RECYCLING WORKS:
A Toolkit for Reducing Waste in the Workplace

Start Small

Create Momentum

Measure Success

Build on Momentum

Effect Lasting Change!

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Since 1980

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ABOUT THIS GUIDE

The Illinois Department of Commerce and Economic Opportunity's ***RECYCLING WORKS: A Tool Kit for Reducing Waste in the Workplace*** is designed to provide businesses, schools, universities, and other institutions with up-to-date information to evaluate and establish waste reduction programs that are compatible with operations, cost-effective, and sustainable. Waste reduction programs will vary due to the type, size, available resources, and constraints of each business or institution; as a result, this guide focuses on key concepts and general program design considerations. Additional recommendations, activities and resources are included to supplement ***RECYCLING WORKS*** and provide more specific information to address the unique needs of each business.

Recycling is one of several waste reduction options available; however, other options such as source reduction and reuse are valuable considerations as well. ***RECYCLING WORKS*** presents an overview of the value of waste reduction in the workplace and the steps to plan a waste reduction program tailored to a business's specific needs, capabilities and goals. Depending on the size of the business and the scope of the waste reduction program, these tasks may be executed by an individual or by a group of people on a task force or "green team".

Once a plan is in place, ***RECYCLING WORKS*** offers suggestions of how to educate and promote the program to employees, staff or students. It is important that everyone is on board to ensure a successful program. Finally, ***RECYCLING WORKS*** provides guidance for monitoring and measuring the success of your waste reduction program.

While ***RECYCLING WORKS*** has been designed primarily to address waste reduction practices in the workplace, we have incorporated related sustainable practices that can be implemented as well to promote a cleaner, greener environment. Measures to reduce energy and water consumption in the workplace are offered, as are tips for reducing energy consumption and greenhouse gas emissions in our travel to and from work.

Supplemental material (including a glossary of terms; national and regional organizations and industry resources for businesses, schools and universities; "green" guides for procurement; templates for a waste assessment/audit; sample letters and press releases; key State and County contacts; and inspirational environmental quotes) are included as attachments to ***RECYCLING WORKS*** to assist in expanding your projects and to provide additional support.

With the information presented in ***RECYCLING WORKS***, businesses, schools, universities, and other institutions will gain a better understanding of environmentally-friendly and cost-effective ways to manage their waste streams. By knowing their options, plans can be developed to reduce, reuse and recycle, as well as to purchase eco-friendly cleaning supplies and products made from recycled-content or sustainable materials, which have less of an impact on our Earth's resources – and are the driving force behind sustainable market development.

The Illinois Department of Commerce and Economic Opportunity (DCEO) and Illinois Recycling Association (IRA) are looking for groups to partner with to host local presentations about this toolkit. To learn more about this opportunity, please refer to DCEO's website (www.illinoisrecycles.com) or IRA's website (www.illinoisrecycles.org).

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SECTION 1: IMPORTANCE OF WASTE REDUCTION IN THE WORKPLACE

What Is Waste Reduction?

Waste reduction is any practice which results in less waste being created. Waste reduction may include source reduction, reuse, recycling, or composting. These terms are defined as follows (refer also to Attachment A for definitions of these and other common waste reduction terms):

> Source Reduction: Any change in the design, manufacture, purchase or use of materials or products (including packaging) to reduce their amount or toxicity before they become municipal solid waste.
>
> Reuse: To extend the life of an item by using it more than once, repairing or modifying it, or by creating new uses for it.
>
> Recycling: The process by which materials are collected and reprocessed so that the raw materials can be used for new products.
>
> Composting: The natural conversion of organic materials by active microorganisms, resulting in a soil-like component called "compost".

Figure 1 displays the commonly-accepted waste management hierarchy, which places source reduction at the top as the most preferred waste management option, followed by reuse and recycling (including composting) before disposal.

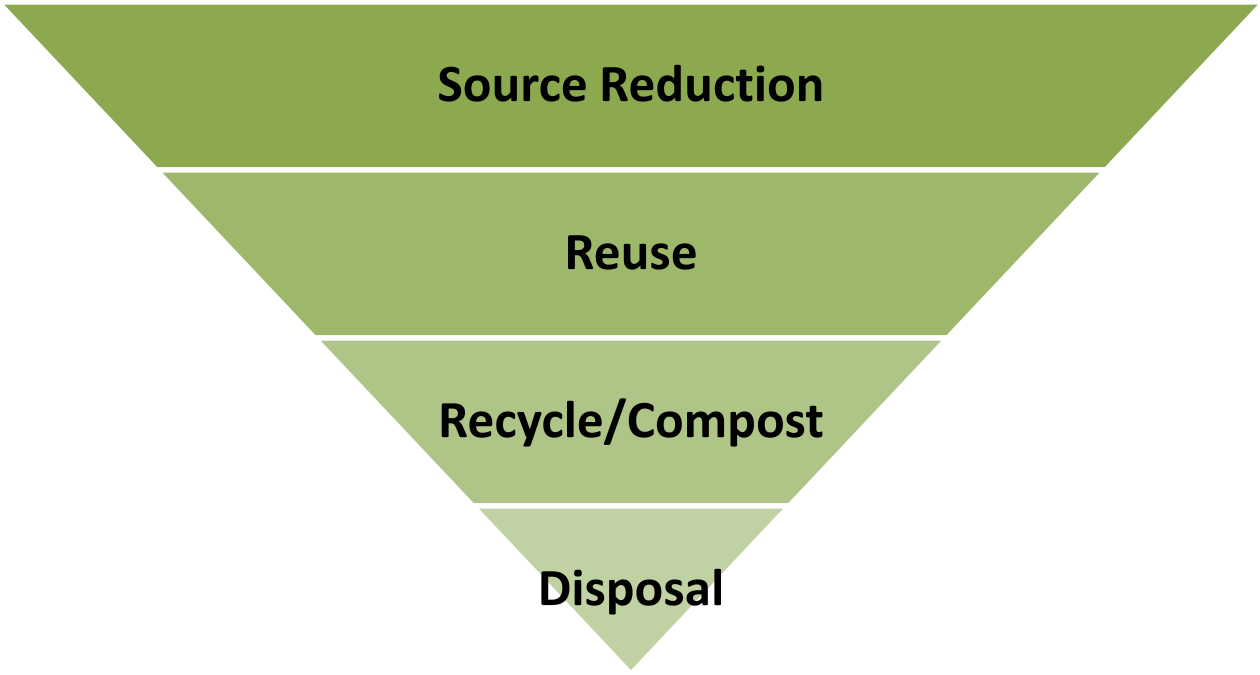

Figure 1. Waste Management Hierarchy

Waste Reduction Potential in the Workplace

Approximately 1/3 of the working adult's life is spent at work, resulting in the consumption of considerable amounts of energy and resources within the workplace. Environmental and financial benefits may be realized by implementing an integrated solid waste management plan in the workplace that includes waste reduction elements.

The workplace represents a significant opportunity to reduce waste statewide. Based on the results of the *Illinois Commodity/Waste Generation and Characterization Study* completed for IRA and DCEO in 2009, business-sector waste represents approximately 54% (10 million tons) of the total municipal waste generated in Illinois[1]. The study further estimates that business-sector waste represents approximately 46% (7 million tons) of the municipal waste landfilled from Illinois annually[2], suggesting a current diversion of approximately 30% of business sector waste from disposal annually.

However, significant opportunity remains to increase waste diversion from the business sector, thereby reducing the quantities of waste landfilled annually. The *Illinois Commodity/Waste Generation and Characterization Study* estimates that approximately 16% of the waste disposed by the business sector consists of cardboard, and an additional 12% of waste disposed by the business sector consists of food scraps[3]. Capturing just these two waste streams, therefore, could nearly double current waste diversion from the business sector. Additional recyclable paper, plastic, glass and metals, as well as electronics and construction/demolition waste, may also be targeted for recovery.

Taking a global approach, recent projections from the United Nations Population Fund indicate that world population could reach 8.9 billion by 2050. With this sizable population growth, consumption (and therefore waste generation) is expected to increase. It is imperative that current lifestyles be evaluated and steps taken to protect and conserve the Earth's limited resources and manage waste responsibly.

Just because we <u>can</u> doesn't mean that we <u>should</u> throw everything away. "Think before you throw" is a saying that makes sense - and CENTS! By reviewing the amount of solid waste your workplace generates and the associated costs of waste management, then evaluating opportunities for waste reduction and their associated costs, you may be motivated to implement a waste reduction program. By implementing waste reduction practices and establishing *green* procedures for office operations and procurement, businesses conserve resources, establish a healthier working environment, and potentially reduce costs and environmental liabilities. In many cases, waste reduction may not reduce costs, but by shifting waste management costs to more environmentally and economically beneficial strategies you may be able to develop a program that is cost-neutral and supports the environmental and sustainability goals of the organization.

Initiatives to reduce waste as well as to increase energy efficiency, reduce water consumption and alter transportation patterns are essential components to transitioning to *sustainability* – the principal of using a resource so that it is not depleted or permanently damaged and so that it is

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1 CDM, *Illinois Commodity/Waste Generation and Characterization Study*, May 2009. Table 3-4, page 3-11.
2 CDM, *Illinois Commodity/Waste Generation and Characterization Study*, May 2009. Table 2-24, page 2-33.
3 CDM, *Illinois Commodity/Waste Generation and Characterization Study*, May 2009. Table 2-5, page 2-10.

available to future generations[4]. By practicing environmental and sustainable principles in the workplace, employees will be empowered to be part of the solution not only at work, but also in their communities. Sharing your successes with your employees, customers, students, patients, etc. can also benefit your business, since we are increasingly cognizant of the "green" achievements all around us.

Benefits of Instituting a Comprehensive Waste Reduction Plan

Recycling may be the first option many businesses consider when developing a waste reduction plan. While recycling is a common waste reduction strategy, practicing source reduction provides the greatest benefit. Through implementation of source reduction practices, waste and recyclables are not created in the first place. This results in cost savings in 2 primary areas: 1) less material may be procured, saving on purchasing and handling costs; and 2) less waste is generated which requires storage, collection and recycling/disposal.

Instituting a comprehensive waste reduction plan for your workplace can result in a variety of benefits that will be discussed in greater detail throughout this guide. Some of these benefits include:

- Reduces costs
- Streamlines business operations and increases operating efficiencies
- Conserves energy, reduces air emissions and water pollutants, decreases GHG emissions
- Conserves natural resources
- Creates revenue potential from marketing of recovered materials
- Preserves landfill capacity
- Visibly demonstrates environmental stewardship
- Boosts staff morale
- Reduces environmental impacts and liability associated with disposal
- Creates and supports "green" jobs, perhaps locally, and helps sustain markets for recyclable commodities increasingly being used by manufacturers

[4] Brundtland Commission, 1987.

SECTION 2: WORKPLACE CHARACTERISTICS

While every business may have unique waste stream characteristics, specific constraints on its ability to implement waste reduction practices, and varying motivations for reducing waste, there are a number of similarities between businesses in the same sector or that are the same size. This section discusses some of the typical characteristics of certain types of businesses to begin to guide your thought process as you evaluate waste reduction options and develop your workplace waste reduction plan.

Waste Reduction in Large Businesses

Large businesses typically generate a large amount of waste, by simple virtue of the scope of their operations and staff. Waste materials are likely handled by janitorial staff or facilities management staff, consolidated from numerous points throughout the business, and disposed in one or more centralized areas. Staff may or may not know where their waste goes after it is deposited in their deskside or work area garbage can, and as a result may not be aware of the amount of waste the business generates.

Large businesses may occupy one or several buildings on a single campus or in an industrial park. They may also be subject to regional or national contracting requirements if they have multiple locations. These conditions all increase the initial research and evaluation to be completed before developing and implementing a waste reduction plan. In addition, education and promotion of waste reduction in a large business requires significant effort to be effective.

Large businesses may benefit from their larger waste stream, because waste reduction can be a highly cost-effective practice. Recycling service providers may be able to offer a number of service options to meet the business's needs, or a large business may have adequate volume of certain materials to work directly with a processing facility or broker to sell the materials.

Waste Reduction in Small Businesses

Small businesses, though they will generally generate much less waste than a large business, are still going to generate similar types of waste as their large-business counterparts. Employees in small businesses may be responsible for taking their waste to a common collection area or dumpster, or waste may be managed by janitorial staff. Even though the waste stream is likely smaller than the large business, and employees may be more involved in managing their waste, they are likely to still lack an understanding of how much waste their business generates.

Small businesses may not always generate large volumes of recyclables required to implement a cost-effective collection program, and recycling service providers may not be willing to pick-up small quantities of recyclables. There are various ways to overcome such challenges, including working with neighboring businesses to consolidate recyclables and contract jointly for service, identifying options for using area recycling drop-off sites, and implementing source reduction efforts to avoid creating the wastes in the first place.

Waste Stream Characteristics of Various Workplaces

The waste stream characteristics described below are generalized and may not represent the characteristics in your particular workplace. However, in general, these characteristics will help you to understand how your waste and waste reduction opportunities differ from other business sectors.

Colleges and Universities

Colleges and universities primarily generate wastes in the classroom, faculty offices, cafeterias, and student housing. In addition to basic recycling programs for paper, bottles and cans, food scrap composting programs have been implemented to manage cafeteria wastes. Some of these programs have replaced #6 polystyrene trays and plastic utensils with alternatives that are biodegradable and compostable. Yard waste composting programs also are important to campuses that have large grounds.

Manufacturers

Manufacturing businesses generate wastes specific to their production processes, as well as wastes from offices and cafeterias. Source reduction is practiced by many manufacturers to minimize the amount of waste generated from the manufacturing process. By reducing waste, manufacturers minimize the use of raw materials, reduce their operating costs, and sell their products at competitive prices. Besides materials typical to their particular manufacturing process, manufacturers may recycle cardboard, wood pallets, office paper and beverage cans/bottles.

Office Buildings

By far, the most prevalent waste generated by office buildings and complexes is paper. In addition, offices will typically generate a smaller percentage of food scraps. Many offices, including municipal offices, schools and commercial buildings, recycle mixed office paper, cardboard and beverage cans/bottles.

Restaurants and Bars

Food scraps represent a significant proportion of the waste generated by restaurants. This waste stream, due to its potential to cause odors and attract rodents and pests, must be removed for disposal much more often than wastes at other types of businesses. Collecting used cooking grease and oil for rendering is commonplace at many restaurants, and special containers are used to store the grease until it is collected. Pre-consumer and post-consumer food scraps are increasingly being considered for composting rather than landfill disposal. In addition to food scraps, restaurants and bars may recycle aluminum, glass, paper and cardboard.

Retail Businesses

Cardboard comprises a significant amount of the waste generated by retailers. Many retailers flatten cardboard boxes before throwing them away to save space in their dumpsters and reduce collection costs. This is the first step towards preparing the cardboard for recycling as well; with the addition of a small cardboard baler a retailer can set aside the cardboard for recycling. Retailers selling items such as appliances and electronics are increasingly providing haul-away and recycling services to their customers to remove old items when the new items are delivered. By collecting these items from customers, it provides a valuable service to customers and allows the retailer to broker the items to recyclers at a low, if any, cost.

Hotels

Wastes in hotels are generated by hotel staff as well as by hotel guests. Hotel staff generate wastes associated with the operation of the hotel, consisting of both administrative/office functions and food service functions. Paper, cardboard, and beverage cans/bottles as well as food scraps are all potential waste reduction targets. Hotel guests present a unique challenge for waste reduction, as they are transient and may not readily seek recycling options. Many hotels have identified options for reducing waste and conserving energy and water consumption associated with guest services.

Basic recycling may be encouraged in guest rooms or cleaning staff may remove cans/bottles, newspapers and other recyclables from waste cans for recycling. Encouraging guests to reuse their towels if staying more than one night and changing bed linens on a less than daily basis can reduce water and energy consumption. Also, providing toiletries only on request or offering shampoos and soaps in bulk can reduce wastes. Water-reducing bathroom fixtures, energy-efficient light bulbs, and pre-programmed thermostat controls can all have an impact on energy and water usage as well.

Health Care

Nearly 75% of the waste generated by hospitals is of the non-hazardous variety, consisting of paper, plastics and food scraps. Paper is the largest component of the waste stream. These materials can be handled much as they are in other businesses (refer below for discussion of special handling considerations for materials containing confidential information). All medical/biohazard wastes must be disposed of according to state regulations.

Managing Confidential Information

Many businesses (e.g., financial institutions, insurance agencies, lawyers and those involved in the healthcare field) as well as governmental entities must give special consideration to waste reduction and recycling due to the presence of confidential information in paper and electronic forms. The shredding of confidential documents is a familiar practice and shredded paper may still be recycled. Many document destruction companies provide this service. Additionally, some common office equipment, such as computers and copiers/workstations, may contain hard drives that store sensitive data. Many electronic scrap processors provide hard drive destruction services and certification.

