

# **RECYCLING MAKES SEN\$E**

## **Waste Prevention and Recycling Guide for Businesses, Schools, and Municipal Offices**

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## ***I. INTRODUCTION***

### **TRASH = WASTED RESOURCES**

Trash is commonly viewed as a cost of doing business. A trash bin or dumpster gets filled and emptied without much thought given to the materials being thrown away. The point that is oftentimes overlooked is that trash is wasted resources. By looking at the volume and type of waste being generated, businesses, schools, and municipal offices gain insight into what parts of their operations or daily practices create the waste materials. Once this information is known, discussions on how to best manage these materials can begin.

Waste prevention and recycling are materials management strategies that businesses, schools, and municipal offices can use to minimize waste, control disposal costs, and potentially save on material purchases. Waste prevention begins by looking at the type and volume of waste, and developing methods for reducing or eliminating these materials. Recycling is a strategy for managing unavoidable waste materials. Recycled materials are important to the United States economy because they are used by processors and manufacturers in making new products. In the ten Northeast states alone, there are more than 13,000 recycling and reuse businesses.<sup>1</sup> In today's competitive economic climate and tight budgets, waste prevention and recycling make economic sense for all establishments.

*Implementing a waste prevention and recycling program has both short and long term benefits, including:*

- Controlling costs by reducing trash disposal needs and material purchases.
- Potentially helping improve productivity through greater efficiency.
- Bringing revenue through the potential sale of recyclables and increased operational efficiency.
- Helping to comply with municipal and state recycling mandates and landfill disposal bans.
- Realizing the full value of waste materials by recycling them for reprocessing and manufacturing into new products.
- Enriching employee, customer, and community relations by fostering a positive public image and helping to create a healthy environment.
- Supporting U.S. recycling processors and manufacturers by making recycled materials available.
- Helping to reduce pollution and control greenhouse gas emissions.
- Diverting materials from landfills or incinerators.
- Conserving natural resources.

This guide is designed to benefit business owners and management, facility managers, office managers, recycling coordinators, and others responsible for managing a facility's waste materials and for designing new waste prevention and recycling programs or

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<sup>1</sup> Recycling Economic Information Study; Northeast Recycling Council, Inc.; July 2000.

expanding existing programs. The outlined steps in the Guide are intended to provide basic information on these waste management strategies. However, keep in mind that the actual design of each program must be tailored to best meet the facility's needs.

## ***II. STEP-BY-STEP APPROACH TO STRATEGIC MATERIALS MANAGEMENT***

### **1) Begin with Upper-Management Support**

A long-term commitment to waste prevention and recycling must be made by top-level management for it to be successful. Developing a facility-wide waste reduction and recycling ethic and policy demonstrates, to staff and the public, an interest and commitment to environmental protection. In addition, program announcements and training sessions with endorsements from senior management encourages greater participation by employees. *See Appendix A for a sample policy.*

### **2) Select a Waste Prevention and Recycling Program Coordinator or Team**

It is important to designate a person or team of people to spearhead the waste prevention and recycling program. Their role is to gather and disseminate information, develop the initial program; monitor all subsequent stages of the program; problem solve; and serve as the liaison between management, employees, and the recycler. This position requires some time commitment during the initial planning stages of program development, but on-going time requirements to monitor the program should be minimal.

## **COORDINATION RESPONSIBILITIES**

- Conduct a waste assessment—observe all operations, general office procedures, and waste generation to help assess the type and volume of waste materials, generation points, and collection options.
- Design the program by working with management and department representatives.
- Select a recycler and serve as liaison between the recycler, custodial staff or service, facility manager, and employees.
- Determine the number and type of recycling containers necessary and container placement.
- Provide a memo and orientation to employees about the program and ongoing program updates.
- Work with department supervisors to encourage employee participation.
- Provide necessary troubleshooting (e.g., making sure that recycling containers are free of non-recyclable trash).
- Monitor the program to keep track of waste prevention and recycling progress (e.g., tonnage of materials collected for recycling, and the environmental benefits of waste prevention and recycling), and report on the progress.
- Disseminate information on the program progress to staff and the public.

### 3) Know What Is In the Waste



The first step in managing waste is to know what's in it. This helps to figure out what part of the waste stream can be reduced or prevented and what part can be recycled. The best way to gain this baseline information is to conduct a waste assessment. An easy and effective way to perform a waste assessment is to walk through the facility and look at the type and amounts of trash being generated in each department, employees' trash bins, and in each dumpster. Engaging employees in this process gains their support of the program as it progresses. *See Appendix B for Waste Assessment Instructions and Appendix C for Waste Assessment Sheets.*

The results from this activity provides management with first-hand data on the wastes being generated and helps to identify materials that can be targeted for waste reduction, prevention, and recycling in the first year of the program implementation.

