce waste, reuse or recycle materials.

## ZERO WASTE

As mentioned in the introduction, zero waste is an aspirational concept where materials are conserved and recovered, toxins are eliminated, and no trash is sent to landfills or incinerators.

## EMPLOYEE ENGAGEMENT

Employee engagement is critical to launching and sustaining successful waste management programs of all types (e.g., recycling, composting, sourcing/source reduction). This is because improving waste management performance requires that everyone, especially at the launch, change long-standing personal behaviors and sometimes business processes or equipment. To overcome people's tendency to stay with the status quo, you need to engage them by explaining why waste management matters, why change will help, and how you have made these changes as simple and convenient as possible. You also need to ensure that employees will be given ongoing feedback so they see the positive impact of their efforts. Appendix 2 provides specific examples of employee engagement activities.

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<sup>1</sup> EPA, "Estimating 2003 Building-Related Construction and Demolition Materials Amounts". <http://www.epa.gov/waste/conserve/imr/cdm/pubs/cd-meas.pdf>

<sup>2</sup> EPA. "Building Savings: Strategies for Waste Reduction of Construction and Demolition Debris from Buildings". June 2000. [www.epa.gov/osw](http://www.epa.gov/osw).  
March 2014 [www.gcgbc.org](http://www.gcgbc.org)

## SUMMARY

As you can see, a practical waste management strategy can help your company reduce its impact on the environment, and help Cincinnati reach its goal of reducing waste to landfill by 33% by 2020!

The Greater Cincinnati Green Business Council members look forward to bringing you more detailed toolkits for the tactics referenced in this strategy document (see the Appendix). However, if you want to get started today, a good starting point is the Materials and Resources section of the LEED Reference Guide for Green Building Operation and Maintenance. Another tool is the “Reducing Waste and Saving Money: Case Studies & Lessons Learned” compilation by the Green Umbrella Waste Reduction Action team, which is available along with other local resources at [www.greenumbrella.org/action-teams/waste-reduction](http://www.greenumbrella.org/action-teams/waste-reduction).

We have included a list of Resources along with the more detailed Appendices to help you on your way.

## RESOURCES

### Regional solid waste districts:

<http://www.hamiltoncountyrecycles.org/>

<http://www.campbellcountyky.org/index.php/13-services/solid-waste>

<http://www.campbellcountyky.org/images/stories/SolidWaste/2010Resource.pdf>

[http://www.kentoncounty.org/county\\_departments/solid\\_waste\\_management/index.htm](http://www.kentoncounty.org/county_departments/solid_waste_management/index.htm)

<http://www.co.warren.oh.us/solidwaste/>

<http://www.butlercountyrecycles.org/>

<http://www.oeq.net/ACSWD.aspx>



**Green Cincinnati Plan**

<http://www.cincinnati-oh.gov/oes/citywide-efforts/climate-protection-green-cincinnati-plan/>

**Greater Cincinnati Green Business Council Composting Toolkit**

<http://www.gcgbc.org/toolkits>

**EPA Waste Website**

<http://www.epa.gov/epawaste/index.htm>

## APPENDIX 1 – Paper and Cardboard Recycling

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According to the EPA, paper is one of the most recyclable and recycled materials, yet it still makes up over 27 percent of municipal solid waste (MSW) in an average landfill, more than any other material Americans throw away.. Because of this, recycling paper can greatly reduce the overall amount of municipal solid waste produced. Paper recycling is a sound economic, social, and environmental practice. Recycling paper not only saves valuable space in landfills, it has positive effects on the environment. The recycled fibers from the waste paper used to make new paper consumes less energy, conserving natural resources that go into paper production. Recycling one ton of waste paper can save 7,000 gallons of water, 380 gallons of oil, and 3.3 cubic yards of landfill space, enough energy to power the average U.S. home for six months, and reduce greenhouse gas emissions by one metric ton of carbon equivalent (MTCE)<sup>3</sup>. Paper is definitely more useful when it isn't sitting in a landfill.

Paper can take between 5 and 15 years to degrade in a landfill. The compression of the trash to keep landfill volume down eliminates the air necessary for the paper to breakdown; this leads to the creation of methane gas. Methane has been identified as a greenhouse gas with up to 21 times the global warming potential of carbon dioxide<sup>4</sup>.

There are many options in recycling paper. Which is chosen depends on the type and amount of paper generated, space, and priorities at the organization. Single stream recycling where paper is combined with other recyclable material is probably most practical for home, small, and even larger businesses that generate small to moderate volume. There may be additional costs associated with single stream recycling but it is important to weigh this against the opportunity to reduce the cost of service pick-ups to the landfill. Typically a pick-up going to a recycling center costs less than one going to a landfill.

If an organization generates a large volume of specific paper types (office paper, corrugated boxes) segregation may create opportunity to sell the paper as a revenue stream. A baler or compactor may be necessary to make cardboard marketable.

Another consideration is risk management. Most organizations value the privacy of their business and customers and may enlist a secure document destruction service. Most all these document destruction service companies recycle the paper and, depending on volume, may offer discounts or rebates on the service based on value and volume of the paper recycled.