SECTION 3: STEPS TO SUCCESS

Many businesses are currently practicing some form of waste reduction, whether or not a formal program has been developed and implemented. Figure 2 identifies 6 key steps to make your efforts to develop, implement, or expand a waste reduction program a success. It is also important to provide ongoing feedback and information to your employees, as well as upper-level management, throughout the program development and implementation process.

Figure 2. Steps to a Successful Waste Reduction Program

The guidance offered in the following sections is intended to structure your approach to waste reduction in your workplace and provide numerous valuable resources to assist you in each step of the process. However, there is no "best" waste reduction program to point to, and waste reduction options are not one-size-fits-all. It is necessary for individual businesses to review the specific needs and characteristics of their operation and design a program that best fits their unique situation.

Step 1. Form a Green Team

The initiative of just one person can start the ball rolling on a waste reduction program. This one person may be able to develop and implement a comprehensive solid waste management plan within a small business with little to no additional support; in most businesses, though, it may be necessary to engage several people on a task force or "green team" to develop a successful program.

A successful waste reduction program will impact several different areas of the business, including purchasing, facilities management, janitorial services, and other staff throughout the business. Therefore, the green team should include input and support from representatives of as many of

these affected departments as possible. Employees that volunteer or are appointed to the green team need to agree to be responsible for many of the tasks involved in planning, designing, implementing and maintaining the program. Ideal green team members will possess knowledge on various environmental subjects and be passionate about leading the charge within the organization.

A team lead or waste reduction coordinator should be appointed to serve as the primary point of contact and guide the team's efforts. This person should be (or become) familiar with all waste reduction options and company policies/procedures and be passionate about leading the charge to reduce waste in the workplace. This person should also observe members of the team to ensure team members remain motivated and feel supported in their efforts, identify new members as members are lost due to changing availability or members leaving the workplace, and watch for signs of burnout.

The size of your team will relate generally to the size of your business. Regardless of the size of the team, team members will have the following responsibilities:

- Work with management to set preliminary and long-term goals of the waste reduction program
- Gather and analyze information relevant to the design and implementation of the program
- Promote the program to employees and educate them about how they can participate in the effort
- Monitor and evaluate the progress of the program
- Prepare reports to management about the status of the program

The green team should meet regularly throughout the evaluation and planning phases of the waste reduction program. During the first meetings of the green team, team members should develop a mission statement defining program goals in both the short term and long term. The preliminary goals set by the team will provide a framework for evaluating specific waste reduction options and should be flexible, as they might need to be adjusted as the evaluation phase proceeds.

Management support is crucial to the success of any program within the workplace, and waste reduction is no exception. The green team, or select members of the team, should achieve management buy-in regarding the evaluation of waste reduction options and consideration of developing a waste reduction plan very early in the goal-setting and option analysis process. Management support provides the following benefits:

- Authorization of expenses to evaluate options, develop the plan, purchase containers and promote the plan
- Motivation to other employees to participate in waste reduction activities
- Access to key decision maker(s) during the evaluation and planning phases

On April 22 (Earth Day), 2009, Governor Quinn signed Executive Order 11 (2009), Executive Order to Reduce the Environmental Impact of Illinois State Government Operations. This directive

identifies policies and actions to be taken in the areas of waste prevention, energy efficiency and conservation, water quality and conservation, sustainable transportation, and education and outreach. While the Order addresses State government activities directly, it provides an example of the type of leadership that can motivate change not only in the specific activities of people or organizations but in the overall approach to operations. It is interesting to note that the order does more than simply suggest that employees practice waste reduction; it clearly integrates these activities as something employees have a duty to perform. The full text of the Executive Order can be viewed at www.illinois.gov/gov/execorders/docs/execorder2009-11.pdf.

Step 2. Do Your Research

Once you have a motivated and committed team to develop and implement your waste reduction program, you will need to do some research to inform your decision-making. Waste reduction comes in many forms, and the same end can be accomplished in a number of different ways. By diligently evaluating your waste stream, considering the service offerings of local recyclers and waste haulers, understanding the markets available for recovered materials, evaluating the economics of any potential waste reduction program, and seeking the input of key contacts, your program has an increased chance of being successful and cost-effective.

Waste Audit / Waste Assessment

In order to develop an effective and targeted waste reduction program, the current waste stream needs to be evaluated. This evaluation is termed a waste audit or waste assessment. The waste assessment provides the team with an understanding of the types and amounts of waste the business generates and the methods by which waste is currently managed. The waste assessment also provides a baseline against which to review waste reduction options and measure program performance.

In some cases, it may be desirable to phase in the waste reduction program in order to control costs, achieve employee buy-in, and reduce the impact on overall operations. The results of the waste assessment can assist the team in identifying the high volume and easily accessible/readily divertable materials that can be the initial target of the waste reduction program, and it can also identify smaller volume items that may be added to the program once it is established. Furthermore, the waste assessment should not be conducted only during the initial planning phases of program development; it should be conducted periodically following program implementation to identify changes in the waste stream and evaluate program performance.

The team can perform the waste assessment themselves, or they may seek outside assistance. This decision may depend on the size and nature of the business, the complexity of the waste stream, the resources (money, time, labor, equipment) available to conduct the assessment or implement the waste reduction program, and the goals of the program. Outside assistance may be available from waste or recycling haulers, community or County recycling coordinators, or an outside consultant. Contacting your local waste and recycling coordinator is a good place to start if seeking outside assistance with your waste assessment; several counties statewide offer waste assessment consultation services to local businesses at low or no cost. A list of Illinois county solid waste officials is maintained by DCEO and can be viewed from their website at www.illinoisrecycles.com.

Attachment B contains sample waste assessment worksheets. The waste assessment can be as detailed or as general as you desire. An office or small business with a predictable and relatively

low-volume waste stream may only need to conduct a brief visual observation of waste collection areas/methods and contents of waste containers to qualitatively characterize the waste stream. Larger businesses or those with higher volume waste streams may benefit instead from a more complex waste sorting effort to quantitatively characterize the components of the waste stream. Steps to take when applying these two methods are briefly discussed below; as an additional resource, US EPA's Waste Wise Member Services website provides additional detail and sample worksheets that may also be helpful in completing your waste assessment (refer to wastewise.tms.icfi.com/plan/approach.htm).

Visual Observation: The green team will perform a walk-through of the business, observing the types of waste that are disposed in garbage cans and dumpsters. The team will also observe the operations that create the waste. The goal of the visual observation is to quickly identify:

- The types and relative amounts of various wastes created, and the processes that create those wastes
- The layout of waste operations (i.e., location of waste containers relative to waste generators, consolidation requirements to move waste from garbage cans to centralized dumpsters, etc.)
- Any current waste reduction efforts in place
- Current waste and recycling container sizes
- Availability of space and equipment to handle waste and recyclables

It may be necessary to conduct the visual observation more than once, or conduct a follow-up observation on another day, to gain a comprehensive understanding of your business's waste stream if there are daily or weekly fluctuations or seasonal variations in characteristics.

The visual observation method is beneficial and sufficient for many businesses because it provides the opportunity to readily identify major components of the waste stream and large targets for waste reduction and recycling opportunities. However, it does not provide detail on waste quantities or specific quantities of materials that may be diverted for recycling, which can create some challenges when developing and implementing your waste reduction plan because you will have to rely on estimates when sizing containers and determining your needs for storage and collection frequency.

Physical Waste Sort: A waste sort involves the collection and sorting of a sample of the waste stream to identify the weight and volume of specific components of the waste stream. The waste sort results in data that will enable a quantification of each component of the waste stream (based on the sample selected), allowing the waste reduction program's operations and goals to be more specifically defined.

A brief visual observation should be performed before conducting the waste sort to determine sampling procedures. The green team will need to determine initially if one day's waste will provide a representative sample of the company's waste stream, or if samples from several days will need to be collected. Additionally, the team will need to determine the categories to sort waste into; these categories may include the following:

- Paper, which may be further broken down to office paper, newspaper, cardboard, and other paper
- Plastics, which may be further broken down by resin type; refer to Section 3
- Glass
- Metals, which may be further broken down to aluminum cans, bi-metal food cans, and other metals
- Organics, which may be further broken down to food scrap, yard trimmings, wood, and other organics
- Other wastes, which may be further identified based on characteristics of your specific business if non-traditional recyclable or recoverable materials comprise a significant portion of your waste stream

Equipment to be used for the waste sort will include a tarp to spread waste on, containers (such as waste baskets, 5-gallon buckets and garbage cans) for each category of waste to be identified, a scale to weigh each waste type (subtracting out the weight of the container), and gloves to protect waste sorters' hands from injury. The size of the sample you select will be dependent on the size of the waste stream your business generates; the larger the sample, the more likely that it will be representative of the waste stream.

Hauler Services

In the development of any waste reduction plan, it is important that the entity charged with the final handling and marketing of recyclable materials is included from the onset of the plan's design. For most businesses, this entity will be your recycling hauler (some businesses may have significant enough volumes of specific, segregated materials to contract directly with a broker or end market).

You will want to ask your hauler, or several area haulers, the following questions:

- Which materials will you accept for recycling?
- What material quality and quantity requirements apply?
- Where (inside, outside) and how (in toters, dumpsters, compactors) will materials be stored before collection?
- Who will provide the collection container(s)?
- Can you provide a baler, and what benefits/costs are associated with baling materials?
- When will materials be collected?
- Who will process and market the recyclables?

- What will you charge for collecting, processing and marketing the recyclables?

- Will you share any revenue with us from the sale of our recyclables?

Because Illinois is a large state and not all areas of the state have equal or convenient access to large recycling processing facilities, the services available to businesses in different regions of the state will vary. In general, the following opportunities may be available:

- In larger urban areas such as northeastern Illinois /the greater Chicago area and the metro-east / St. Louis area, a wide range of recycling options are available. Dozens of waste and recycling haulers provide a comprehensive array of collection and processing services. Several recycling processing facilities operate in these regions, and the majority of the facilities are equipped to process commingled single-stream recyclables (i.e., all recyclable paper and containers together). This enables businesses to recycle all accepted materials in one container, potentially reducing the storage capacity required and simplifying the recycling process in the workplace.

- In smaller urban areas in northwestern and central Illinois, such as Rockford, Quad Cities, Peoria, Springfield, Champaign/Urbana, Bloomington/Normal, many recycling options are also available. Several waste and recycling haulers operate in these smaller urban areas, but the services provided are not as comprehensive as in larger urban areas. Recycling processing facilities operating in these regions do not generally process single-stream materials, though the majority do process commingled paper and commingled containers. Alternatively, some haulers in these regions may transfer recyclables a greater distance to processing facilities located outside the region in order to offer their customers greater flexibility in their options.

- Rural areas of the state, particularly in southern Illinois, have much more limited recycling options available. Due to a lack of nearby processors or end markets, transportation costs are much greater than in more urban areas of the state. As a result, haulers typically provide more limited services for both residential and business recycling. Minimum quantities of materials may be required for haulers to provide collection, and materials may be required to be separated by type to minimize the need for additional processing.

DCEO has engaged IRA to develop a database of recycling opportunities in Illinois. The database is expected to be completed by August 2010 and will be made available on the IRA website at www.illinoisrecycles.org. A link to the database will be maintained from DCEO's website (www.illinoisrecycles.com) as well when it is completed.

Availability of Markets

Once you have a better idea of the materials you may collect and have estimated how much of each material you expect to collect, you need to evaluate the markets for those materials. Separating materials for recycling only makes sense if there is an outlet for the materials; if a market is not reasonably available for a certain material, this will impact the materials you target in your waste reduction plan.

The price you pay to have someone pick up your recyclable material depends on the market for that material. In the design of a recycling plan, it is critical to know what you will do with what you collect. The waste haulers or recycling firms in your area can provide information on commodities accepted, current prices and logistic information regarding collection, transportation and processing.

In some cases, finding a market may be as simple as contacting your hauler or as complex as scheduling distant end markets to supply and deliver trailer beds. Here are a few simple tips to follow when evaluating your material's marketability:

- Know if there are quantity requirements, and if there is a minimum quantity required.
- Markets should be close enough to keep transportation costs reasonable.
- Uncontaminated / clean recyclable materials are more marketable. If materials are or may be contaminated, this needs to be discussed with the processor or recycling hauler because it will impact your costs.

Though there is a cost for a hauler to collect and transport your recyclable materials to a processor, there may also be a payment made by the processor for the material. This payment offsets a portion of the collection and transportation costs, and eliminates the need to pay a disposal fee. Recycling haulers may be willing to share the revenue they receive for your materials, or they may reduce your hauling costs based on their projections of the revenue they may receive.

Economic Analysis

While there are many environmental reasons to pursue a waste reduction program, businesses must also consider the economic impact of a program. Recycling is a service, and like other services it is not free (though it may result in a reduction in costs or a revenue-share potential). As program options are developed, an economic analysis should be conducted to evaluate the cost of implementing waste reduction activities, taking into account projected disposal savings, compared to the current cost of waste management services.

The costs of the program may include the capital cost of containers and processing equipment (such as a cardboard baler, if required). Most of these capital costs are typically incurred during program startup and may be amortized over several years to reduce the impact on the business. The waste reduction program will also have ongoing operating costs, including internal labor (for program implementation, on-site material collection, education/promotion, and monitoring), outside contractors for hauling to processors/markets, container repair and replacement, and development of education information. While DCEO cannot fund recycling service fees, they do offer a grant program to provide assistance in purchasing capital equipment. The Illinois Recycling Grants Program (IRGP) is a competitive program through which applicants submit responses to a Request for Applications. To learn more about this program, please visit DCEO's website at www.illinoisrecycles.com.

Because waste reduction practices will result in less waste being set out for landfill disposal, your business may realize a reduction in disposal costs. Waste haulers typically charge businesses based on several factors, the following of which may be adjusted after implementation of a waste reduction program: 1) the size of the waste container or dumpster, and 2) the frequency of collection (once per week, twice per week, etc.). The waste assessment is an important tool to evaluate the adequacy of your container size and collection frequency after implementation of the

waste reduction program. Contact your waste hauler or refer to Figure 3 below to determine the size of your waste dumpster.

Example: Your business currently has a 2 cubic yard dumpster that is emptied twice per week, and the dumpster is nearly full each time it is emptied; you are generating approximately 4 cubic yards of waste weekly. With implementation of a waste reduction program, you have estimated that source reduction measures will prevent generation of 15% of the waste stream. As a result, your business will now generate approximately 3.4 cubic yards of waste weekly:

(4 cubic yards) – (15% x 4 cubic yards) = 3.4 cubic yards

Your waste reduction program also is estimated to result in the recycling of 45% of the remaining waste stream. The remaining amount of waste to be disposed by the business then is approximately 1.9 cubic yards:

(3.4 cubic yards) – (45% x 3.4 cubic yards) = 1.87 cubic yards

Based on this change in disposal volume, your business may be able to reduce the size of your dumpster to 1 cubic yard (retaining twice per week collection), or you may be able to reduce the frequency of collection to once per week (retaining a 2 cubic yard dumpster).

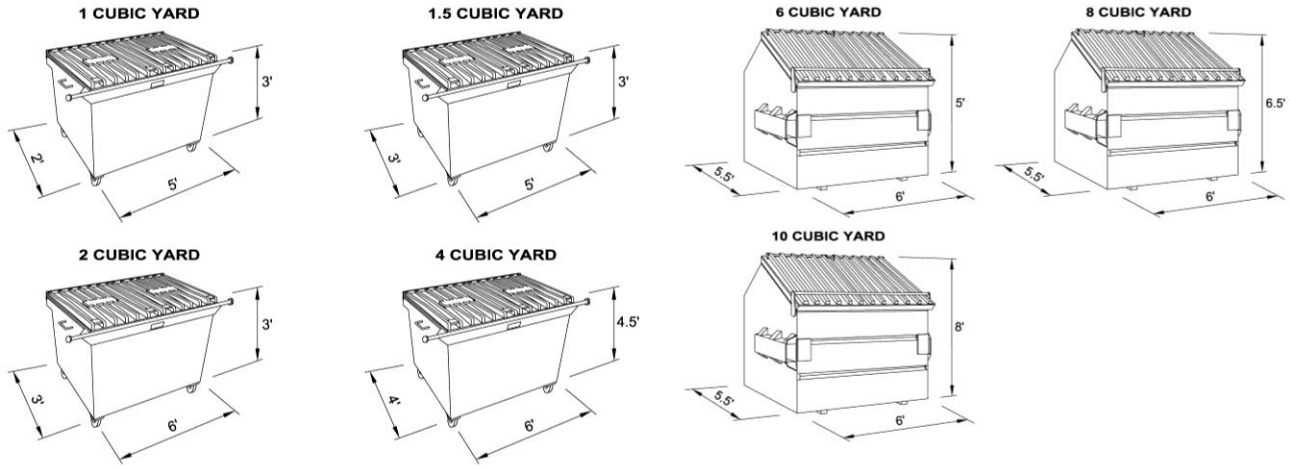


Figure 3. Typical Dumpster Dimensions

TABLE 1. ECONOMIC ANALYSIS		
1. Annual Savings and Revenues		
Waste Disposal Savings	$_____	
Revenues from Recyclables	$_____	
Source Reduction Savings	$_____	
Other Savings	$_____	
Total	(+)$_____	(1)
2. Annual Operating Costs		
Labor	$_____	
Energy	$_____	
Space (Lease, Permit)	$_____	
Collection/Transportation	$_____	
Program Administration	$_____	
Education/Promotion	$_____	
Container Replacement	$_____	
Other	$_____	
Total	(-)$_____	(2)
3. Capital Costs		
Containers	$_____	
Equipment	$_____	
Subtotal	$_____	
Annualized Cost	(-)$_____	(3)
Net Savings (Cost) of Program (Sum (1), (2) and (3))	$_____	

Key Contacts

A number of resources are available to assist the team in performing the necessary research and evaluation of waste reduction options. The green team may wish to reach out to any and all of the following key contacts early in the plan development process and throughout plan development and implementation (refer also to Attachment C for a list of contacts). In addition to the following list, talking with other local businesses and businesses similar to your own can provide insight regarding waste reduction options.