Manufacturing and industrial facilities also need to look closely at the waste generation points to see if production, equipment, and/or processing techniques can be modified to reduce or eliminate waste. Warehouse and distribution operations need to look closely at the supply chain for consideration of the lean principles of "just-in-time inventory," packaging and shipping wastes, and pallet management. Hospitals and health-care facilities can look into leasing options for computer, analytical, and lab equipment. Most electronic recycling companies accept analytical and lab equipment for recycling. Hospitals can also integrate reuse opportunities such as reusable totes for distribution of supplies.

#### Waste Generation Rate

Disposal + Recycling = Generation

Example: If a facility disposes of 75 tons of waste/year and recycles 15 tons of office paper/year.

Waste generation rate = 90 tons

Facilities with technical processes that produce significant amounts of waste, may want to consult with waste management experts to assist in developing waste prevention procedures. Many states have business technical assistance programs that may be helpful. *Go to the Recycling Business Assistance Guide on [NERC's Web site](#) for contacts in each state.*

In addition, understanding the cost of waste management is a critical component of controlling costs and finding opportunities for savings. Reviewing and analyzing last year's waste disposal bills and cost of dumpster(s) pick ups is another important step to understanding the waste. Become familiar with the size of the dumpster(s) and the service provided—picked up on a regular schedule or when called in. *See the Dollars & Cents Section of this Guide for more details on specific costs and revenues.*

### 4) Know What Materials or Products Are Purchased

Another way to help assess a facility's waste stream is to determine the amount and kinds of products (and raw materials) purchased. For example, knowing how much paper is

ordered can give a good idea of what constitutes the recyclable paper waste stream.

Purchasing records will help to:

- Verify volume estimates made during the visual survey.
- Identify purchased items that may be reduced in volume, or substituted with reusable, durable, or recyclable products, instead of disposable.
- Provide information for evaluating the program costs and benefits once implementing a waste prevention and recycling program.
- Identify environmentally preferable products that can be purchased, including products made with recycled content.

### **CONDUCTING A PURCHASING ASSESSMENT**

- Identify individuals responsible for making purchases for the facility.
- Determine what products are procured and in what quantity.
  - Volumes of copy machine, printing, and computer paper ordered during the period.
  - Frequency and amount of vending machine stocking for beverage and food containers.
  - Estimates of cardboard boxes, pallets, and other types of packaging received.
- Review additional facility records that may be helpful:
  - Purchasing, inventory, maintenance, and operating logs.
  - Supply, equipment, and raw material invoices.
  - Equipment service contracts and repair invoices.
  - Newspaper and magazine subscriptions.

#### **Common Office Recyclables**

##### Office Paper

Shredded Documents  
Copy Paper  
Letterhead  
Envelopes  
File Folders & Contents  
Newspapers & Magazines  
Paperboard  
Other Clean Paper

##### Cardboard

##### Beverage & Food Containers

Glass, Plastic, Aluminum, & Steel

##### Electronic Scrap

Computers & Related Equipment  
Cell Phones  
Printers  
Copiers  
Other Electronics

##### Other

Toner Cartridges  
Alkaline & Lithium Batteries  
CDs, DVDs, Floppy Disks  
Office Supplies  
Refrigerators

### **5) Set Achievable Waste Prevention and Recycling Goals**

Consult the waste assessment to determine what materials make up the largest portions of the facility's waste stream. These materials can be the focus of the first-year waste prevention and recycling goals. Remember, less waste materials means less money spent on disposal fees. Add additional materials or new goals once the original goals have been reached.

A strategy for achieving the program goals is to involve staff in the program design and implementation. The more involvement employees have in the program, the more they will participate. Also, keeping staff informed of the progress toward the program goals

helps to keep them engaged in the process. *See Appendix D for the Paper Waste Prevention and Reuse Tips.*

## 6) Select a Recycler

When selecting a recycler, choose one that provides high-quality, dependable service. The recycler should be familiar with service needs and how to provide service tailored to the facility. Having an efficient collection service saves time and money on employee and custodial labor.

To compile a list of recyclers in the geographic area, contact the local solid waste office to see if they maintain a list. Also look in the yellow pages under "recycling," "waste paper," and/or "scrap dealers." In addition, ask waste haulers if they provide recycling services. **Please note:** Not all recyclers collect all types of recyclables. Facilities that generate multiple materials for recycling may have two or more recycling service providers.