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<sup>3</sup> US EPA: <http://www.epa.gov/wastes/conserves/materials/paper/basics/index.htm#benefits>

<sup>4</sup> EPA Overview of Greenhouse Gases. <http://www.epa.gov/climatechange/ghgemissions/gases/ch4.html>

Not all paper may be suitable for recycling. Paper napkins, plates, and other food contaminated paper products are not desirable for recycling but may be good candidates for composting. See GCGBC “Workplace Composting Toolkit” for further information.

*See recycling resources through your local solid waste management district referenced at the end of this toolkit.*

## APPENDIX 2 – Employee Engagement

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Employee engagement is critical to launching and sustaining successful waste management programs of all types (e.g., recycling, composting, sourcing/source reduction). This is because improving waste management performance requires that everyone, especially at the launch, change long-standing personal behaviors and sometimes business processes or equipment. To overcome people's tendency to stay with the status quo, you need to engage them by explaining why waste management matters, why change will help, and how you have made these changes as simple and convenient as possible. You also need to ensure that employees will be given ongoing feedback so they see the positive impact of their efforts.

Some specific areas where employee engagement is critical are sourcing/procurement and general waste management (esp. recycling). Below are several ideas related to these areas.

### Employee Engagement in Sustainable Purchasing

**Sustainable Purchasing – Initial Roll-out.** Engage employees, particularly those that do most of the purchasing (e.g., administrative professionals, event/meeting planners, marketing staff), in how and why the program was set up. They need to understand why past ordering processes are changing and why some products may have been dropped and others added. By explaining the environmental impacts of purchasing decisions and the tools available to help compare alternatives, it is easier to educate these individuals so that they can explain the reasons for these changes to others. These individuals should also learn that these tools can be used to track purchases and compare cumulative environmental and other impacts from these purchasing decisions. Some vendors provide integrated platforms to help track purchasing options and impacts. Finally, this type of reporting may be required for “consumable materials” (e.g., paper, toner cartridges, desk accessories, etc.) facilities that are seeking recognition under the U.S. Green Building Council's “LEED for Existing Buildings: Operations & Maintenance” Program (see <http://www.leeduser.com/credit/EBOM-2009/MRc1>).

**Sustainable Purchasing –Ongoing.** To reaffirm employee commitment to a sustainable purchasing program, regular communications (quarterly or semi-annually) should provide summary information about why sustainable purchasing is important to the company and the environment. Progress should be shared in several dimensions, including increased usage of recycled content, renewable/rapidly renewable materials, and independent certifications. Next steps may also be shared, such as product categories where purchasing patterns are shifting more slowly than desired or newly-introduced products that may now allow older products to be phased out over time. It may also be necessary to give staff warning that some products are being phased out so that some business functions or processes can transition to new processes and materials.

**New Employee On-boarding.** - New employees should be briefly introduced to and educated on why the program exists, how to use it, and to the types of ongoing communications they will see in the future.

### Employee Engagement in General Waste Management

**Recycling – Initial Roll-out.** Engage employees during the initial recycling roll-out by using multiple communications channels, including colorful container labels with pictures and words, matching large-format signage, dedicated emails, and other existing communications methods. Educational and outreach events with key partners (recycling and compost providers, government agency staff, environmental nonprofit organizations) can be an excellent way to engage staff. Fun activities may include recycling games, raffles, and contests; consider integrating internal or external social media options. Educational material could focus on a week’s worth of consumption of a particular commodity that can now be recycled or composted (see section on Waste Audits).

During the early planning process, you may wish to recruit volunteers for a “green team”. These individuals could get involved early on by bringing them on a tour of the local landfill, recycling facility/material recovery facility, conducting a waste audit at your facility/office (see section on Waste Audits), and then to help you explain your new corporate program to their colleagues.

**Recycling – Ongoing.** Once a program is in place, an organization must continue regular communications to improve understanding and participation while also introducing feedback. After a program is launched, an organization should measure or estimate how their trash and recycling generation evolve over time. Both numbers should be tracked so that reductions in total material and diversion rates can be monitored. This information should be shared with employees on a regular basis (monthly or quarterly) to demonstrate that their efforts are having a measurable impact which is helping to make the organization more sustainable, improving morale, and helping to improve the environment. If increased recycling is cost-neutral or providing cost savings, consider incorporating this into the communications as well. Goals or competitions can also be set up where organizations compete against themselves over time or across divisions. Positive incentives can also be used: One large regional manufacturer set a waste reduction goal for their facility and made achieving it one factor in all employees’ annual performance bonus. (Some organizations are attempting to constructively incorporate negative feedback, such as a “wall of shame” for recycling missteps (though this approach may not be the best way to engage some employee groups). Challenges focused on changing behavior can also increase engagement; for example remove personal/desk-side trash cans for two weeks to test transitioning to recycling/trash stations in common areas. Celebrate success at least annually by sharing it internally and potentially with external stakeholders to help explain your organizations values.

**New Employee On-boarding.** New employee orientation materials should introduce and explain your organization’s waste management goals and program. The materials should explain your companies main waste types, which wastes are collected, the locations of receptacles, explain your signage and labels, what data is collected, and how it is used to provide feedback inside and outside the company (i.e., with your partners or other stakeholders).

Similar methods for engaging employees can (and should) be applied to other components of your waste management strategy to help ensure success.