- County waste and recycling coordinators. The Illinois Department of Commerce and Economic Opportunity (DCEO) maintains a list of county coordinators on their website at www.illinoisrecycles.com. County coordinators can provide information on services available to assist the business in developing and implementing their waste reduction program, types

of materials that may be recycled in the local market, points of contact with local haulers and service providers, and other local resources.

- Waste and recycling haulers. Your current waste hauler may also provide recycling services and can identify container options, materials that may be accepted, and costs of service. You may also wish to contact other waste haulers or recycling haulers to determine if other companies may offer different services.

- Professional organizations. Local waste and recycling organizations in Illinois, such as Illinois Recycling Association (IRA; www.illinoisrecycles.org), Illinois Counties Solid Waste Management Association (ILCSWMA; www.ilcswma.org), and the Solid Waste Association of North America Land of Lincoln Chapter (SWANA; www.swanaillinois.org) can direct businesses to resources to assist them with waste reduction opportunities. Local affiliates of Keep America Beautiful (www.kab.org/site/PageServer?pagename=Affiliate_State_Illinois) can provide additional state and local resources. National organizations can also provide a national perspective on waste reduction and help you to determine what businesses in other parts of the country may be doing to reduce their waste.

- State agencies. DCEO provides a variety of business support programs and assistance, including in the area of waste and recycling. To learn more about these grant programs please visit www.illinoisrecycles.com. The Illinois Environmental Protection Agency (IEPA) Bureau of Land (www.epa.state.il.us/land) regulates waste handling facilities and can provide guidance regarding management of special waste materials that may not be landfilled.

- Federal agencies. The US EPA provides a number of waste reduction resources on its website (www.epa.gov) and may be able to provide assistance through its regional office (Illinois is located in US EPA Region 5, with its office located in Chicago) to identify and evaluate waste reduction options.

Step 3. Evaluate Options

Once you have determined several of the initial parameters for your waste reduction program, you will have to make some decisions regarding the specific waste reduction practices to implement. By starting with source reduction and reuse options, then adding recycling and composting options to reduce remaining waste, you can develop an effective waste reduction strategy.

Source Reduction and Reuse

The first options to consider for waste reduction are the no-cost or low-cost, easy things to do to decrease the volume of waste generated at work. Source reduction and reuse are the most preferred options in the waste management hierarchy. As previously defined, source reduction refers to not creating waste (or toxic waste) in the first place. Reuse refers to using materials again for the same or another purpose to capture the value and usefulness of materials which have outgrown their original use or original user.

The following source reduction options can be implemented easily for little cost:

- Establish a double-sided copying policy or set printers on double-sided setting as default
- Print draft documents and internal copies on draft, black and white setting, and only print in color when necessary
- Run one sample copy to proofread documents before printing multiple copies
- Establish a "Be nice, use it twice box" for paper that has only been used on one side, using other side for faxes or drafts
- Eliminate a cover page when sending a fax
- Make note pads from old letterhead or use for in-house memos
- Distribute company memos and newsletters electronically, or post a hard copy in a common area of the office
- Subscribe to online newspapers and newsletters
- Use Power Point or dry erase boards for meeting agendas
- Reduce spacing and font size to keep documents to one page
- Reuse envelopes or use two-way (send and return) envelopes
- Keep mailing lists updated
- Cancel junk mail; write to the Direct Marketing Association Mail Preference Service, PO Box 9008, Farmingdale, NY 11735-9008, and ask that your business be removed from their mailing lists or visit precycle.tonic.com/ to pay a fee to have it done for you
- Purchase recycled-content office supplies (see Attachment D for a list of suppliers, or check with your supplier for recycled-content options)
- Have a central location for office supplies to avoid surplus inventory
- Ask suppliers not to use excessive packaging materials, and purchase in bulk when possible
- Establish a system for returning cardboard boxes and foam peanuts to suppliers for reuse, reuse for shipping your business packages, or give to a UPS/FedEx store
- Provide reusable mugs for staff and use at meetings
- Stock kitchen with reusable cups, plates and flatware
- Provide a water cooler or install a filter on the faucet to cut down on individual bottled water

- Encourage staff to bring a waste-free lunch, utilizing reusable food containers, napkins and bags
- Repair items when possible
- Find ways to use odd pieces for art projects – make crafts from trash
- Donate magazines and gently-used equipment to clinics, charities, etc.
- Rent equipment that is only needed occasionally
- Use rechargeable batteries where practical
- Have printer and copier cartridges refurbished through manufacturer

Material exchanges are a good resource if you have a large amount of any material to get rid of or have a unique material that may have reuse potential. Several exchanges are noted below:

The US EPA's Materials & Waste Exchanges website provides a list of international, national and state references for buying and selling reusable and recyclable commodities: www.epa.gov/epawaste/conserve/tools/exchange.htm.

The National Association for Exchange of Industrial Resources (NAEIR) is a nonprofit gifts-in-kind organization that facilitates the exchange of excess inventory between companies from across the United States and schools, churches and nonprofit organizations: www.naeir.org.

ThrowPlace is a website where global registered users may list goods they wish to give away to others. Charities, businesses or individuals registered with ThrowPlace are able to search the site and make requests for items of interest. Items must be given away and cannot be sold: www.throwplace.com.

The Wheaton-based School & Community Assistance for Recycling and Composting Education (SCARCE) has a Book Rescue and Tools for Schools program, where gently used books of all kinds for all levels are systematically shelved in their warehouse for educators to take and reuse, and surplus office/school supplies collected from area businesses and municipalities are given to educators in need of those items, which can include furniture: www.bookrescue.org or (630) 545-9710.

ReDo is a national non-profit organization that promotes reuse as an environmentally sound, socially beneficial and economical means for managing surplus and discarded materials: www.redo.org.

Freecyle (www.freecycle.org) and Craig's List (www.craigslist.org) are Internet-based sites to donate, receive for free, barter or purchase items inexpensively. Both organizations require registration.

Product stewardship is increasingly prevalent throughout many business sectors. Product stewardship is the principle that manufacturers and retailers of products have the responsibility for designing, producing and packaging their products in a manner that minimizes environmental

impacts. Source reduction activities related to the design, manufacturing, distribution and selling of products are a key element of product stewardship. For more information on product stewardship, refer to the Global Product Stewardship Council (www.productstewardshipcouncil.net) or the Product Policy Institute (www.productpolicy.org).

Source Reduction and Reuse Case Studies

Office Max Corporate, in Naperville Illinois, reduced waste with two employee campaigns. There are approximately 1,000 employees at the Naperville location. In 2007, the *You've Been Mugged* campaign placed a ceramic coffee mug on each employee's desk with a note that said, "You Have Been Mugged!" No longer was the company going to purchase individual #6 styrofoam coffee cups for employees or visitors. Disposable cups were replaced with reusable, washable mugs. In 2008, the *Work With Us* campaign provided employees with a reusable steel water bottle to fill at will from a filtered water machine, which cut down on purchasing individual-bottled water.

Eastern Illinois University, a member of the US EPA WasteWise program, operates a reuse operation with the local community for furniture and office supplies. Additionally, in 2005 the University provided a local township road department with 615 tons of boiler ash to spread on snow- and ice-covered roadways, improving traction on the roads.

Recycling

Recycling refers to separating, collecting, processing, marketing and ultimately remanufacturing a material that would have been discarded as refuse. Any recycling option will require that materials be segregated from wastes and stored until removed or collected by a hauler. Also, haulers and markets may have material quantity and/or quality requirements to be met before accepting the material for recycling. Clean, uncontaminated materials are preferred (and in some instances necessary) for reprocessing into new products. These considerations may impact the types of materials you choose to recycle.

Most everyone is aware of many of the commonly recycled materials that may be generated within a business. A brief description of each of these materials is provided below.

Glass: Hard, brittle, generally transparent or translucent materials typically formed from the rapid cooling of liquefied minerals. Most commercial glass is made from a molten mixture of soda ash, sand and lime. Colors of glass include clear, green, brown/amber, and blue. When glass is recycled, colors are sorted separately and the glass is cleaned and crushed to produce cullet. Cullet is then used to manufacture new glass products, abrasives, fiberglass, or in paving applications such as "glasphalt".

Metal: an element that usually has a shiny surface, is a good conductor of heat and electricity, can be melted down, fused, or hammered. Metals include iron, gold, sodium, copper, magnesium, tin and aluminum. Categories include non-ferrous, ferrous, bimetal and tin-coated.

Aluminum: A lightweight, silver-white, metallic element that makes up approximately 7% of the Earth's crust. Aluminum is used in a variety of ways, but perhaps most familiarly in the manufacture of soft drink cans.

Steel: A strong, durable material made of iron and carbon, and often other metals, to achieve different properties. Steel is often used as a component in cans and as a structural material in construction.

Tin: A soft silver-white metallic element, capable of being easily molded and having a low melting point. Tin is often used together with other metals in making cans for packaging.

Paper: A thin material made of pulp from wood, rags, or other fibrous materials and used for writing, printing or wrapping. Paper comes in a variety of grades from high to low.

High-Grade Paper: Includes most white office paper, including computer paper, copy machine paper, letterhead, white notebook paper and envelopes.

Low-Grade Paper: Includes most non-white office paper, file folders, tablet paper, colored envelopes and yellow legal paper. Low-grade paper is less valuable than high-grade paper in terms of recycling.

Corrugated Cardboard (OCC): Unbleached, unwaxed paper with a ruffled inner liner.

Newspaper (ONP): Printed newsprint paper.

Mixed Waste Paper: Paper that is not segregated by color, quantity or grade. Typically will also include magazines, newspaper inserts, and paperboard/chipboard.

Plastic: A material made from petroleum capable of being molded, extruded or cast into various shapes. There are many different kinds of plastic made from different combinations of compounds called polymers or resins. To assist plastics recyclers, the different types of plastic are identified by a number ranging from 1 to 7, generally located on the bottom of an item. For additional information regarding plastics, visit www.americanchemistry.com/plastics/ or www.napcor.com.

#1 PET: Polyethylene terephthalate (screw-top beverage bottles)

#2 HDPE: High-density polyethylene (milk & water jugs, laundry detergent bottles)

#3 PVC: Polyvinyl chloride (typically contains cleaning products or personal care products)

#4 LDPE: Low-density polyethylene (grocery bags and film products)

#5 PP: Polypropylene (yogurt containers, margarine tubs, personal care products)

#6 PS: Polystyrene (rigid – cups, plates, tableware, packaging; expanded – packaging for electronics, clamshell containers)

#7 Other: Other resins, usually a mix of the above.

Recycling Facts and FAQs

What does the recycling symbol mean?

1. The first arrow going up is to collect materials for recycling.
2. The second arrow at the top is when the materials go to the recycling center to be sorted and then are reprocessed.
3. The third arrow coming down is when new products have been made from the recycled materials.

In order to keep the cycle of recycling going, it is important to purchase items made from recycled materials.

What does recycled-content mean?

Recycled-content means that a percentage of the materials used to make a new product come from materials that were recycled. A consumer is a person who buys and uses things. **Post-consumer recycled-content** means that a new product is made, at least in part, from a material that was recycled by consumers. Whereas, **post-industrial recycled-content** means that a new product is made, at least in part, from a material that was recycled by an industry. An example of post-industrial recycling is using blue jean trimmings to make pencils or writing paper.

How long does it take for aluminum cans to be recycled?

Aluminum cans return to the store shelf in as little as 60 days. The can is collected for recycling, then melted, rolled into a sheet, made into a new can, filled with product and taken to a store. That means that a consumer could basically purchase the same recycled aluminum can from a store shelf every nine weeks, almost six times a year. For more information, visit the Can Manufacturers Institute's website at www.cancentral.com.

What percent of recycled steel is used to make a new steel can?

According to the Steel Recycling Institute, all steel cans made in the United States today contain about 28% recycled steel. Since the 1970's, major appliances like stoves and refrigerators contain as much as 80% recycled steel. Steel Recycling Institute at www.recycle-steel.org.

What types of glass can be recycled?

Typically only food and beverage jars and bottles (clear, green, blue or brown) can be recycled. Other glass like ceramic cups and plates, light bulbs, window glass, crystal, heat resistant ovenware or mirrors cannot be recycled. Please try to reuse these items or dispose of them properly. For more information, visit the Glass Packaging Institute at www.gpi.org.

How many trees does it take to produce a ton of paper?

It takes 17 mature trees, grown for about 20 years, to make a ton of paper. For other benefits of manufacturing recycled paper, visit the American Forest and Paper Association at www.afandpa.org.

Composting

Composting is nature's way of recycling. Composting converts organic materials, including food scrap (like fruits and vegetables) and yard waste trimmings (like leaves, grass and small tree branches) into a dark, earthy-smelling soil conditioner, thereby preserving valuable nutrient-rich organic resources. Additionally, composting can save money by lowering disposal costs and replacing store-bought fertilizers. Compost also saves water by helping the soil hold moisture, reducing water runoff. Composting can make a significant contribution to achieving waste reduction goals, especially if organic waste comprises a large proportion of your waste stream.

Landscape waste has been banned from Illinois landfills since 1990. Significant commercial composting and land application infrastructure has developed in the 20 years since the ban was implemented, and public education has resulted in increased backyard composting and mulching to reduce the amount of landscape waste collected and requiring composting. Recent legislation effective January 1, 2010, now allows food scrap to also be commercially composted in permitted facilities in Illinois. As mentioned in Section 1, food scraps constitute approximately 12% of the business-sector waste stream in Illinois. In businesses such as restaurants, grocery stores, and hotels, food scraps may comprise between 40% and 70% (or more) of the waste stream[5].

The Illinois Department of Commerce and Economic Opportunity (DCEO) Office of Recycling and Waste Reduction closed its inaugural *Food Scrap Composting Revitalization and Advancement Program* (F-SCRAP) grant round in April 2010 and anticipates opening a new grant round in Fall 2010. F-SCRAP grants are designed to assist for-profit and not-for-profit organizations including businesses, schools and government agencies to implement projects to collect and compost food scraps in Illinois. For more information, visit www.illinoisrecycles.com.

Onsite Outdoor Composting: If you are interested in developing an onsite composting program, first check with your local community or county waste and recycling coordinator to identify any restrictions on outdoor composting. A properly constructed compost pile is needed to minimize nuisances (such as odors) and achieve a quality finished compost.

You will need space, a bin, oxygen, water, leaves, grass and organics. Bins are available commercially, but can also be made with wood, fence posts, chicken wire, etc. Almost all natural, organic materials will compost, but not everything belongs in an onsite compost pile (see Table 2). Generally speaking, meat, bones and fish should not be composted because they can attract rodents, raccoons and other pests and can cause odors in your compost pile. Dog and cat manure should also not be composted, as it contains harmful pathogens that are not always killed by the heat of the compost pile.

[5] Cascadia Consulting Group, 2007.

TABLE 2. CHOOSING WASTES TO COMPOST		
Things to Compost		Things Not to Compost
Grass Clippings	Alfalfa Hay	Oils, Fat or Grease
Leaves	Coffee Grounds	Diseased Plants
Fruits and Vegetables	Straw	Meat, Bones, Fish
Brush and Shrub Trimmings	Flowers	Manures
Wood	Bread	Dairy Products
Sawdust	Wood Ash	Butter, Salad Dressings
Pine Needles	Paper	Inorganic Matter
Cornstalks		

Making an outdoor composting bin yourself is inexpensive and relatively easy, or there are many types of bins available commercially. Commercial bins are typically square or cone-shaped. Some are open and some have a lid. Each type of bin has advantages and disadvantages, so choosing the type that is best for your space and complies with local requirements is important.