## SPEAK THE LANGUAGE

Before contacting recyclers, it is important to become familiar with their language. By using common industry terms when speaking to recyclers, communication is more effective and a comparison of responses can be made. Following are a few key terms to know:

- **Tipping Fee** (also known as a *processing fee*) is the fee that the recycler charges based on the amount (usually tons) of material that is recycled (or tipped) at the transfer station or Materials Recovery Facility (MRF).
- **Pull Charge** is the charge for removing the dumpster.
- **Rental Fee** is the cost of using the dumpster for a specified length of time.
- **Cubic Yard** (or *yard*) is the most common unit for measuring the volume of solid waste. A cubic yard is equivalent to 202 U.S. gallons.
- **Tons** are the common measure of weight for waste materials – a ton is equal to 2,000 pounds.
- **Density** of waste refers to the weight per unit of volume (e.g., the estimated weight of food waste is 412 pounds/55 gallon drum). *See Appendix E for Densities of Common Recyclable Materials.*
- **Dumpster** (also *container, box, or can*) is a large container for storing trash and recyclables outside. Dumpsters are sized by the cubic yard, and can range from 1- 40 yards.
- **Compactor** is a dumpster with an internal mechanism that compacts materials to allow for greater storage in a single unit. These are commonly used for cardboard.
- **Toters** are wheeled containers for collection and storage of recyclables, typically holding 60 - 100 gallons.
- **Commingled** is a term used to describe unlike recyclables collected in a single recycling bin. *Commingled containers* are often used for aluminum, plastic and glass, and beverage containers.

If a term used by a recycler is unfamiliar, don't be afraid to ask for clarification. This  
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### Large Bin Options

- Toters (carts-on-wheels)
- Reusable woven-plastic bags or clear trash bags
- Large laundry hamper or similar type bin
- Large, durable loading dock-type plastic bins or bags
- Compactor unit (20 or 40 yard)
- Trash-type dumpsters

enables a comparison to be made of recycler responses.

### QUESTIONS TO ASK RECYCLERS

- What types of materials can be collected?
- Is a minimum amount required for a pickup?
- Is there a charge for collection? How much? How is the charge fixed (per haul, by volume, or a standard fee)?
- Is a contract required for service? What are the terms and contract duration?
- If the trash hauler and recycling service provider are the same, can the current trash contract be re-

negotiated to reflect a lower volume of trash? Are recycling services offered at no-cost or reduced rates?

- Are revenues paid for high-grade paper or other materials in large volumes?
- Can records be provided on the amount of material collected for recycling?
- How are material(s) collected?
- Is collection regularly scheduled or on-call?
- Are collection and storage bins provided? How many? How big are they? Is there a rental fee?
- Is cardboard acceptable with other types of paper?
- What is considered a contaminant? How is contamination handled?
- Are confidential materials destruction services offered (e.g., paper shredding and computer hard drive wiping)?
- Is help provided to organize and promote the program to employees?

## 7) Design an Efficient Recycling Collection & Storage System

Once the types and volumes of materials to be recycled have been identified and the recycler selected, designing the recycling collection and storage system is the next step. A successful recycling program is simple, employee-friendly, and only requires a slight modification in work habits. The key components of the system include: deciding on the type, size, and placement of collection and storage containers to be used; obtaining the containers; staffing the program; training employees on how the program works; and encouraging employee participation.

Determining available space near the points of material generation is the first step to visualizing the collection and storage system. The quantity of containers needed depends on the size of the operations and volume of materials generated. The available space for the containers determines the type and size of containers to be used (e.g., a small bin at each desk in the office, larger bins near the copier to collect paper, and larger bins in the staff lounge and near vending machines for bottles and cans). Depending on the size of the operation, it may also be necessary to have centrally-located containers to empty the smaller containers into. One type of container often used in centralized locations is a toter.

These wheeled containers make it easy to move material to the designated recycler pick up

location.

### TIPS FOR EFFICIENCY

- Strategically place the collection containers to minimize employee and custodial time and labor—close to the points of material generation.
- Size recycling containers for optimizing storage in available space, minimizing need for emptying, and avoiding worker-safety issues.
- Consider larger collection containers in central locations to conveniently serve the greatest number of employees (e.g., copier room, lounge area, mail room, stock room, and hallways).
- Always place trash cans next to recycling containers. Clearly label all containers so that employees can readily distinguish between the receptacles to minimize cross contamination. Color-coded containers perform this function well.
- Build the system to minimize multiple handling of collected materials and to reduce labor costs.
- Use toters to make the material transfer from one location to another easier. For larger companies, a baler or compactor may also be beneficial in minimizing required storage space and garnering a higher market value. If a main storage area is utilized, fork lifts or pallet jacks may also be useful in stacking the bales.
- Remain flexible while implementing the collection program because collection container locations may need to change to be more effective and efficient.