Advantages and disadvantages of an open bin:

- Convenient for adding new materials
- Open bins collect rain water and can become too wet (they can be covered during rain events to control moisture levels)
- Can attract flies, bees, rodents and urban wildlife
- Materials can be difficult to mix
- May be an eyesore to your neighbors

Advantages and disadvantages of enclosed containers:

- Containers rarely attract pests
- Upright containers may be more aesthetically pleasing
- Rotating drums are easier to mix and unload
- Upright containers may be difficult to mix or turn
- Enclosed containers require moisture to be added periodically

You can construct your own outdoor composting bin from scrap material or from materials purchased from a local hardware or home improvement store:

- Use an old metal or plastic garbage can. Puncture numerous holes throughout the can to provide air flow and oxygenation and allow excess moisture to drain. The can may be placed in a discreet corner of your yard. Raising it off the ground will provide added ventilation.

- Old snow fencing can be used to enclose the sides of a bin.

- Spare wood can be used to build a crate-like structure.

- Wire mesh or chicken wire can be used to enclose the bin.

When selecting a location for your bin, choose a site that is level, well-drained and easily accessible. By placing the bin over bare ground rather than concrete, worms and other beneficial organisms can more easily make their way into the pile. It is a good idea to remove any grass or plants under the bin and turn the soil to a depth of 6 to 8 inches.

When gathering materials to compost, keep in mind that a good mix of carbon and nitrogen nutrients are needed. An ideal mix is approximately 2 parts of carbon (brown matter) to one part nitrogen (green matter). A proper moisture content is necessary as well; the material should feel damp, but should not drop much water when squeezed by hand.

At the bottom of the bin, create a 4 inch (10 cm) layer of brush, twigs, hay or straw. Add a 4 inch (10 cm) layer of brown material, then a thin layer of good garden soil. That is one layer. Add a 4 inch (10 cm) layer of green materials topped with a thin layer of good garden soil. Moisten each layer by misting it lightly with a garden hose. Keep adding material in alternating layers of browns and greens until the bin is full. Microorganisms need both carbon (energy) and nitrogen (photo synthesis) to thrive. For every one unit of nitrogen used by bacteria, they will consume 30 units of carbon. Using different combinations of green and brown materials will help accelerate the composting process. Too much brown material will result in a pile that takes longer to break down, and too much green material will result in slime that smells and does not heat up effectively.

Once the bin is full, turn the pile every 10 to 14 days until the composting process is completed. It can take anywhere from two months to one year to produce finished compost. The time frame varies depending on the combination of materials used, temperature and moisture content of the pile.

Finished compost is dark, crumbly, broken down, and has a pleasant earthy smell. It is common to have some recognizable pieces of leaves or twigs remaining. Finished compost is a good soil amendment and fertilizer for:

- House plants

- Flower and vegetable gardens

- New planting areas

- Existing trees and bushes

- Lawn top-dressing

Local/Regional Outdoor Composting Resources

Educator Workshops and Resources

Angelic Organics Learning Center (locations in Caledonia and Chicago)
(815) 389-8455 or (773) 288-5462; **www.learngrowconnect.org**

Growing Power Urban Farm, Milwaukee, WI
(414) 527-1546 or Chicago Projects Office (773) 486-6005; **www.growingpower.org**

CompostMania
www.compostmania.com

University of Illinois Extension
web.extension.illinois.edu/cook

Chicago Botanic Garden, Glencoe
(847) 818-2901 or (847) 298-3502, weekdays; **www.chicago-botanic.org**

Resource Materials

Cornell University - Educational Materials
cwmi.css.cornell.edu/composting.htm

University of Illinois Extension
web.extension.uiuc.edu/homecompost/ ; **urbanext.uiuc.edu/compost/**

Composting Bins and Rain Barrels
www.composters.com

Green Cone
(800) 807-6527; **www.solarcone.net**

US EPA - *Greenscaping Your Lawn and Garden* (#530-K-03-002)
www.epa.gov/epawaste/conserve/rrr/greenscapes/index.htm

US EPA – Food Waste Management Tools and Resources
www.epa.gov/wastes/conserve/materials/organics/food/fd-res.htm

US Composting Council – *Best Management Practices (BMPs) For Incorporating Food Residuals Into Existing Yard Waste Composting Operations*
www.epa.gov/reg3wcmd/pdf/FR2YW_BMP.pdf

Master Gardening
www.mastergardening.com

Indoor Composting with Worms: Vermi-composting is the process of using "red wiggler" worms (a special type of earthworm) and microorganisms (like bacteria, protozoa, molds and fungi) to convert organic waste into black, nutrient-rich humus, excellent for new plant growth. Whether you set up a small bin or invest in a large-scale vermi-digester system, food and paper waste can become fertilizer while reducing the amount of waste landfilled.

Worms feed on both the organic wastes and the bedding, converting all the organic materials into worm castings. How much you can feed the worms depends on the size of the bin. There are approximately 1,000 worms in a pound, and the worms can eat approximately half their weight in food scrap per day (e.g., 10 pounds of worms, or 10,000 worms, can eat approximately 5 pounds of organic waste per day). Worms also may double their population every few months.

Commercial worm bins can be purchased, or you can make your own worm bin from an 18-gallon storage box with holes, a lid and a drainage tray. Figure 4 shows two options for indoor vermi-composting bins: an 18-gallon storage-tub-style bin and the commercially-available Can-O-Worms Bin. Starter worms can be purchased for your bin; refer to the list of resources at the end of this section.

18-gallon container

Can-O-Worms

Figure 4. Vermi-Composting Bin Styles

Worm bins will remain odorless, if you maintain the bin properly. The resources at the end of this section provide several tips and guidance documents to assist you to set up and maintain your worm bin. Some helpful hints for small worm bin set up:

- Create a bedding mixture of 2/3 coconut fiber (soak in a bucket to allow to expand, then crumble it up – it should be moist, not dripping wet) and 1/3 shredded paper (no bleached or colored paper, soy ink only)
- Do not fill the bin more than 2/3 full
- Use chlorine-free water to moisten materials
- Start bin with one pound of red worms

- Empty out the bag of worms onto the bedding. Gently spread any clumps of worms around the surface. They are light sensitive and will quickly retreat beneath the top layer.
- Dig a hole, add the food scraps, and cover with bedding. Place the bin on the tray and put the lid on tightly. If the bin is too wet, simply add more shredded paper to absorb the excess moisture.
- Worm "food" may include small pieces of brown corrugated cardboard; fruit and vegetable food scraps cut into small pieces (easier to process); coffee grounds and non-bleached filters; crushed egg shells
- Bin mixture should only be 12" to 18" (30 to 54 cm) deep
- Bury food to avoid attracting fruit flies
- Avoid overloading the bin with any one food item – moderation is the key
- Worms need protein; occasionally feed them corn meal and crushed unsalted peanuts
- Slowly increase from a couple of pounds of food the first week to 4-5 pounds by the fourth week, as worms mate and multiply
- Excess water in the bottom tray can be used to spray on household plants

Vermi-Composting Resources

Illinois Department of Commerce and Economic Opportunity
www.istep.org

CalRecycle, The Adventures of Vermi the Worm
www.calrecycle.ca.gov/vermi/

Abundant Earth (Can-O-Worms)
www.abundantearth.com

Flowerfield Enterprises
www.wormwoman.com

Two-Way Microscopes, item #5788900
www.sciencekit.com

Coconut Fiber, item #36-080 – Gardener's Supply
www.gardeners.com

Worms by the Pound
Dean Allen (815) 483-6046; **mcwormworker@comcast.net**

Large-Scale Projects

Sarah Bush Lincoln Health Center, Matoon
Jeff Nichols, project lead (217) 258-2525; **www.sarahbush.org**

Southern Illinois University, Carbondale
Andilee Warner, project lead (618) 453-8131; **sustainability.siuc.edu/waste.html**

Special or Hazardous Wastes

The Illinois Environmental Protection Act (415 ILCS 5/1 et seq.) contains Illinois's environmental regulations. Among other things, this law contains provisions that prohibit a variety of items from being disposed in Illinois landfills. The recently created *Illinois Electronic Products Recycling and Reuse Act* (415 ILCS 150/1 et seq.) also contains a provision that will ban certain electronic scrap items from being landfilled in the future. The following items are banned or will soon be banned from Illinois landfills:

Yardwaste - Public Act 85-1430 bans landscape waste (grass, leaves and brush) from being landfilled effective July 1, 1990.

Lead-Acid Batteries (Car Batteries) - Public Act 86-723 bans the landfilling of lead-acid batteries effective September 1, 1990.

Waste Tires - Public Act 86-452 bans whole used or waste tires from sanitary landfills effective July 1, 1994.

White Goods - Public Act 87-858 bans white goods (large appliances) from being landfilled effective July 1, 1994, unless the "white good components have been removed." White goods include "all discarded refrigerators, ranges, water heaters, freezers, air conditioners, humidifiers and other similar domestic and commercial large appliance." White good components include: "any chlorofluorocarbons refrigerant gas; any electrical switch containing mercury; and any device that contains or may contain PCBs in a closed system, such as a dielectric fluid for a capacitor, ballast or other component." Additionally, landfills cannot accept "clean" white goods for disposal unless they participate in the Industrial Materials Exchange Service by communicating the availability of white goods.

Used Oil - Public Act 87-1213 bans liquid used oil from being landfilled effective July 1, 1996. For the purpose of this act "liquid used oil" does not include used oil filters, rags, absorbent material used to collect spilled oil, or empty containers which previously contained virgin oil, re-refined oil or used oil.

Automobile Switches Containing Mercury - Beginning September 1, 2008, all mercury-containing switches from scrap or "end-of-life" vehicles must be removed prior to delivery of the vehicle to a scrap metal recycling facility, unless the switch is inaccessible due to significant damage to the vehicle in the area surrounding the location of the switch.

Electronic Scrap (e.g., computers and televisions) – In accordance with Public Act 95-959 electronic scrap will be banned from Illinois landfills beginning January 1, 2012. A list of registered electronic waste collectors, recyclers and refurbishers, as well as additional information regarding the responsibilities of retailers and manufacturers, has been posted by IEPA at www.epa.state.il.us/land/electronic-waste-recycling.

The US EPA has established universal waste regulations to streamline hazardous waste management standards for designated wastes, including:

- Batteries (Ni-Cd, lithium ion, cadmium, lead acid, button cell)
- Pesticides
- Mercury-containing equipment and bulbs

The regulations govern the collection and management of these widely generated wastes, thus facilitating environmentally sound collection and proper recycling, disposal or treatment. While residents are exempt from these standards, businesses, schools and institutions that generate these wastes are required to follow state and federal rules. Depending on the size of the workplace, used fluorescent or high-intensity discharge lamps may be required to be treated as universal wastes; for more information on the management of this waste stream, refer to www.epa.state.il.us/land/fluorescent-

lamps/. For more information on the management of special and hazardous wastes in general, visit www.epa.state.il.us or www.epa.gov.

Electronics: The Federal Electronics Challenge provides a checklist to assist businesses, municipalities, schools, etc. with the selection of responsible electronics recycling services. For more information, visit www.federalelectronicschallenge.net/resources/docs/select.pdf.

To learn about the dangers of exporting electronic waste to Third World Countries, visit the Basel Action Network at www.ban.org.

To learn more about other electronics organizations, visit:

International Association of Electronics Recyclers - www.iaer.org
International Organization of Standardization - www.iso.org

Other Materials: There are specialized, permitted companies that will pick up and refurbish, recycle or safely dispose of special materials that should not be thrown away due to recovery potential or the presence of hazardous components. These materials include:

- Light bulbs and lamps (containing mercury)
- Chemicals (including some cleaning supplies)
- Rechargeable batteries
- Ink and laser cartridges

Before calling a specialized company to handle these wastes, contact your waste hauler to see if they can help out.

Special and Hazardous Waste Management Resources

Earth 911 provides reuse and recycling outlets for special materials according to your zip code; **www.earth911.com**

1-800-Recycling finds recycling locations near your zip code; **www.1800recycling.com**

Various local government publications. Many county waste and recycling coordinators and regional waste agencies publish “Green Pages”-type documents that identify reuse and recycling providers for all types of materials, as well as alternative uses or management methods for various wastes.

Green Procurement

As the world's population grows and increasing amounts of resources are needed to meet everyday needs, it is prudent for consumers to examine their buying habits. By applying principles of "green" procurement (or, Environmentally Preferable Purchasing as termed by US EPA and the federal government), you can reduce waste, increase your use of recyclable and recycled-content products, and reduce toxicity in your workplace.

The green team may evaluate and develop recommended green procurement policies, including:

- Set goals for the purchase of a set percentage of products with recycled content – paper products and office supplies are an easy place to start.
- Establish minimum recycled-content standards for post-consumer materials, such as a minimum of 30% for copy paper.
- Order merchandise in bulk when available from the supplier and when storage space allows.
- Repair and reuse pallets or return them to your supplier.
- Purchase remanufactured office equipment.
- Implement an inventory system or keep supplies in a main area to avoid over-stocking and track consumption.
- Purchase eco-friendly t-shirts for special events.
- Recognize individual or department efforts with a recycled material award.

To identify specific changes in purchasing that your workplace may adopt, the green team should contact its current suppliers and discuss alternative products that would meet the new purchasing criteria. It may be beneficial to check with other suppliers as well to see what they may be able to offer. Communicating your green procurement policies with your suppliers is also beneficial because they may be able to provide you additional services you would not have considered. At a minimum, you should:

- Notify manufacturers and suppliers of your desire to buy recycled-content and recyclable products.
- Ask your suppliers to minimize the use of packing materials.
- Ask your suppliers to ship orders in returnable and/or reusable packaging.

A list of green procurement resources is provided in Attachment D. Additional discussion on purchasing recycled-content products and eco-friendly cleaning products is provided below.

Purchasing Recycled-Content Products

Over the years, there have been a few slogans for America Recycles Day, such as, “Be a Better Buyer, Buy Recycled”, “You Aren’t Truly Recycling Unless You Buy Recycled”, and the most recent, “It All Comes Back to You”. Another dimension to waste reduction measures, pertaining specifically to recycling, is purchasing products made in part from recycled materials. Without a commitment from consumers to purchase products made from recycled materials, your recyclables have no market. Purchasing products made from recycled materials is the last step in the recycling loop, and the meaning of the phrase, “Closing the Loop”. A closed-loop system is when a material is recycled, reprocessed, made back into the same or a new product, and purchased by the consumer.

After you have identified opportunities to purchase recycled-content products, each item should be evaluated in terms of availability, cost and performance. Some recycled-content products may be more expensive than their virgin-material counterparts, but that is not always the case. It may also not be the sole consideration for many products. For example, historically, recycled-content paper was considerably more expensive than virgin paper; however, today the price of recycled-content paper is competitive with virgin paper and performs equally well in many day-to-day applications. As another example, benches and picnic tables made from recycled plastic may initially cost more than their wooden counterparts; however, they last up to four times longer and do not require maintenance, thereby reducing ongoing and future costs.

Eco-Friendly Cleaning Products

In 2007, the *Green Cleaning Schools Act* was signed in Illinois, making it only the second state in the nation to enact legislation requiring green cleaning in schools. The act requires all elementary and secondary schools in Illinois to purchase and use only environmentally-sensitive cleaning supplies. These products reduce exposure of children and staff to irritants and toxic chemicals while protecting the health of custodial staff.

Beyond the regulatory requirement to purchase and use eco-friendly cleaning products in schools, this practice is beneficial for all workplaces to consider implementing. A number of resources are provided for more information on particular products, practices and alternatives to standard cleansers.

Eco-Friendly Cleaning Resources

US Environmental Protection Agency **www.epa.gov/climatechange/wycd/waste**
Recycled-Content Tool (ReCon)
Durable Goods Calculator (DGC)

Greener Choices
www.greenerchoices.org

Household Products Database: Health and Safety Information
www.householdproducts.NLM.NIH.gov

Nontoxic Cleaning Information
www.Care2.com

SWANCC's Eco-Friendly Cleaning Guide
swancc.org/pdfs/Education/ecoCleaningGuide.pdf

Earth Friendly Products (Winnetka, Illinois)
www.ecos.com

Seventh Generation
www.seventhgeneration.com

Green Meetings

A green meeting or event incorporates environmental considerations to minimize its negative impact on the environment. Green meetings can save money by reusing materials, reducing overall waste, recycling as much as possible, and conserving energy and water. Green meetings increase environmental awareness and are the responsible way to conduct a meeting of any size.

In 2003, the Convention Industry Council established a *Green Meeting Task Force* to create "Best Practices" for event organizers and suppliers to use as guidelines for implementing sustainability policies. The Green Meeting Industry Council (GMIC) (www.greenmeetings.info/) provides resources and expertise for developing and implementing sustainable practices in the meetings, incentives, events, and conference industries. GMIC does not currently have an Illinois chapter, though a Chicago chapter is being formed. The Green Meeting Industry Council provides its members with:

Education: Inspire and motivate meeting professionals to action to address sustainability by developing and providing resources that enable adoption of green meeting practices.

Community: Bring planners and suppliers together to create green meetings by providing networking and information sharing, including an annual conference

Recognition: Increase the profile of innovators in the green meetings field through awards and media coverage.

Control: Standardize sustainable meeting practices by providing a certified qualification for green meeting professionals.

Research and Policy: Provide credible and relevant data, expertise and policy to assist professionals in making informed and intelligent decisions.

BlueGreen Meetings also provides a variety of checklists and questionnaires at www.bluegreenmeetings.org to assist meeting planners when evaluating cities, hotels, and meeting/convention venues.

10 Easy Tips for Hosting a Green Meeting

1. Put it in writing – Establish an environmental statement or policy for the meeting. Then get buy in from management and share with suppliers, delegates and speakers.
2. Use paperless technology – Cut down on paper use as much as possible using a variety of digital media (web site, online registration, email promotion and confirmation, PowerPoint presentations posted online).
3. Meet close – Reduce distance by choosing a host city centrally located to attendees and speakers, and within the city choose a hotel and meeting location within walking distance of each other and near the airport and other major transportation routes.
4. Practice the 3 Rs – Identify options for reduction, reuse and recycling for all materials generated.
5. Bulk up – Avoid individual packaging for condiments, cream, sugar, etc.
6. Lighten your stay – Use a hotel with linen reuse program.
7. Eat green – Include meatless options, and purchase local, seasonal produce if possible.
8. Close the loop – Any printed materials should be doubled-sided and printed on recycled-content paper using vegetable-based inks.
9. Save energy – Turn off / turn down lights and air conditioner/heating when meeting rooms are not in use.
10. Spread the word! – Promote your efforts.

Source: ***www.bluegreenmeetings.org***

Green Meeting Case Studies and Resources

By collecting name badge holders for reuse at an event of 1,300 attendees, approximately $975 was saved by not having to purchase new ones for the next event. (Convention Industry Council, www.conventionindustry.org)

If a five-day event serves 2,200 people breakfasts, breaks, lunches and receptions using china instead of plastic disposables, it prevents 1,890 pounds of plastic from going into a landfill. Another example is not pre-filling water glasses at banquet tables during three days of served lunches for 2,200 attendees; 520 gallons of water can be saved. (Meeting Strategies Worldwide)

In 2006, The GreenBuild International Conference and Expo held in Denver, Colorado boasted an attendance of 13,350. Their waste reduction achievements resulted in a 27% diversion rate to include 10,920 pounds of waste recycled; 4,800 pounds of food scrap composted; and 618 pounds of food donated to a local food bank. (GreenBuild International)

Green Meeting Resources:

MeetGreen	**www.meetgreen.com**
BlueGreen Meetings	**www.bluegreenmeetings.org**
Green Seal	**www.greenseal.org**
Meeting Professionals International	**www.mpiweb.org**
Convention Industry Council	**www.conventionindustry.org**
Green Hotels Association	**www.greenhotels.com**
Green Events Source	**www.greeneventsource.com**

Step 4. Develop a Plan

After evaluating a number of potential waste reduction options, the team will be prepared to compile a comprehensive waste reduction plan that is accompanied by a realistic budget, a defined schedule, and clear action items. The plan will incorporate specific information about any contracted services and the responsibilities of both the business and their subcontractors for implementation of the plan.

For recycling components of your plan, the team should seek competitive bids or proposals from two or more recycling haulers prior to contracting for collection of your recyclables. By getting information from more than one hauler, you can confirm that you are getting a fair market price for the services to be provided and service that meets your needs.

Your waste reduction plan should identify, at a minimum:

- Key staff members responsible for plan implementation
- The source reduction and reuse activities you will implement
- The materials you will collect for recycling and/or composting
- How recyclables and/or organics will be collected and stored
- Who will remove recyclables and/or organics from the business, and where they will go
- Costs of each element of the plan
- A schedule for plan implementation
- How progress will be measured and reported

Tips for controlling program costs:

Small businesses or businesses that occupy the same building may consider reaching out to their neighbors to jointly procure recycling services. By pooling their recyclables, they may be able to reduce the number of containers needed, the space needed to store containers, and the cost of collection compared to each having their recyclables collected separately.

Self-haul your recyclables to a drop-off site or processing facility. Many drop-off locations will accept recyclables from small businesses for no cost. Be sure to confirm that business recyclables will be accepted and the specific materials that can be delivered to the drop-off.

Start out conservatively and then expand. Consider collecting corrugated cardboard and office paper to begin with and then expand into additional materials as you and your staff become acclimated to the recycling process.

Use copy paper boxes, old waste cans, unused storage boxes, etc. for desk-side or common area recycling containers. A simple sign or label on the container can denote it as recycling (see Attachment E for examples).

Recycling bins and containers need to be placed in classrooms, offices, work rooms and high-traffic areas, such as the cafeteria, hallways, concession and vending machine areas, outdoor sports fields, etc. Each location may require a different size and kind of container, depending on the materials targeted for collection and the space constraints of the location. To the degree possible, place a recycling bin next to every garbage can. This allows everyone the opportunity to “think before you throw” and makes recycling as convenient as throwing it in the garbage. Recycling containers should look different than garbage cans, and be marked as to what materials are accepted. Sample signage is provided in Attachment E.

Recycling Container Resources

Barco Products	www.barcoproducts.com	(800) 338-2697
Busch Systems	www.buschsystems.com	(800) 565-9931
Consolidated Plastics Co.	www.consolidatedplastics.com	(800) 362-1000
D & B Fabricators	www.dbfabricators.com	(800) 332-2459
Fibrex	www.fibrexgroup.com	(800) 346-4458
Forms + Surfaces	www.forms-surfaces.com	(800) 451-0410
MidPoint International	www.midpoint-int.com	(800) 646-4246
Norseman Plastics (Food Scraps)	www.norsemanplastics.com	(800) 894-8397
Recycle Away (Pop Bottle Receptacle)	www.RecycleAway.com	(800) 664-5340
Recycle Clear	www.recycleclear.com	(414) 431-0651
Rehrig Pacific Company (Traditional Recyclables and Food Scraps)	www.rehrigpacific.com	(800) 934-3312
Resourceful Bag & Tag	www.bagandtag.com	(800) 872-8241
T.M. Fitzgerald & Assoc.	www.tmfitzgerald.com	(888) 795-6600
Toter	www.toter.com	(800) 772-0071
US EPA Database of Manufacturers and Suppliers	http://cpg.epa.tms.icfi.com/user/cpg_search.cfm	
Windsor Barrel Works	www.windsorbarrel.com	(800) 527-7848

If you will be purchasing recycling containers, consider purchasing bins made from post-consumer recycled content materials. It is required that any bins purchased through DCEO grant funds contain a minimum of 25% post-consumer recycled content. Most suppliers can provide bins meeting this specification.

Joint Procurement Considerations

Joint procurement refers to the collaborative procurement of services by two or more businesses. Through joint procurement, businesses may reduce their costs compared to procuring services individually. This cost reduction is due primarily to increasing the volume of materials available for recovery and collection and increasing the efficiency for the collector. Administrative elements of service charges as well as any surcharges placed on each customer bill may also be reduced through a joint procurement.

Issues to be addressed by the businesses participating in a joint procurement are similar to those faced by a business in an individual procurement and include identifying:

- Anticipated types and quantities of materials to be diverted
- Potential locations for collection containers and material storage
- Collection frequency requirements (e.g., if food scrap is to be collected, collection may be required daily)
- Contract coordination and administration responsibilities

For sample contracts and RFP documents, refer to www.ilcswma.org/documents. For additional information on joint procurement on behalf of schools, contact the Solid Waste Agency of Northern Cook County at (847) 724-9205.

Step 5. Launch the Program

Once your program has been devised, it is critical to inform and educate employees, students, and customers – they are the most important part of your waste reduction program. Without their involvement and support, the program may fail. Make participants feel like it is their recycling program and let them know how essential they are to the program's success.

Provide all participants with clear and regular directions about their role in the program. Continual education will help keep the program running smoothly. It is particularly important to provide detailed directions to the staff responsible for collecting materials.

An education campaign can be as simple or sophisticated as you want to make it. Initially, send a letter or memo signed by top management to all members of the staff about the soon-to-be implemented program. See Attachment F for a sample. Then make arrangements for a group training session to go over the program's details and identify the "do's" and "don'ts".

You may want to develop educational and promotional materials for distribution or posting. Consider the following:

- Strive to make your message and promotional materials stand out by being visually appealing. Printing information on colored paper may be enough to catch everyone's eye on a bulletin board.
- Be clear on program details. Visuals can be stronger than words, and using both can increase the clarity of your message.

- Come up with a logo or catchy slogan to include on all materials.
- Create pictures or graphics to draw attention to written materials or recycling containers.
- Provide simple, easy to follow program guidelines specific to the responsibilities of various staff or departments. It may be beneficial to provide materials in multiple languages.
- In addition to distributing or posting written educational materials, present information face-to-face.
- Make a video of what can be recycled and where bins are located, and show the video to new hires, during assemblies or meetings, or on the business's internal television channel.
- During morning announcements or staff meetings, occasionally recite an environmental-related quote or fact, or brag about waste reduction successes to remind everyone of the options for waste reduction.
- Contribute an article or establish a column in your newsletter outlining program details, and include photos.
- Have volunteers assist students, visitors or customers in common areas such as lobbies and cafeterias during high-volume use times.
- Keep track of recycling performance using visuals in common areas of the building.
- Recognize individual or department waste reduction successes at meetings.
- Contact a reporter from the local paper to inform them of your commitment to reducing waste and helping the environment (see Attachment F for a sample press release).
- Invite town officials to come and tour your business and its recycling program.
- Hold an Eco-Fair to highlight program details. Invite other "green" companies to share their wares and knowledge.

Several creative recycling campaigns have been developed in recent years to revitalize waste diversion and waste reduction efforts. A few programs that may inspire your own creative campaign include:

Georgia: I Don't Recycle, www.yougottabekidding.org

South Carolina: The Recycle Guys, www.scdhec.gov/recycle

North Carolina: Public Service Announcements, www.RE3.org

Curbside Value Partnership: Educational materials and campaigns (generally geared towards residential programs, but can be adapted for businesses), www.recyclecurbside.org

The timing of education and outreach efforts should be tied to key phases of program implementation, including in the weeks leading up to and immediately following program commencement, and at the time of any change or expansion of the program. Additionally, there are opportunities throughout the year to conduct ongoing promotion activities, including:

- March: Earth Hour, www.earthhour.org
- April 22: Earth Day, www.earthday.net
- April (last Friday): Arbor Day, www.arborday.org/arborday
- September 15: Reduce Your Carbon Footprint Day, www.carbonday.com
- September: Clean Up the World Week, www.cleanuptheworld.org
- September: National Pollution Prevention Week, www.p2.org/p2-week
- October: Make a Difference Day, www.usaweekend.com/diffday
- October: Walk to School Month, www.walktoschool-usa.org
- November 15: America Recycles Day, www.americarecyclesday.org

Step 6. Monitor and Measure Success

Once the program is underway, the team will need to evaluate its effectiveness to see if preliminary goals are being met. No matter how well you plan, there are always going to be problems with a new recycling effort, especially in the first few weeks. Expect problems, such as materials being put in the wrong bins, an occasional lack of storage space, and a lack of participation by some employees. By monitoring the program from the start, you can identify and correct these problems and continue advancing the program.

Once the potential for reducing waste becomes better understood, consider raising the bar and implementing new strategies or expanding your program to achieve the next tier of success. To know whether you are ready to celebrate that next step or need to knuckle down and promote the program more, you should be doing the following:

- Keep track of the amount of waste and recycling produced by your business.
- Periodically post waste reduction progress on your internal website, bulletin board, or in your newsletter.
- Continually identify and implement new ideas for waste reduction.
- As necessary, identify areas needing improvement or modification.
- Document compliance with state or local regulations.
- Determine the effect of any new additions to the program.

- Keep employees and staff informed and motivated.

The green team should routinely evaluate program performance, with the first evaluation occurring within one month of program implementation. Give the program a chance to take off before implementing any wholesale changes if you aren't seeing the successes you had hoped for; it may take 6 months to one year or more for everyone to get on board and for significant reductions to be realized.

EPA's Monitoring and Evaluation worksheets are provided in Attachment G and may serve as a guide in evaluating your program.

SECTION 4: RELATED SUSTAINABLE PRACTICES

Implementing a waste reduction program in the workplace can be one element of a larger, comprehensive sustainability plan. Sustainability is not simply a destination; it is a direction the workplace may move and mindset employees should embrace, as encouraged in Governor Quinn's Executive Order Number 11 (2009).

US EPA's WAste Reduction Model (WARM) can assist you to measure the greenhouse gas emission reductions achieved by your waste reduction efforts. Additionally, with a few simple actions, you can reduce other environmental impacts in the workplace. Tips for conserving resources such as energy and water and reducing transportation-related emissions are provided in this section. Additional tips can be found in "The Step-by-Step Guide to Sustainability Planning" (Hitchcock and Willard) and IEPA's "Going Green: A Resource Guide for Local Officials".

Energy and Water Conservation

Greenhouse gasses are emitted as a result of using energy to drive, using electricity to light and heat buildings, and through other activities that support our quality of life like growing food, raising livestock and throwing garbage away. Greenhouse gas emissions can be reduced through simple measures, as well as reduces air pollution, increases the nation's energy independence and saves money. For energy conservation and emissions reduction tips you can apply at home, in the office, on the road and at school, refer to the list below and visit www.epa.gov/climatechange/wycd/index.html for additional suggestions.

- Strive for an energy-efficient building
- Purchase Energy Star appliances
- Plug electronics in using power strips, then turn off the power strip at night and over weekends and holidays
- Set computers and printers to go into "sleep" mode
- Use rechargeable batteries
- Fix leaky faucets and toilets
- Provide real plants to filter the air naturally
- Install motion sensors for lights
- Install programmable thermostats
- Replace air filters for heating and cooling systems every 3 months
- Install solar panels if possible
- Switch to T8s and CFLs as new bulbs are needed, or LEDs

- Set up a rain garden
- Install rain barrels to collect water for both indoor and outdoor plants
- Landscape with native, drought-resistant plants and grasses
- Make sure dishwasher is full before running
- Design stormwater and wastewater management systems to reuse water where possible and minimize runoff and discharge

Energy and Water Conservation Resources and Products

Resources

American Council for Energy Efficient Economy	**www.aceee.org**
Consumer Reports Greener Choices	**www.greenchoices.org**
Culinary Parts Unlimited (replacement parts & accessories for kitchen counter tops and appliances)	**www.culinaryparts.com**
Electronic Product Environmental Assessment Tool (evaluates electronics)	**www.epeat.net**
Energy Federation Inc.	**www.efi.org**
Energy Tax Incentives	**www.energytaxincentives.org**
Environmental Defense Fund	**www.environmentaldefense.org**
EPA's Energy Star Program	**www.energystar.gov/products**
Illinois Department of Energy	**www.illinoisenergy.org**
U.S. Department of Energy	**www.eere.energy.gov**

Products

Borealis Lighting	**www.borealislighting.com**
Eco Bulb Plus	**www.ecobulbplus.com**
Excalibur Electronics (solar & crank radios)	**www.excaliburelectronics.com**
Forever Flashlights (no batteries)	**www.foreverflashlights.com**
Imperial Tankless (water heaters)	**www.imperialtankless.com**
LED Lamps	**www.wattmanledlamp.com**
LED Liquid lighting & bulbs	**www.ledliquidatorsinc.com**
Green Batteries	**www.greenbatteries.com**
Solar Battery Saver SE2	**www.batterystuff.com**
Sundance Solar	**www.sundancesolar.com**
USB Cell	**www.usbcell.com/products**
Voltaic Pouch	**www.voltaicsystems.com**

Transportation and Travel

According to the National Academy of Engineering, transportation accounts for approximately one-third of greenhouse gas (GHG) emissions in the United States, two-thirds of oil consumption, and about half of urban air pollution. In addition, GHG emissions are increasing faster in transportation than in any other sector, making it a prime target for changes in energy and climate policy. As a result of increased use of energy-intense modes of transport, especially private cars and trucks, bus and rail transit now account for less than 3 percent of passenger travel in the United States[6].

To reduce the environmental impacts, particularly greenhouse gas emissions, during your workday travels, consider the following tips:

- Walk or bike to work if possible
- Offer a bike fleet for employees to use for local travel and on-campus travel
- Encourage carpooling, including by posting requests in common areas
- Take public transportation when possible
- Consider fuel-efficient or alternative-fuel vehicles for fleet purchases
- Keep vehicle maintenance current
- Choose airline carriers and other transportation companies with sound environmental policies

[6] Sperling, D. and Lutsey, N., "Energy Efficiency in Passenger Transportation", *The Bridge*, Volume 39, Number 2 – June 2009.