### DESK-SIDE BINS

In most cases, the smaller desk-side bins are not offered with recycling services, but are extremely important to have at each desk in an office. Cardboard boxes, crates, or trash receptacles labeled *For Recycling Only* can all be used as recycling bins. Some facilities prefer designer containers that fit neatly into tight corners or match the building decor. These types of containers can be custom-made or purchased from office and janitorial supply firms.

A typical office generates 1.5 pounds of recyclable paper per employee each workday.

### PRIMARY STORAGE CONTAINER

The primary storage container is the last place materials are consolidated before the recycler picks them up. Depending on the volume of material, a dumpster or toters are used for this purpose. Most recyclers provide reusable bags, toters, and/or dumpsters as part of their service. This depends on the type of collection vehicle they use and the volume of material to be collected. If the bins are not provided, consult with the recycler prior to purchasing them to make sure they can service the type of bin being considered.

Storage containers are usually located outside the building. Locking outside bins (or the storage area) prevents scavenging of the recyclables, as well as, accidental disposal of trash in the recycling bins. For smaller buildings, storage may be on a loading dock, in a basement or a hallway, or other out-of-the-way location. Exterior space near existing

trash collection bins may be appropriate. A parking space can also be used. If space is limited, ask the recycler to help select the main storage site.

Nonprofit organizations sometimes offer collection services that better fit small businesses or facilities with limited storage space. These organizations often collect materials from inside the facility, eliminating the need to have outside bins or transporting bins outside for collection.

If the volume of collected materials makes self-transporting more cost-efficient, check with the town recycling office to see if the facility is eligible to use the municipal transfer station or drop-off center. Also ask if a fee is charged to use the service and the specific requirements for accepting materials (e.g., cardboard must be flattened and tied in three-foot bundles).

## LABELS & SIGNAGE

Visible and clear signage on all recycling containers and in the recycling area encourages recycling and reduces contamination. Container signs specifying the type of materials collected work best. This helps prevent employees and visitors from using the recycling containers as trashcans. Labels and signs that specify the *Do's* and *Don'ts* or *Acceptable* and *Not Acceptable* may also be beneficial. In addition, *No Trash* signs may need to be placed on or near the recycling containers. See Appendix C for sample signage.

### Selecting An Outside Storage Site

- Is the storage site large enough?
- Is it easily accessible for transport of in-house containers or collected material?
- Is a freight elevator, if necessary, easily accessible at the site?
- Can the site or bin be locked?
- Is there easy access for convenient pickup from the site?
- Is the storage area sheltered from the weather?
- If indoors, is the site protected with sprinklers? Check for local fire department requirements.
- Clearly place large signs on the collection bins and in storage area to designate them as **Recycling Only**. Also post **No**

## STORAGE OPTIONS FOR COMMON RECYCLABLES

**Cardboard** – There are many options for cardboard collection and storage. The key to successfully recycling this material is to make sure it stays dry. Set up a designated storage area that is near enough to the point of generation and keeps it out of the elements. A dumpster for flattened cardboard boxes is ideal and may pay for itself.

Large volume generators should consider a compactor unit or baler. Smaller generators may want to consider working with a hauler that collects loose or bundled cardboard. Restaurants and cafeterias need to find out from the local health department if there are any regulations for storing cardboard. Other options can be discussed with the recycler.

**Paper** – It is most effective to place a paper recycling bin next to each employee. Since the majority of an office employee's waste is paper, many offices simply place their trash receptacles into recycling bins. Cardboard boxes or similar receptacles



Alternatively, recycling bins can be purchased through most custodial suppliers.

Printers and other companies that generate a significant amount of high-grade white office paper should consult with a recycler about collecting this paper separately. Separated, high-grade materials bring the opportunity of earning revenues. When separating high-grade papers for recycling, it is extremely important to keep this paper separated from other grades. This minimizes contaminants and maintains the market value. If the recycling program includes collection of other types of paper-- junk mail, colored ledger, file folders, etc. These paper grades may be collected together as "mixed paper." Talk with the hauler about available recycling options for all the different types of paper generated at the facility, because it may be a significant portion of the waste stream and another opportunity to reduce the garbage dumpster size or hauling requirements.

Many offices have their confidential papers shredded. If the shredding is done in-house, talk with the recycler about a way to contain the material for recycling. Private shredding companies typically recycle the material, but this should be verified and required. Also consider asking the recycler to provide weight slips or an estimation of the materials recycled (on a quarterly or annual basis) for tracking and reporting purposes.

**TIP:** Eliminating cardboard from the trash dumpster decreases the dumpster size or the number of hauls needed. These savings can be used to pay for the cardboard dumpster.