Transportation and Travel Resources and Products

Resources

Bike Commuting Tips	**www.runmuki.com/commute**
Biodiesel America	**www.biodieselamerica.org**
Bureau of Transportation Statistics	**www.bts.gov**
Earth Routes	**www.earthroutes.net**
Eco Tour Directory	**www.ecotourdirectory.com**
Eco Tourism at Conservation International	**www.ecotour.com**
Fuel Cell Resources	**www.fuelcells.org**
Green Cars	**www.greencar.com**
Green Concierge Travel	**www.greenconciergetravel.com**
Green Hotels Association	**www.greenhotels.com**
Sierra Club	**www.sierraclub.org/outings/national**
Ski Area Environmental Scorecard	**www.skiareacitizens.com**
Sustainable Travel International	**www.sustainabletravelinternational.org**
Travel Green Wisconsin	**www.travelgreenwisconsin.com**
U.S. EPA	**www.epa.gov/greenvehicles**
U.S. Dept. of Transportation	**www.fueleconomy.gov**
Walk to School Day	**www.walktoschool-usa.org**

Products

Better World Club (emergency roadside assistance for cars, bikes, hotel, air travel & insurance)	**www.betterworldclub.com**
Electra Bike	**www.electrabike.com**
Electrik Motion (bikes & scooters)	**www.electrikmotion.com**
eGo (electric moped)	**www.egovehicles.com**
Get a Grip Cycles (bikes)	**www.getagripcycles.com**
I-Go	**www.igocars.org**
Pedros (bike care products)	**www.pedros.com**
Rickshaw Rick's Custom Cabs	**www.rickshawrick.com**
Scooter Commuter (electric scooters & bikes)	**www.scootercommuter.com**
Schwinn (electric bike)	**www.schwinnbike.com**
Working Bikes Cooperative	**www.workingbikes.org**
Zip Car	**www.zipcar.com**

ATTACHMENT A
GLOSSARY OF WASTE AND WASTE REDUCTION TERMS

Baler: A machine used to compress materials into bundles to reduce volume.

Behavior: A person's actions or reactions under specified circumstances.

Biodegradable: Capable of being broken down by microorganisms, such as fungi and bacteria, into simple compounds that can be absorbed by the environment.

Bottle Bill: A law, passed in some states, which requires that the price of a beverage container include a refundable deposit. The deposit is refunded to the consumer when the bottle or can is returned to the retailer.

Boycott: To abstain from purchasing or using.

Bulk: Food or other products that are sold unpackaged or in large containers. This allows consumers to buy goods in large amounts, which cuts down on packaging materials.

Buy Back Center: Business set up to purchase recyclable materials from the public.

Byproduct: Excess material or waste produced in addition to the primary product.

Centralized Resource Recovery: Process in which collected recyclable materials are taken to a central location to be processed.

Closed-Loop Recycling: Taking an old product, reprocessing it and making it into a new product of the same kind – like an aluminum can.

Closed System: A system in which nothing comes in and nothing leaves. For example, the earth is a closed system - nothing comes in except energy in the form of heat and light form the sun, and nothing leaves except heat and reflected light.

Commercial Waste: Refuse from traders, businesses, sport recreation or entertainment premises.

Commingled Materials: A mix of several recyclables collected in one container.

Commitment: A pledge or agreement to do something.

Community: A united group of individuals with common interests who live in an area; also, the area itself in which people live, like a neighborhood.

Community-Based Social Marketing: Marketing that relies on social science-based research to plan a strategy utilizing direct contact and community support to change behavior.

Compaction: The act or process of pressing material together to occupy the smallest volume possible.

Compost: Decomposed organic material that results from the process of composting. It is used to enrich or improve soil for growing.

Composting: The natural conversion of most organic materials by active microorganisms, resulting in a soil-like component called “compost”.

Conservation: The preservation of natural resources.

Consumer: A person who buys goods or services for personal consumption, rather than for resale.

Consumption: The amount of any product or resource (material or energy) used in a given time by a given number of consumers.

Contamination: The process of adding one substance to another substance, such as motor oil to water, that reduces its quality; to make impure or unsafe by contact with potentially harmful substances.

Contract: An agreement, pledge, or bond to accomplish something.

Curbside Collection: Programs where recyclable materials are set out, often in special containers, and collected at the curb, to be brought to processing facilities.

Decompose: To break down organic waste materials by bacteria and fungi; to rot or decay.

Decomposition: The process of decomposing, or being broken down into simpler components by active microorganisms.

Deforestation: The clearing and removal of trees from a forested area.

Dirty MRF: A materials reclamation facility in which unseparated MSW is processed to recover recyclables.

Disposable: Designed to be thrown away after a single use or within a short time.

Downcycle: To make new, but different products from used ones.

Drop-off Center: A collection site to which individuals take their recyclable trash and deposit it in specially designated containers.

Dump: A site where waste is disposed of in an unmanaged, uncovered area.

Durable: Goods that can be used more than once and withstand long use, wear and decay.

Ecosystem: An ecological community, together with its environment, functioning as one unit.

Efficiency: The ratio of the effective or useful output to the total input in any system.

Environment: The circumstances and conditions that surround living organisms, including soil, water, plants, animals and buildings.

Garbage: Material that has been discarded because it is worn out, used up or no longer needed. Many things thrown away could be recycled or reused.

Goal: An end purpose, aim or objective.

Grasscycling: Source reduction activity in which grass clippings are left on the lawn after mowing. The practice consists of mowing grass so it is never more than two to three inches tall. The grass clippings are left where they fall and allowed to decompose, returning nutrients to the lawn.

Ground Water: Water that sinks into the through the soil to be stored underground; large underground storage areas are called aquifers.

Habit: A recurrent pattern of behavior that is acquired through repetition.

Hauler: A garbage collection company that offers a complete refuse removal service. Most serve as collectors of recyclables as well.

Hazardous: Materials that are dangerous to handle or dispose of; hazardous materials include substances that are toxic, flammable, corrosive, infectious or radioactive.

Household Hazardous Waste: Small quantities of unused or leftover products used in the home that become waste and can be harmful to the environment if not properly disposed of. Oil-based paints, pesticides and some cleaners are examples of HHW. Caution must be taken when handling, storing or disposing of these products.

Incinerator: A furnace or apparatus designed to reduce the volume of waste by burning it.

Integrated Waste Management: A recommended approach to solid waste management that involves the complementary use of source reduction, recycling and composting prior to landfilling or incinerating waste.

Landfill: A specially engineered land site for disposing of solid waste in the ground.

Landfill Gases: A natural by-product of decomposing organic matter consisting mostly of methane and carbon dioxide.

Leachate: Rainfall that has penetrated through the solid waste in a landfill. It contains dissolved or suspended materials that could contaminate ground or surface water if not collected and treated.

Life Cycle: The complete cycle of events occurring over the lifetime of an animate or inanimate object. A product life cycle is the series of steps involved in manufacturing; distributing; using; reusing; recycling or ultimately disposing of a product.

Litter: Waste materials that are carelessly discarded in an inappropriate place or that escape from waste-handling systems.

Market: A place where products are sold; in recycling, the company that purchases recycled commodities for use in manufacturing new products.

Material: Anything composed of matter; a component part or element.

Materials Reclamation Facility: A place where recyclable materials are sorted and processed – known as a MRF.

Microorganisms: Any microscopic or ultra-microscopic organism, like a bacterium or protozoan.

Municipal Solid Waste: Municipal solid waste includes all materials typically disposed of in dumpsters by businesses and institutions and removed for offsite disposal by private haulers. Also see "waste stream".

Natural Resources: Materials created by nature that are either useful or necessary for life. Examples are wood, water, and minerals.

Nature: The entire materials universe and its phenomena; the overall pattern or system of natural objects, existences, forces and events.

Non-Biodegradable: Not able to decompose or break down naturally.

Non-Renewable Resources: Natural materials that are considered finite or exhaustible due to their limited supply, their scarcity, time required for their formation and their rapid depletion. Oil, minerals, and natural gas are examples.

Non-Toxic: A substance that does not have the capacity to produce personal injury or illness to humans through ingestion, inhalation, or skin absorption.

Obstacle: Someone or something that stands in the way, is a hindrance, or creates a barrier to achieving an end result.

Open Dump: An uncovered space used for depositing municipal garbage, and often a source of sanitation and health problems. Most open dumps have been replaced by modern sanitary landfills that cover waste and contain environmental controls to prevent contamination of the surrounding areas.

Open System: A system in which matter and energy come in and out but not in a balanced way. Matter and energy may be wasted or dispersed, and more importantly, resources are depleted.

Organic: Derived from the animal or vegetable world (living organisms) or containing carbon compounds.

Packaging: A container or wrapping made from a variety of materials which is used to store, display, protect, or transport a product.

Pallet: A wooden platform used with a forklift for moving bales or other large items. It is also called a *skid*.

Pilot: Implementing a program on a small level, to try it out on a small sample of people.

Pollutant: A liquid, gas, dust or solid material that causes contamination or air, water, earth and living organisms

Pollution Prevention: eliminating waste before it is created.

Processing: The operations performed on recycled materials to render them reusable or marketable. Processing has two functions, to separate and to add value to a particular material.

Product Life Cycle: The predictable stages through which a product passes from its origin to the end of its useful life.

Recyclable: Material that still has useful physical or chemical properties after serving its original purpose and can be reused or remanufactured to make new products. Plastic, paper, glass, steel and aluminum cans, used oil are examples of such materials.

Reclaimed: Made from material that is being reused, but in a different form. Halfway between being reused and being recycled the reclaimed materials are changed from its previous form, but not entirely reprocessed.

Recycling: The process by which materials are collected and reprocessed so that the raw materials can be used for new products.

Recycled-Content: Is the percentage of material a product is made from that has been recovered from consumers in the municipal solid waste stream (post-consumer content) plus any industrial materials salvaged for reuse (pre-consumer content).

Reduce: To use less of; to decrease in extent, amount, number or other quantity.

Renewable Resources: A naturally occurring raw material or form of energy derived from an endless or cyclical source like the sun, wind, falling water (hydroelectric), plants and animals.

Refurbish: To repair, clean and make useful again. Some electronic manufacturing companies and other businesses take back used equipment, refurbish it and sell it again.

Reuse: To extend the life of an item by using it more than once, repairing or modifying it, or by creating new uses for it.

Solid Waste: Any unwanted materials, either solid or semi-solid, which is discarded from households, industries or communities.

Source Reduction: Any change in the design, manufacture, purchase or use of materials or products (including packaging) to reduce their amount or toxicity before they become municipal solid waste.

Source Separation: The sorting of waste materials at the point of generation; removing and separating recyclable materials at home, school or business.

Stakeholder: Active support from key participants involved in promoting a program.

Sustainability: Is the ability to keep our ecosystem going over time, taking from the earth and giving back to the earth in balance.

Sustainable: That which is made, used, and disposed of in such a way that it could continue to be made, used, and disposed of again and again indefinitely.

Tipping Fee: The charge made for unloading waste at a landfill, incinerator, or recycling center.

Tools: A variety of methods or approaches used to obtain information and to promote a program/message with the goal of changing a behavior.

Toxic: Containing compounds that pose a substantial threat to human health and/or the environment.

Transported: Taken from one place to another, usually by truck, car, train, barge or airplane.

Trash: Items made or used by people that are discarded because they are considered worthless, unnecessary or offensive.

Waste Audit: An inventory of the amount and type of waste that is produced by a specific location.

Waste Prevention: The design, manufacture, purchase or use of materials or products to reduce their amount or toxicity before they enter the municipal solid waste stream.

Waste Reduction: Preventing and or decreasing the amount of waste being generated either through waste prevention, recycling, composting, or buying recycled and reduced-waste products.

Waste Stream: The collective term for the waste disposed of by a community, also known as municipal solid waste (MSW).

Waste-to-Energy: The process of burning waste to produce energy/electricity.

Vermi-Composting: Indoors, in a contained bin, it is the process of using "red wiggler" worms and microorganisms (like bacteria, protozoa, molds and fungi) to convert organic waste (fruit and vegetable scraps) into black, nutrient-rich soil, excellent for new plant growth. Worms feed on the organic wastes and the bedding. Vermi-composting can help reduce household and institutional food scrap that goes to a landfill.

Yard Waste: Grass clippings, leaves and tree trimmings from yards and landscaped areas. In Illinois, since 1990, landscape waste has been banned from landfills. It is collected separately and composted at permitted facilities.

Glossary terms were compiled from the following resources:

US EPA, *Business Guide for Reducing Solid Waste*, www.epa.gov
US EPA, *The Quest for Less*, www.epa.gov
Keep America Beautiful, *Clean Sweep U.S.A.*, www.kab.org
New York City Teacher's RRResource Guide, www.nyc.gov/sanitation
Nike's *Air to Earth* Teacher's Guide, www.airtoearth.com

ATTACHMENT B
SAMPLE WASTE ASSESSMENT WORKSHEETS

The facility walk through and waste sort worksheets provided in the following pages have been excerpted from US EPA's *Business Guide for Reducing Solid Waste*.

WORKSHEET

C Facility Walk-Through

Date and The of Walk-Through	**Department:**
Department Manager:	**Telephone Number:**

Team Members Conducting Walk-Through:_____

Employees Interviewed:_____

1 Waste Components

Waste-Producing Activity or Equipment	**Waste Material Produced**	**Estimated Amount of waste Produced per Year**	**Current waste Reduction Activities (if any)**
Receiving shipments	*Cardboard boxes*	*About 50 boxes per week/2,600 per year*	*Recycling*
	Foam peanuts	*2 waste containers (5 cubic yards each) per week/100 per year*	*None*

WORKSHEET

C Facility Walk-Through

1 Waste Components *(Continued)*

Waste-Producing Activity or Equipment	Waste Material Produced	Estimated Amount of Waste Produced per Year	Current Waste Reduction Activities (if any)

WORKSHEET

C Facility Walk-Through

2 Target Materials for Waste Reduction

Based on the facility walk-through, list all materials that could be targeted by your waste reduction program. For each waste type, list all potential waste prevention, recycling, and/or composting methods that could be effective. Although recycling and composting are preferred ways of *managing* wastes, you may want to consider *preventing* **the waste in the first place,**

Waste Type	Potential waste Reduction Activities
Office paper	*Develop company-wide double-sided copying policy*
Foam peanuts	*Return to supplier for reuse* *Collect in house for reuse in our own shipments*

WORKSHEET

D Waste sort Form

Date of waste Sort	**Department:**
Source of Sample (if different from department	
Sample Collected Over: ☐ **One Day** ☐ **Two Days** ☐ **Other Technique (specify)**_____	
Sample Collected: ☐ **All Waste at Source** ☐ **Representative Sample (specify weight)**_____	
Team Members Conducting Waste Sort: _____	
Factors Affecting Representativeness of Sort:_____	

Waste Component		**Net Component Weight**	**Percent of Total Sample Weight** (all components)	**Weight of Waste Generated Annually**
	High-Grade			
	Low-Grade			
	Computer Printout			
	Newsprint			
	Corrugated Cardboard			
	Magazines/Glossy			
	Other			
	Total Component Weight			
	PET(1)			
	HDPE (2)			
	PVC (3)			
	LDPE (4)			
	Polypropylene (5)			
	Polystyrene (6)			
	Other (7)			
	Total Component Weight			

WORKSHEET

D Waste Sort Form

Waste Component		Net Material weight	Percent of Total samples	Weight of waste **Generated Annually**
Glass	Clear			
	Green			
	Amber			
	Other			
	Total Component Weight			
Metal	Aluminum			
	Other Non-Ferrous Metal			
	Tin-Coated Steel			
	Other Ferrous Metal			
	Bi-Metal			
	Other			
	Total Component Weight			
Compostable Organics	Yard Trimmings			
	Food Scraps			
	Scrap Wood			
	Other			
	Other			
	Other			
	Total Component Weight			
Other	Textiles			
	Rubber			
	Leather			
	Inorganic (e.g., ceramics, mixed materials)			
	Copier Toner Cartridges			
	Other			
	Total Component Weight			
Totals				

D Waste Sort Instructions

1 Beginning the Waste Sort

A. Assemble the waste sample to be sorted, using either one day's worth of waste or an otherwise representative sample of waste from your facility.

B. Weigh the empty containers that the sorted wastes will be placed into and record these weights on a label on each container.

C. Sort the waste sample by major component (paper, plastics, glass, metal, compostable organics, other),

D. If needed, further sort each major waste component into more specific component subcategories (e.g., glass into clear, green, amber, or other),

E. Place the sorted materials into separate labeled containers.

2 Calculating Net Component Weights

A. Weigh each filled waste container and subtract the weight of the container (from I-B) to obtain the net component weight. Record the net component weight on the spaces provided on the Waste Sort Form, If you did not sort these waste components into component subcategories, proceed to Step 2-C.

B. If you sorted the waste components into component subcategories, add their net weights and record the total waste component weight on the Waste Sort Form.