**Returnable Cans and Bottles** - These commodities are valuable in states with bottle bills. Therefore, special effort should be made to capture them. Place recycling bins for beverage containers in convenient, centrally-located areas (i.e., employee lunch areas, near vending machines, and foyer areas). A well-marked recycling container should be placed next to every trash container to make recycling as convenient as trash disposal.

If collecting redeemable bottles and cans isn't a priority for the facility, offer the possibility to staff who may be interested in facilitating this recycling effort; or partner with a local organization, charity, or company to run the returnable recycling program.

**Other Recyclable Beverage Containers** - Aluminum, glass, steel, and plastic cans and bottles are additional materials with established markets. These materials can easily be collected near points of generation, in clearly marked containers.

**Electronics** - Electronic scrap is a quickly growing and easily recyclable category in the office waste stream. If the facility generates a small amount of electronic scrap, contact the municipal recycling office and inquire if they collect electronics. If they do not collect include electronics in the town program or if the facility generates a lot of electronic scrap, contact an electronics recycler. The International Association of Electronics Recyclers maintains a Web-based [listing of recyclers](#).

**Wood Pallets** – Pallets are commonly made of hard wood and oftentimes disposed of after

one use. Alternative options for these underutilized commodities include: requiring vendors to take back their pallets for reuse on their next delivery date, making them available to residents and local companies, and finding a pallet recycling company to take them.

To manage the used pallets, set up a system that minimizes the need for handling them--stack for a fork lift to move and store close to the recycler pick up location.

### **OFFICE COMPLEX OR SHARED DUMPSTERS**

Facilities that share trash dumpsters can also share primary recycling containers to reduce collection charges. Be sure to work together to reduce waste disposal needs by maximizing the recycling programs. If trash collection services are not shared with another facility, it may still make sense to share recycling containers (e.g., cardboard and/or paper recycling containers).

### **8) Staff the Recycling Program**

#### **EMPLOYEE-ASSISTED COLLECTION**

Most employees can easily empty their personal desk-side recycling container into the centrally-located containers. Since the recycling containers do not have garbage in them, they do not need to be emptied until full. This task can become a regular part of employee duties and should not be a burden.

#### **CUSTODIAL INVOLVEMENT**

Recycling programs work best when integrated with existing custodial services. Custodial service providers can simply and cost-effectively collect materials from centralized containers and transfer them to the primary storage container. It is important to note that while recycling may require collection of paper and other separated recyclables; the same amount of waste is being collected. Since garbage is not mixed in with the recyclables, these bins only have to be emptied when full. Thus, on a regular basis, the duties of the custodial service are actually reduced until they need to empty the recycling collection bins into the primary storage container.

Some facilities use an alternating collection system in which the custodians collect the recyclable paper one night and the trash the next. To avoid possible contamination issues, simultaneous collection should be considered only if the recovered paper can easily be kept separate from the trash. The use of different color collection containers (one for trash and one for paper) or bags works well (clear bags for recyclables) to minimize these errors.

By involving the custodial service in the planning stages of the recycling program, it helps them to gain insight and cooperate in the collection process. Work with the personnel collecting the materials to design a collection system that does not add significantly to their general duties. If using an outside custodial service, be sure to add recycling duties when renewing the contract. Remember when negotiating a custodial contract, custodians are not carrying out additional trash. The materials are just separated differently and require a new system.

If the custodians are not involved in the recycling collection, make sure they are amply informed about the program so they don't accidentally mix the paper with the regular trash and throw it away. Early involvement and orientation of all custodial staff is essential, regardless of their role in the collection.

## **POINTS TO CONSIDER WHEN DETERMINING AN IN-HOUSE COLLECTION SYSTEM**

- Which staff can best handle the recycling consolidation duties?
- Are the custodians in-house or contract?
- How large is the custodial staff that services the building?
- Are there daytime and nighttime shifts?
- How are the custodial duties divided? Can recycling be integrated into the normal custodial routine?
- Is it necessary to add recycling services into the existing custodial contract?
- Are there temporary personnel or other employment agencies (e.g., students and disabled adults) that can provide part-time personnel to consolidate the recyclables?

## **9) Implement the Program**

### **EMPLOYEE TRAINING**

Information is the key to a successful recycling program. Employees participate, if they are well informed about the program and its benefits. Employee training and cooperation is the principal component to a cost-effective waste prevention and recycling program. Additionally, employees are more likely to participate if they understand that top management supports the program.

People may be reluctant to adopt new waste prevention and recycling habits. Be sure to praise staff for their efforts. Celebrate the gains made through the waste reduction and recycling program. Consider implementing an incentive program for employees whose suggestions or actions directly contribute to successful materials management ideas. A thank you letter posted on the employee bulletin board, monetary rewards, or time-off for ideas resulting in savings provides positive reinforcement.