C. Add all the total waste component weight figures to determine the total sample weight and record this total on the Waste Sort Form,

3 Calculating Percent of Total Sample Weight

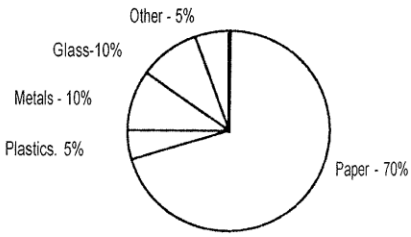
A. Use the following formula and the figures recorded in the Net Component Weight column of the Waste Sort Form to compute the percentage each waste component constitutes the total weight of the sample. Repeat the calculation for each waste component under consideration and record the results in the Percent of Total Sample Weight column on the Waste Sort Form. (Note: If you sorted the waste components into component subcategories, you also may choose to calculate the percentage of the sample occupied by each waste component subcategory, depending on the level of information you are interested in,)

_____ ÷ _____ X 100 =	%
Net component weight / Total sample weight	**Percent of Total Sample Weight**

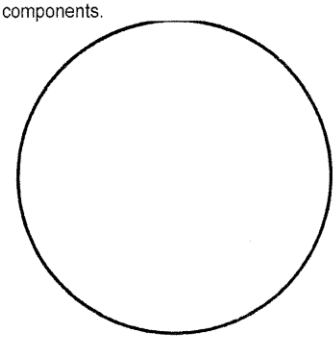
WORKSHEET

D Waste sort Instructions

B. Use the data listed in the Percept of Total Sample Weight column on the Waste Sort Form to create a pie chart to help compare the percentages of the different waste components.



Example



4 Calculating Weight of Waste Generated Annually

A. If you sorted one day's worth of waste, calculate the weight of waste generated for each waste component using the following formula

_____	x	_____	=	
Net component weight		Number of working days per year		Weight of waste Generated Annually

B. If you sorted a representative sample, first weigh or estimate all of the waste generated by your company that day. Calculate the amount of waste generated annually for each waste component using the following formulas:

_____	÷	_____	_____
Total component weight generated/day		Total sample weight (all components)	

_____	x	_____	x	_____	_____
Net component weight		Multiplier		Number of work days per year	

C. Repeat the appropriate calculation for each waste component under consideration and record the figures in the Weight of Waste Generated Annually column on the Waste Sort Form. (Note: If you sorted the waste components into component subcategories, you may choose to calculate the amount of waste generated annually by each waste component subcategory, depending on the level of detail you are interested in obtaining.)

ATTACHMENT C
KEY CONTACTS

Federal

US Environmental Protection Agency – Region 5
www.epa.gov/region5

National Recycling Coalition
www.nrc-recycle.org

Keep America Beautiful
www.kab.org

Recycling Organizations of North America (RONA)
www.recyclingorganizations.org

Solid Waste Association of North America (SWANA)
www.swana.org

State

County Recycling Coordinators
http://www.illinoisbiz.biz/NR/rdonlyres/F49AD9AF-E577-40D7-B985-E2DA0347FC58/0/CountyRecyclingCoordinators20100107.pdf

Department of Commerce and Economic Opportunity
www.illinoisrecycles.com

Illinois Chapter of SWANA
www.swanaillinois.org

Illinois Environmental Protection Agency
www.epa.state.il.us

Illinois Recycling Association
www.illinoisrecycles.org

Illinois Counties Solid Waste Management Association (ILCSWMA)
www.ilcswma.org

ATTACHMENT D
GREEN PROCUREMENT RESOURCES

Guides

U.S. EPA – http://www.epa.gov/osw/inforesources/pubs/brecycled.htm, www.epa.gov/epp/, www.epa.gov/waste/conserve/tools/cpg/index.htm, www.epa.gov/waste/conserve/rrr/buyrecycled.htm

Solid Waste Agency of Northern Cook County, *Eco-Friendly Marketplace* – www.swancc.org

SWANA's Buyer's Guide – http://mswmanagement.com/forms/print-25924.aspx

National Geographic's Green Guide – http://www.thegreenguide.com/

Green America – http://www.greenamericatoday.org/pubs/greenpages/

Green America – Fair Trade – www.fairtradeaction.org

General Resources

Big Green Purse – Using Your Spending Power to Create a Cleaner, Greener World, by Diane MacEachern – www.biggreenpurse.com

Green Washing Index – helps consumers become more savvy evaluating environmental marketing claims of advertisers – www.greenwashingindex.com

Consumers Union Guide to Environmental Labels – www.eco-labels.org

Market Transformation to Sustainability - SMART Certified – rates building products, fabrics, apparel, textiles & flooring by considering the product's complete life cycle – http://mts.sustainableproducts.com/standards.htm

Organic Trade Association – www.ota.com and www.organic.org

Organic Consumers Association – www.OrganicConsumers.org

USDA National Organic Standard – www.AMS.USDA.gov

Care2 Inc. – Take action – www.care2.com

New Dream Marketplace – community-related campaigns and programs – www.newdream.org

Eco-Cleaning Products

Greener Choices – www.greenerchoices.org

Household Products Database: Health and Safety Info – www.householdproducts.NLM.NIH.gov

Nontoxic Cleaning Information – www.Care2.com

SWANCC's Eco-Friendly Cleaning Guide – http://swancc.org/pdfs/Education/ecoCleaningGuide.pdf

Earth Friendly Products, Winnetka – www.ecos.com

Seventh Generation – www.seventhgeneration.com

ATTACHMENT E
SAMPLE RECYCLING SIGNAGE

Examples of signs that may be used on recycling containers in your workplace are provided. These signs are very simple and can be printed directly from the Tool Kit, or you may wish to create your own signage that specifies the materials that can and cannot be accepted.

Additional images can be obtained from the Illinois Recycling Association's website at www.illinoisrecycles.org/GraphicsPackage/index.php.

Recycle More America is a national collaborative effort to develop standardized signage for recycling bins. As an additional resource, signage for numerous materials has been developed and posted for free download and printing on the Recycle More America website at www.recyclemoreamerica.org.

♻ RECYCLE ♻

Bottles and Cans Only

♻ RECYCLE ♻

Mixed Office Paper Only

♻ RECYCLE ♻

Paper Only

♻RECYCLE♻

Cardboard Only

ATTACHMENT F
SAMPLE MEMO AND PRESS RELEASES

Sample Inter-Company Memo to Promote Waste Reduction Program

MEMORANDUM

TO: All Employees
FROM: Business Owner
SUBJECT: **New Recycling Program**
DATE:

I am pleased to announce that we will launch a new recycling program beginning _____, to include source reduction measures. Many of you recycle at home, and now it is time to have the opportunity to recycle at work.

To assist with this effort, the following individuals have volunteered to be part of a *Green* taskforce team that helped initiate the program, and will promote, monitor and evaluate the program as we go along.

1

2

3

4

It is important that everyone embrace the new recycling program so that we can achieve significant results by reducing waste and recapturing resources. I truly believe that with your cooperation and support, we can make a significant impact on being better stewards of our environment. The measures that are being put in place to reduce waste and increase recycling can potentially save our company money as well. Specific details will be forthcoming soon.

I hope that you are excited about this new initiative and know that our collective contributions will have a positive effect on our environment.

Sample Press Release – To Promote New Waste Reduction Program

(COMPANY) ANNOUNCES NEW RECYCLING PROGRAM

City, State, Date – The President of _____ (company) announced today that his company is implementing a new recycling program beginning _____. According to _____(president's name or COO), which manufactures widgets, expects to save more than $$ in the first year of the program, just by recycling paper and corrugated cardboard.

"Recycling is the best answer to our society's growing waste disposal program", _____(president's name) said. "First of all, it diminishes the need for landfill space (every ton of paper recycled saves three cubic yards of landfill space), and second, it saves our natural resources (for every ton of recycled paper, 17 trees are saved)."

_____(president's name) has issued a challenge for other businesses in _____(city) to join them in preserving resources to show environmental stewardship and to save their own companies money by starting or enhancing their own recycling programs.

###

Sample Press Release – To Promote the IRA Waste Reduction Tool Kit to Businesses

RELEASE: Immediately
Contact Information: (Name, Phone, Email)

(Community) Announces *Tool Kit* to Assist Businesses in Reducing Waste in the Workplace

News
The (City/County of) is pleased to make available, the Illinois Recycling Association's new *Recycling Works Tool Kit* for local businesses interested in implementing a recycling program and instituting waste reduction measures in the workplace. The *Tool Kit* is funded through a grant from the Illinois Department of Commerce and Economic Opportunity (DCEO).

The Tool Kit includes the following information on:

- How to evaluate your business' waste stream to reduce volume and costs
- Best practices for waste reduction measures
- How to start a recycling program
- Ways to promote program and educate staff
- Resources

(Name, title) for the (City/County of) said, "I am pleased that through the support of DCEO and the Illinois Recycling Association (IRA), we have an opportunity to provide our business community with information on how recycling and waste reduction programs in the workplace can have positive benefits for our environment and the bottom line."

Businesses wanting more information regarding IRA's Tool Kit should contact (name) at (phone) or (email).

###

ATTACHMENT G
MONITORING AND EVALUATION WORKSHEETS

Sample monitoring and evaluation worksheets are provided. These worksheets are from US EPA's *Business Guide for Reducing Solid Waste*.

WORKSHEET

G Monitoring and Evaluation

Name of Reviewer:	**Date of Review:**
Building:	**Department:**
Name of Contract:	**Telephone Number:**

1 Amount of Waste Reduced

Use the following tables to quantify the annual amount of waste that is being reduced as a result of your company's waste reduction efforts. When recording the amount of waste prevented, use whatever time period (e.g., weeks or months) is easiest for you to measure. Multiply these figures by the appropriate annual multiplier to come up with an estimate of the amount of waste reduced per year. Then, in the last column of each table, convert this amount to either weight or volume. (if you are charged for waste removal based on weight, convert the amount of waste reduced to tons. If you are charged for waste removal by volume or per pull, convert this amount to cubic yards).

A Waste Prevention

Activity	**Type of Waste Prevented**	**Amount of Waste Prevented** (units/time period)	**Annual Amount of Waste Prevented** **X Annual Multiplier =**	**Conversion to Tons or Cubic Yards***
Double-sided copying	*White office paper*	*12 reams per week*	*624 reams per year*	*21 cubic yards per year*
Donate wooden pallets	*Pallets*	*10 pallets per week*	*520 pallets per year*	*10.4 tons per year*
			Total	

•See Appendix D for conversion tables.

WORKSHEET

G Monitoring and Evaluation

B. Recycling

Material	Amount of Waste Collected (units/time period)	Annual Amount of Waste Collected	Conversion to Tons or Cubic Yards*
		X Annual Multiplier =	
HDPE plastic	*40 pounds per week*	*2,080 pounds per year*	*1.04 tons*
		Total	

C. Composting

Material	Location of Composting	Estimated Amount of Waste Reduced	Annual Amount of Waste Reduced	Conversion to Tons or Cubic Yards
			X Annual Multiplier =	
Cafeteria food scraps	*On site*	*250 pounds per week*	*13,000 pounds per year*	*6.5 tons*
			Total	

D. Total Amount of Waste Reduced

Use the formula below to calculate the total annual amount of waste reduced (in tons or cubic yards).

_____ +	_____ +	_____ =	
Total annual amount of waste prevented *[from Step 1-A]*	Total annual amount of waste recycled *[from Step I-B]*	Total annual amount of waste composted *[from Step 1-C]*	**Total Annual Amount of Waste Reduced**

•See Appendix D for conversion tables.

WORKSHEET

G Monitoring and Evaluation

2 Avoided Waste Removal Costs

Avoided waste removal costs will be calculated differently, depending on how your company is charged for waste hauling. Companies may be charged by weight (2-A), volume (2-B), container pull (2C), or a combination (2-D) of these. Complete as many of the following tables as appropriate for your company's waste hauler billing system(s).

A. Avoided Waste Removal Costs ***(if charged by weight)***

Activity	**Total Annual Amount of Waste Reduced** (in tons) *[from Worksheet G-1]*	x	**Waste Removal Cost** (per ton) *[from Worksheet B-2]*	=	**Annual Avoided Removal Costs**
Waste Prevention					
Recycling					
composting					
				Total	

B. Avoided Waste Removal Costs *(If charge by volume)*

Activity	**Total Annual Amount of Waste Reduced** (in cubic yards) *[from Worksheet G-1]*	x	**Waste Removal Cost** (per cubic yard) *[from Worksheet B-2]*	=	**Annual Avoided Removal Costs**
Waste Prevention					
Recycling					
composting					
				Total	

WORKSHEET

G Monitoring and Evaluation

C. Avoided Waste Removal Cost ***(if charge by container pull)***

If your facility is charged by container pull, use the following table to show how many fewer pulls could have resulted from your waste reduction activities.

Activity	Total Annual **Amount of Waste Reduced** (in cubic yards) [from *Worksheet* G-1] ÷	Volume of **Hauling Container** =	Container Pull Avoided x	Cost per Pull (in dollars) [from *Worksheet B-2]* =	Annual **Avoided Waste Removal Costs**
Waste Prevention					
Recycling					
Composting					
				Total	

D. Total Avoided Waste Removal Costs

If your company is charged in a combination of ways for waste removal services, and you have filled out two or more of the above tables, use the following formula to calculate your total avoided removal costs.

_____ + _____ + _____ = $ _____

Total Annual Avoided Waste Removal Costs

[from 2-C]

WORKSHEET

G Monitoring and Evaluation

3 Revenues and Avoided Purchase Costs

A. Revenues

Use the following table to calculate the revenues received from collected recyclable or exchanged materials,

Activity	**Amount** Collected per Time Period	Annual Amount Collected	Unit Price	Estimated Annual Revenue
	x Annual Multiplier=	x	=	
Glass recycling	*55 pounds per week*	*2,880 pounds per year*	*$0.08 per pound*	*$229*
			Total	

If your company receives additional revenues from other measures such as materials exchanges or the sale of compost, use the formula below to calculate total annual revenues from your waste reduction program.

_____ + _____ = $ _____

Revenues from recycling | Revenues from materials exchanges, compost sales, etc. | **Total Annual Revenues**

WORKSHEET

G Monitoring and Evaluation

B. Avoided Purchase Costs

Use the following table to calculate the annual savings from avoided purchase costs resulting from all waste reduction activities (waste prevention, composting, recycling, materials exchange).

Activity	Material	Amount of Material Not Purchased per Time Period	x	Unit Price	=	Total Avoided Purchase Cost	X Annual Multiplier =	Annual Avoided Purchase Cost
Double-sided copying	*White office paper*	*12 reams per week*		*$3 per ream*		*$36 per week*		*$1,872*
							Total	

WORKSHEET

G Monitoring and Evaluation

C. Total Revenues and Avoided Purchase Costs

Calculate the total annual revenues and avoided purchase costs using the following formula:

_____	+	_____	=	$ _____
Total annual revenues *[from 3-A]*		Total annual avoided purchase costs *[from 3-B]*		**Total Annual Revenues and Avoided Purchase Costs**

4 Gross Annual Waste Reduction Savings

Use the following formula to calculate the gross annual savings resulting from your waste reduction program, If 'an estimate of your program's net savings is desired, use Step 2-B in Worksheet F to estimate operating costs for each of your waste reduction measures. Then, subtract these costs from the gross savings calculated below.

_____	+	_____	=	$ _____
Total annual avoided waste removal costs *[from Step 2-D]*		Total annual revenues and avoided purchase costs *[from Step 3C]*		Gross **Annual Waste Reduction Savings**

5 Purchases of Recycled Products

Use the following table to track your purchase of products with recycled content.

Recycled Content Product	**Annual Quantity Purchased**	**Unit Price**	**Annual Purchase Cost**
		x	=
Recycled corrugated cardboard boxes	*2,000 units*	*$.10 per unit*	*$200*

WORKSHEET

G Monitoring and Evaluation

6 Other Factors

Consider other significant factors that may have influenced any changes in cost or savings. For example, did your number of employees increase or decrease?

7 Summary

Summarize the success of your waste reduction program and describe any drawbacks. Indicate ways to address these drawbacks.