Encourage all employees, including management and custodial services, to attend a brief informational session about the program. The sessions can be incorporated into a regular staff meeting or as a special meeting. The containers, collection system, *Do's and Don'ts*, and the program benefits can be explained in these sessions. Ask the recycler to assist with the training and be on hand to answer any unforeseen questions.

Such training has proven to be more effective than just written memos in achieving both higher levels of participation and less confusion about the program details. Be sure to distribute a program kick-off/training memo that includes a list of materials to be recycled. Include waste prevention and recycling program information in new employee orientation, and provide a brief training to all new employees.

### **A SEVEN-STEP PARTICIPATION PLAN**

- 1) Involve employees in program planning and implementation and provide all new employees with a basic training sheet about the program.
- 2) Keep the program simple and convenient—the fewer changes people have to make in their daily routines, the greater the program's success. Ask for suggestions regarding program efficiency and ease of participation, when implementing the program and on a regular basis at staff meetings.
- 3) Put large and clearly understandable signs above and on the recycling collection containers explaining how materials are to be prepared for recycling.
- 4) Focus program trainings and overall program responsibilities on all levels of staff, including management.
- 5) Develop a reward or incentive program, such as *Recycler of the Month*.
- 6) Make waste reduction and recycling part of the job.
- 7) Provide on-going publicity. Post or announce the amount of materials reduced and/or recycled each month, as well as the resulting environmental benefits. Keep messages short, positive, and interesting.

### **Program Kick-Off Memo & Event**

Send out a program kick-off/training memo signed by senior management to announce the program start. If the memo is not from senior management, be sure to indicate their support to give the program additional credibility. A kick-off event (or other special function) is another way to encourage employee interest and investment in the waste prevention and recycling program. Other promotional ideas to encourage employee participation include: emailing a short survey to all employees before starting the program to gauge their interest in recycling and to solicit program

#### **Memo Content**

- Description of program.
- Reasons for recycling and benefits of program to facility and community.
- Clear explanation of materials to be and not to be collected for recycling.
- Details of recycling separation and collection procedures.

ideas and volunteers; or holding a contest to design a program logo, motto, and/or mascot. See *Appendix G* for a sample kick-off/training memo.

### **10) Understand the Dollars and Cents of Waste Management**

Understanding the costs and revenues of materials management may take some investigative work, yet it is a critical component of controlling costs and finding opportunities for savings. Waste reduction and recycling reduces disposal needs, thus avoiding disposal costs. As garbage disposal costs continue to rise, cost avoidance savings should become more and more apparent. Implementing waste prevention and recycling strategies now is an investment in future savings.

Following are some details on costs and savings that can be anticipated. *Also, see Appendix H for a sample recycling budget form.*

### **MATERIALS MANAGEMENT COSTS**

Costs generally fall into the categories of supplies, labor, and contracted recycling services. These costs depend on a range of factors, including: facility location, available recyclers, and municipal recycling opportunities in the local geographic area.

**Supplies** - Materials that may need to be purchased or rented include: recycling bins (small and large), totes and/or dumpsters, recycling signs and posters. The initial cost for desk-side and large recycling containers depend on the volume of materials generated and the number of containers needed.

**Labor** - Labor is essential for program set up, monitoring, and evaluation; staff training; emptying recycling containers into larger containers; preparing recyclables for pick up or self-transport; and public relations.

**Contracted Recycling Services** - Costs associated with services provided by recyclers may include toter or dumpster rental, pull charges for removing the recyclables, a fuel surcharge, and tipping fee. The recycling tipping fees depend on the facility location and the types and volumes of materials recycled. Funds that may be received from the sale of high-grade or high-volume recyclables can offset other costs. It is important to remember that even if there is a charge for recycling, in most cases, it is less than a disposal fee.

## REVENUES

**Avoided Disposal Costs** is a term used to represent the amount of money that is **\$AVED** by **not** disposing of recyclables as trash. Haulers charge customers a disposal fee for each ton (or pound) of waste disposed. Thus, it is important to include the avoided disposal cost as part of the savings that result from recycling. For example, if ten tons of cardboard is recycled and the hauler charges \$75 per ton trash tipping fee, then the avoided disposal cost is \$750 (10 tons x \$75/ton).

**TIP:** Some haulers are less precise in applying disposal fees. They may estimate the number of tons in a dumpster rather than actually weighing the material. As a result, credit may not be given for a reduced amount of waste disposed. Work closely with the hauler to ensure correct accountability, and be sure to ask how the weights paid for are calculated. If possible, check how full the dumpster is before it is taken away. If it is only partially full, this may indicate that a smaller dumpster can be used, which may also decrease rental and disposal fees. Being a careful waste service consumer may help the facility save on waste disposal costs.

**Market Value & Deposits** – The markets for recyclables fluctuate as all materials markets do. It is important to know the market trends for the materials generated, so that a fair market value may be obtained from the recycler. If in a bottle bill state, the bottle deposits should also be recognized as a revenue source.

Information on market trends may be found on the different recycling trade association Web sites. A listing of the trade associations may be found on NERC's site at the [Market Resources for Recycling Industries](#).

### 11) Evaluate the Program

#### ONGOING PROGRAM MONITORING

Ongoing monitoring is an important component of a successful waste prevention and recycling program. This makes it possible to identify program components that work and those that don't, and to come up with solutions for these issues. Also, keeping accurate records on the amount of materials being reduced and recycled provides a system for tracking the facility's progress. Additionally, purchasing records can show reductions in supplies.

Close monitoring of the materials reduced and recycled provides greater understanding of the facility's disposal needs. It is therefore up to the facility's decision makers or recycling team to determine how successful the program has been at reducing trash. Ask custodians to monitor the primary trash containers to determine how full these are on trash collection day. Fewer and smaller trash containers or fewer pick ups may be possible. If the facility trash service is under contract, be sure to check the expiration date to renegotiate appropriately. Remember, reduced trash disposal helps a facility's bottom-line.

## **ANNUAL EVALUATION**

Annual program analysis and evaluation is another important component of the program. This process assists with measuring the program's progress and its impact on the facility and the community. This is also a good time to review the program goals and decide on additional materials to be targeted by the program. Waste prevention can be difficult to measure unless additional waste assessments are compared to the initial, baseline assessment conducted prior to the program's start. As this process is ongoing, adopting a plan to conduct waste assessments at regular intervals can help the facility continually improve its efforts.

The environmental impacts of the program may also be measured by inputting the tonnages of materials prevented from disposal and those recycled into the [Northeast Recycling Council's Environmental Benefits Calculator](#).

### **12) Marketing the Program**

Promoting the program's success keeps staff informed of the progress made and educates the public of the facility's commitment to the environment. This promotion can be in the form of monthly announcements emailed to staff or posted on the employee bulletin board, and quarterly press releases sent to the local press. This type of promotion can be instrumental in building a positive public image.

## ***III. CLOSING THE LOOP***

Recycling is not complete until the collected materials are remanufactured into new products, reintroduced into the marketplace, and purchased. Markets for recyclable materials remain steady or improve, if products containing recycled materials are purchased. Ordering, purchasing, and using supplies made from recycled materials is everyone's contribution to ensuring that a market exists for the recyclables collected.

Most paper, sanitary products, and other suppliers carry high quality products made from recycled materials. Some of these include: copy machine and printer paper; tissue paper; office supplies; trash bags, containers, and other sanitary supplies; outdoor furnishings; decks; plastic speed bumps and curb stops; building materials constructed from recycled glass, paper, wood, and/or, plastics; and more. To find vendors that carry products containing recycled content, ask your current suppliers, contact the state Environmental Agency, and search on recycling trade association Web sites.

### **Why Buy Products with Recycled Content?**

- It creates a demand for the materials that are collected. That demand makes products with recycled content more valuable and offsets the cost for recycling collection and processing.
- It helps the regional and national economies, because it supports domestic manufacturing. This helps to reduce the national debt and balance the country's trade deficit by using locally-generated resources for manufacturing and export.

- It preserves the country's resources and reduces pollution.
- It promotes a commitment to the environment.
- It creates a positive public image.

### **How to Buy Products with Recycled Content?**

- Establish a procurement subcommittee of the waste reduction and recycling team to help design and implement the procurement plan.
- Review the facility's purchasing specifications to eliminate any prohibitions or limitations against recycled-content products.
- Evaluate and revise other potential obstacles to purchasing recycled-content products (e.g., setting brightness levels for paper or requiring that products be pre-tested for a set number of years).
- Adopt a facility-wide policy that establishes a preference for recycled-content products. Purchasing policies can set preferences for recycled content (e.g., copy and printing paper should contain at least 30% post-consumer recycled content).
- Look at minimum recycled content standards set by other businesses, schools, or governments.
- Go beyond just purchasing recycled-content paper and look at buying a variety of products.
- Work with vendors to test products that are acceptable for use at the facility and do not impact equipment warranties.

When designing a procurement program, consider the following:

- Types, volume, and use of materials purchased.
- Level of knowledge purchasing staff has about recycling and recycled-content products.
- Participate in cooperative purchasing with other facility's to reduce costs.
- Request a product list from suppliers. Many paper and sanitary product suppliers offer products containing recycled material.
- Ask vendors to provide information on new products that reduce waste or are made from recycled materials.
- Purchase paper products made from post-consumer recycled materials—made from previously used paper. These include: paper towels, toilet tissue, napkins, placemats, bags, menus, office paper and more.
- Test the recycled-content material to determine its replacement ability for products currently purchased.
- Promote "buy recycled" throughout the facility.