ATTACHMENT H
RESOURCES FOR BUSINESSES

National Associations and Industry Organizations

The Aluminum Association, Inc. – www.aluminum.org

American Forest and Paper Association – www.afandpa.org

American Plastics Council (APC) – www.ameriplas.org

Aseptic Packaging Council (APC) – www.aseptic.org

Can Manufacturers Institute (CMI) – www.cancentral.com

Envirolink Network – www.envirolink.org

Environmental Defense Fund – www.environmentaldefense.org

Environmental Industry Associations – Interactive – www.envasns.org

Environmental Protection Agency (EPA) – www.epa.gov

Glass Packaging Institute – www.gpi.org

Institute of Scrap Recycling Industries (ISRI) – www.isri.org

Keep America Beautiful – www.kab.org

National Recycling Coalition (NRC) – www.nrc-recycle.org

National Association for Plastic Container Recovery (NAPCOR) – www.napcor.com

National Oil Recyclers Association – www.NoraNews.org

Solid Waste Association of North America – www.swana.org

Steel Recycling Institute – www.recycle-steel.org

U.S. State Sites

California Department of Resources Recycling and Recovery (CalRecycle) – www.calrecycle.ca.gov

Database of State Incentives for Renewables and Energy – www.dsireusa.org/incentives

Illinois Department of Commerce and Economic Opportunity –www.illinoisbiz.biz

Illinois Recycling Association – www.illinoisrecycles.org

Massachusetts Department of Environmental Protection – www.state.ma.us/dep/recycle/recycle.htm

Michigan Department of Environmental Quality – www.michigan.gov/deq

Minnesota Office of Environmental Assistance – www.moea.state.mn.us/reduce/index.cfm

North Carolina Div. of Pollution Prevention and Environmental Assistance – www.p2pays.org

Northeast Recycling Council – www.nerc.org

Ohio Department of Natural Resources – www.dnr.state.oh.us/recycling/default.htm

Pennsylvania Department of Environment Protection – www.dep.state.pa.us/dep/deputate/airwaste/wm/RECYCLE/Recycle.htm

Recycle Iowa – www.recycleiowa.org

Wisconsin Department of Natural Resources – www.dnr.state.wi.us

Industry Trade Publications

BioCycle – Journal of Composting & Recycling, (610) 967-4135 – www.jgpress.com

Resource Recycling – North America's Recycling and Composting Journal, (503) 233-1305 – www.resource-recycling.com

Green at Work, (800) 833-9056 – www.greenatworkmag.com

MSW Management – a publication of the Solid Waste Association of North America – www.mswmanagement.com

Waste Advantage – www.wasteadvantagemag.com

Waste Age – The Authoritative Voice of Waste Systems and Technology – www.wasteage.com

Waste & Recycling News – BiMonthly Reporting on Solid Waste Management, (800) 678-9595 – www.wastenews.com

*** Refer also to IRA's website at www.illinoisrecycles.org for a list of environmental-related books and media.**

ATTACHMENT I
RESOURCES FOR SCHOOLS AND UNIVERSITIES

Many of these organizations, associations or industries have no-cost or low-cost educational materials for educators to include curricula, posters, media, etc.

U.S. Department of Energy – www.eere.energy.gov

US EPA – free resource materials for educators and businesses – www.epa.gov/osw

American Forest and Paper Association – www.afandpa.org

American Chemistry Council – www.americanchemistry.com

Can Manufacturers Institute – www.cancentral.com

Clean Air Counts – A Chicago Region Initiative – www.cleanaircounts.org

Community Learning Network – a site designed to help teachers integrate technology into the classroom in grades K-12, over 5,800 annotated links to educational sites with free resources – www.cln.org

Consumer Reports – Green Products Rating Guide – www.greenerchoices.org/ratings.cfm?product=greencleaning

Earth 911 – *Benefits of Waste Reduction* – good general information – www.earth911.org/usa/master.asp?s=lib&a=brrc/wrp_Benefits.asp

Environmental Defense Fund – www.edf.org

Environmental Yellow Pages – Worldwide Directory – www.enviroyellowpages.com

Glass Packaging Institute – www.gpi.org

Grassroots Recycling Network – www.grrn.org

Green Student – www.greenstudentu.com

IL Dept. of Commerce and Economic Opportunity – school resource materials – www.istep.org

DCEO Illinois College Assistance Program for Recycling – http://www.illinoisbiz.biz/dceo/Bureaus/Energy_Recycling/Recycling/ICAP.htm

Keep America Beautiful – www.kab.org

Illinois Recycling Association – www.illinoisrecycles.org

North America PET Plastic Industry – www.napcor.com

National Energy Education Development Project – energy facts, games & activities – www.eia.doe.gov/kids

National Environmental Education Week – www.eeweek.org

National Energy Education Development Project – energy facts, fun, games and activities – www.eia.doe.gov/kids

New American Dream – Responsible Purchasing Network – www.newdream.org/procure

NIH Curriculum Supplement Series – *Chemicals, the Environment and You* (grades 7 – 8), but series available for all grade levels – http://science.education.nih.gov/customers.nsf/MSEnvironment.htm

PBS – Kids and Chemicals – Facts and Laws (grades 9 - 12) – www.pbs.org/now/classroom/classroom_kids1.html

Seventh Generation – The Cost of Clean lesson plan (grades 5 – 7) – www.seventhgeneration.com/earth-day-lesson-plan

Sustainable Oregon Schools Initiative – http://sustainableschools.org

Steel Recycling Institute – www.recycle-steel.org

Terrific Science – fun science resources for teachers, parents and kids – www.terrificscience.org

Other Environmental Resource Sites

www.earthsite.org

www.earthday.net

www.earth911.org

www.americarecyclesday.org

www.cleanuptheworld.org

www.environmentaldefensefund.org

www.grist.org

www.treehugger.com

www.turnofftvweek.org

www.walktoschool.org

www.wastefreelunches.org

Programs for Youth

A Better Future – ideas for individuals and groups make a difference – www.abetterfuture.org

Action Without Borders – www.idealist.org

Change the World Kids – community service to help the environment – www.changetheworldkids.com

Do Something – Volunteer to make a difference by taking on a task individually or in a group – www.dosomething.org

EPA's Environmental Kids Club – www.epa.gov/kids/index.htm

EPA's – Energy Hogs (Teacher and student guides) – www.energyhog.org/childrens.htm

Improving Kids' Environment (IKE) – has developed a fun, home-made game to play with children to teach them (and their parents) about mercury in fish and what kinds of fish are safest to eat. Check out www.ikecoalition.org/Mercury/fishing%20game.htm and while you are on the computer, visit the Environmental Protection Agency's game at www.epa.gov/fishadvisories.

Kids Against Pollution – is a multinational network of youth dedicated to solving and preventing pollution problems through interactive education projects and events in order to protect children's health and the planet. For more information, visit www.kap-international.com

Kids for a Cleaner Earth (FACE) – youth involvement for environmental projects – www.kidsface.org

Kids Recycle! – Learn how to compost outdoors at home or at school – and inside with worms - composting guides and manuals show kids how at www.kidsrecycle.org/composting.php.

Planet Connect Program is a new online network for high school students to learn about the environment plus green college and career options and offers grants for environmental projects. Visit http://planet-connect.org for details.

The Lorax Project – www.seussville.com/lorax/index.php?section=home

Project Learning Tree – Materials and project to promote ecological sustainability – www.pltgreenschools.org

Roots and Shoots – a global program for youth through the Jane Goodall Institute – www.rootsandshoots.org

RecycleMania – College recycling competition – www.recyclemania.org

Zero Footprint Kids is a carbon footprint calculator for children, measuring the direct impact of a child's lifestyle on the planet, using terms kids understand: carbon, land, water and trees – www.zerofootprintkids.com.

Miscellaneous Grant Opportunities for Schools

Captain Planet Foundation – www.captainplanetfdn.org/grants.html

Classroom Earth – numerous grants listed – www.classroomearth.org

Department of Commerce and Economic Opportunity (DCEO), *Illinois Zero Waste School Grant Program* – DCEO is soliciting grant applications from Illinois public and private schools for grants to implement or expand recycling and waste reduction programs and strive to achieve zero waste status. www.illinoisrecycles.com or www.istep.org

Greening School – numerous funding opportunities – www.greeningschools.org/resources/funding_opportunities.cfm

Kids Gardening, a division of National Gardening Association. Numerous Funding Opportunities listed at: http://www.kidsgardening.com/kgn-current.html

Illinois Rain Garden Initiative – www.raingarden.il.gov

Lexus Environmental Challenge – For middle and high school students – http://www.scholastic.com/lexus/

Lowe's Toolbox for Education Grant – Launched in partnership with PTO Today, a leading organization serving parent-teacher groups, *Toolbox for Education* will provide grants of up to $5,000 for public school improvement projects initiated by parents. Up to 1,000 grants nationwide will be awarded – www.lowes.com/lowes/lkn?action=pg&p=AboutLowes/Community

Office Max – http://about.officemax.com/html/officemax_contributions_policy.shtml

Organic School Garden Grants – Schools that use organic gardening techniques and methods are eligible to enter the Organic School Garden Awards program – http://fconline.foundationcenter.org/pnd/10003730/kidsregen

The President's Environmental Youth Awards – http://epa.gov/enviroed/peya/index.html

Starbucks Foundation – www.starbucks.com

Target Corporation – http://target.com/target_group/community_giving/local_giving.jhtml

Wal-Mart Foundation – www.walmartfoundation.org/wmstore/goodworks/scripts/index.jsp

Eco-Friendly Products and Fundraisers

Cell Phones /Printer Cartridges:
Cartridges for Kids – www.cartridgesforkids.com
Cartridge World – www.cartridgeworldusa.com – check with local stores
Cure Recycling – proceeds can go toward childhood cancer research – www.earthtonesolutions.com
Funding Factory – www.fundingfactory.com

Gardening:
Flower Power Fundraising – www.flowerpowerfundraising.com

Light Bulbs:
Green Light Bulb – www.helpfundraise.com
Lights for Learning – CFL light bulbs – www.lights4learning.org
One Planet – www.oneplanetfundraising.com

Lunchtime Items:
Aluminum water bottles and sandwich container with cold pack lid – www.addedincentives.com
Wrap-n-Mats – www.wrapnmat.com
Stainless steel containers - www.lunchbots.com
Lunch bags, food containers and beverage bottles - www.lunchwithoutwaste.com

Paper/Gift Wrap/Note Cards:
Abitibi Bowater – Paper Retriever – recycling program for non-profits – www.PaperRetriever.com
Acorn Designs – nature-inspired note cards on recycled paper – www.acorndesigns.org
Earth Presents – gift wrap, cards and bows designed by art students – made from post-consumer recycled materials. www.earthpresents.com
Cancel junk mail – Tonic MailStopper (formerly Greendimes) – www.mailstopper.tonic.com
Stop junk mail - www.41pounds.org

T-Shirts/Clothing:
Eco Sprouts – www.ecosprouts.com
Global Goods Partners - www.globalgoodspartners.org/schools

Miscellaneous Products:
Bags – www.reusethisbag.com
Coffee – www.cafemam.com
EcoLabel Fundraising – fair-trade and eco-friendly products – www.ecolabelfundraising.com
Eco-Promotional Products – www.ecopromotionsonline.com – (on-line shopping)
Fair Trade Fundraiser Program – socially responsible and environmentally sustainable products www.equalexchange.coop/fundraiser
Friendly Fundraising – www.FriendlyFundraisinginc.com (on-line shopping)
Green Fundraising – Raising funds, raising awareness, raising the bar - www.GreenRaising.com
Items include: gifts and wrap; goodies; home & office; lunchtime; and reusable bags.
Green Market – www.greenmarketfundraising.com
Kick Start Green Fundraising – www.kickstartgreen.com Items include *Kleen Kanteen*, *Chico Bags* and *U-Mix- It-Safe* Spray.
Let's Go Green – www.letsgogreen.biz

Reclamation of Materials for Reuse or Recycling

Preserve's Gimme 5 Plastic Program – www.preserveproducts.com/gimme5
Terracycle's *Bottle Brigade* – wants Plastic PET beverage bottles and #2 HDPE milk jugs for worm tea – www.terracycle.net/brigades
Terracycle wants old cookie wrappers, empty drink pouches, chip bags, and corks – www.terracycle.net
Textiles recycling (clothes/shoes) – www.usagain.com and www.uniquethriftstore.com

Curriculum Resources & Guides

Air to Earth (Nike) – display box of "Nike Grind" court surfaces and program video (Nike and North American Association for Environmental Education) – www.ecoeducators.com

An Ounce of Prevention – A Middle Level Science Curriculum on Source Reduction, (National Science Teachers Association and the Dow Chemical Company, 1996) – www.use-less-stuff.com

Closing the Loop: Exploring Integrated Waste Management & Resource Conservation, Hands-on lessons and activities from grades K-6 (California Integrated Waste Management Board) – www.ciwmb.ca.gov/Schools/Curriculum/CTL/

"Compost…because a rind is a terrible thing to waste!" – 30-minute video with activity manual (Cornell Waste Management Institute, 1996) – www.cuwmi.cornell.edu

Connecting Service-Learning to the Curriculum: A Workbook for Teachers and Administrators (Community Works Press, 2005)

Edens Lost & Found: How Ordinary Citizens are Restoring Our Great American Cities – Middle School through Adult, Illinois Sustainable Education Project – www.istep.org – This publication is a series of PBS broadcasts that tells the story of inspired individual citizens in cities across the country, including Chicago, who are improving their quality of life and public health through the restoration of urban ecosystems. Related curriculum at www.edenslostandfound.org. (57-minute DVD also available for loan)

Environmental Pathways – Youth Investigating Pollution Issues in Illinois – for grades 5 & 6 (Illinois Environmental Protection Agency, 2001) – www.epa.state.il.us

Global Issues & Sustainable Solutions: Population, Poverty, Consumption, Conflict, and the Environment - Teacher Guide (Facing the Future: People & the Planet, 2004)

Green Chemistry, curriculum and video to educate students on the skills and knowledge to practice chemistry in ways that are benign to human health and the environment. Developed through a cooperative effort of the American Chemical Society's Education and International Activities Division and the Green Chemistry Program, and Office of Pollution Prevention and Toxics of the U.S. Environmental Protection Agency. www.chemistry.org

Greening School Grounds: Creating Habitats for Learning, Edited by Tim Grant and Gail Littlejohn, www.facingthefuture.org

It's All Connected: A Comprehensive Guide to Global Issues and Sustainable Solutions Student Textbook (Facing the Future: People & the Planet, 2005)

The Quest for Less – Activities and Resources for Teaching K-8, by U.S. Environmental Protection Agency (EPA)

Recycle: The Essential Guide, (Black Dog Publishing, 2006)

School Recycling Guide – Setting up Solid Waste Recycling Programs in Schools (Keep America Beautiful, Inc., 2002) – www.kab.org

Soil Biology Primer - An introduction to the living component of soil and how that component contributes to agricultural productivity and to air and water quality (Soil and Water Conservation Society, 2000)

Teaching Green – The Elementary Years – Hands-On Learning K-5, by Green Teacher, New Society Publishing – www.greenteacher.com

Teaching Green – The Middle Years – Hands-On Learning 6-8, by Green Teacher, New Society Publishing

Teaching Green: The High School Years, 9 – 12, Edited by Tim Grant and Gail Littlejohn

Teaching Global Sustainability in the Primary Grades, K-4 (Facing the Future, 2007) – www.facingthefuture.org

Vital Results Through Service-Learning: Linking Students and Community in Vermont Schools – (Community Works Press, 2002)

Understanding Garbage and Our Environment for grades 5 – 8 (National Science Foundation, 1999) – www.eNASCO.com

The Worm Café – classroom vermi-composting (Flower Press, 1999) – www.wormwoman.com

Worms Eat Our Garbage – classroom vermi-composting activities (Flower Press, 1993) – www.wormwoman.com

*** Refer also to IRA's website at www.illinoisrecycles.org for a list of environmental-related books and media.**

ATTACHMENT J
INSPIRATIONAL ENVIRONMENTAL QUOTES

"We can't solve problems by using the same kind of thinking we used when we created them."
- Albert Einstein

"One touch of nature makes the whole world kin."
- William Shakespeare

"What is the use of a house if we don't have a decent planet to put it on?"
- Henry David Thoreau

"The Earth does not belong to man; man belongs to Earth. Man did not weave the web of life; he is merely a strand in it. Whatever he does to the web, he does to himself."
- Chief Seattle, Dwamish Tribe

"There is no such place as away."
- Chief Seattle

"May the footprints we leave behind show that we've walked in kindness toward the Earth and every living thing."
- Inspired by Native American philosophy

"If you do not like the way the world is, you change it. You have an obligation to change it. You just do it one step at a time."
- Marian Wright Edelman

"I am only one, but still I am one. I cannot do everything, but still I can do something. I will not refuse to do something I can do."
- Helen Keller

"We must be the change we wish to see in the world."
- Mahatma Gandhi

"We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect."
- Aldo Leopold

"Let every individual and institution now think and act as a responsible trustee of Earth, seeking choices in ecology, economics and ethics that will provide a sustainable future, eliminate pollution, poverty and violence, awaken the wonder of life and foster peaceful progress in the human adventure."
- John McConnell

"If future generations are to remember us with gratitude rather than contempt, we must leave them something more than the miracles of technology. We must leave them a glimpse of the world as it was in the beginning, not just after we got through with it."
- President Lyndon B. Johnson

"The environment, after all, is where we all meet, where we all have a mutual interest. It is one thing that all of us share. It is not only a mirror of ourselves, but a focusing lens on what we can become."

- First Lady, Lady Bird Johnson

"Even if I knew that tomorrow the world would go to pieces, I would still plant my apple tree."

- Dr. Martin Luther King, Jr.

"One individual cannot possibly make a difference, alone. It is individual efforts, collectively, that makes a noticeable difference – all the difference in the world!"

- Dr. Jane Goodall

"Space travel has given us a new appreciation for the Earth. We realize that the Earth is special. We've seen it from afar. We realize that the Earth is the only natural home for man we know of, and that we had better protect it."

- James Erwin, U.S. Astronaut

"Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has."

- Margaret Mead

"Unless someone like you cares a whole awful lot, nothing is going to get better – It's not."

- The Lorax, by Dr. Seuss

"What good is achieving academic excellence if the planet we live on is compromised for ourselves and future generations?"

- Mary Allen, SWANCC Recycling & Education Director