Visit the NERC Web site for more information on [environmentally preferable purchasing](#).

## ***APPENDICES***

**Appendix A. Sample Waste Prevention and Recycling Policy**

**Appendix B. Waste Assessment Instructions**

**Appendix C. Waste Assessment Sheets**

**Appendix D. Paper Waste Prevention and Reuse Tips**

**Appendix E. Densities of Various Waste Materials**

**Appendix F. Sample Recycling Area Signage – Containers and Office Paper**

**Appendix G. Sample Kick Off/Training Memo**

**Appendix H. Sample Recycling Budget Form**

## **Appendix A. Sample Waste Prevention and Recycling Policy**

The owners, management, and staff of (Fill in name of establishment) are committed to helping protect our environment, conserve landfill space and resources, and controlling greenhouse gas emissions. We manage the materials used in the facility by implementing cost effective waste reduction and prevention, reuse, recycling, composting, and buy recycled products programs.

## Appendix B. Waste Assessment Instructions

### Measuring Waste

A waste assessment is a systematic examination of a facility's waste disposal system.

A waste assessment is used to examine:

- Current waste generation--composition, volume, operations, processes, and sources;
- Existing waste management practices-- disposal, waste prevention, and recycling; and
- Waste management costs.

A waste assessment establishes baseline information to identify areas where cost savings can be achieved through waste prevention, recycling, and reduced purchasing. For facilities that already have a recycling program, conducting a waste assessment can help determine the effectiveness of existing efforts and point to additional materials to be recycled.

An effective waste assessment can be as simple as a "walk-through" of the facility. It can also be a comprehensive look at waste—sorting and weighing all waste for a period of time. This in-depth process provides the most information on waste generation and is valuable for facilities that have a wide range of waste materials.

### WALK-THROUGH ASSESSMENT

Any waste assessment, whether simple or in-depth, begins with a walk-through or visual overview of the facility. For many offices, schools, and small businesses, a visual waste assessment is really all that is necessary. For larger facilities, a walk-through of the premises will help to lay out a plan for a more comprehensive waste assessment.

A walk-through waste assessment will:

- Identify waste streams and volumes.
- Assist in determining key personnel who will be valuable in helping to identify waste streams and sources.
- Identify potential waste prevention measures.
- Establish and help prioritize materials to be collected in a recycling program.
- Determine the program design and collection logistics.

### Step 1. Preparing for the Walk Through

- Appoint a coordinator or recycling team to visually inspect some or **all** of the trash cans

### Calculating Office Paper Generation

Step 1: Multiply the number of employees by 0.5 lbs. (recyclable paper/employee/day). This will be the total recyclable paper/day.

Step 2: Multiply the pounds of recyclable paper/day by 240 (working days/year); then divide by 12 (months per year).

Step 3: Divide this figure by 2000 (lbs/ ton) to get the total tons of recyclable paper/month generated.

Step 4: Set a paper recycling goal. Take the tons of recyclable paper/month generated (above) multiply by the recycling goal to get tons/month paper to be recycled.

in the facility. See *Recycling Makes Sen\$e* in the toolkit for information on forming a recycling team.

- Plan to conduct the walk-through near the end of the day (or after closing) and prior to custodial collection of garbage and before the facility dumpster is emptied by the hauler.
- Purchase gloves for each member of the recycling coordinator or team.

## **Step 2. Conducting the Walk-Through**

- Look closely into all work area trash cans and record types and volumes of waste on the waste composition sheets to estimate the percentage of each material type found. It may be necessary to look more closely in the receptacles by moving materials around to see what is underneath.
- Note the origin of generation (e.g., front office, copy room) and identify waste-producing activities and equipment. Record all information on the waste assessment sheets.

**TIP:** While conducting the walk-through, note the types of trash cans used in each work area. Observing the types and locations of waste containers will assist in determining the style, color, number, and placement of recycling bins. Of particular interest will be work areas with heavy material generation (e.g., copy machines and print terminals). Also assess space availability and potential locations for recycling containers. Larger facilities may need to accommodate a compactor or baler, and/or space for gathering materials.

- Include employee lounge areas, cafeteria or kitchen areas, vending machine locations, stock rooms, storage areas, and dock areas.
- Include all shipping and packaging materials (e.g., boxes, paper, stretch wrap, polystyrene packaging, pallets, spools, drums).
- Include food waste, tires, scrap metal, demolition debris, and/or production scrap, electronic scrap, toner and printer cartridges, and hazardous materials.
- Examine and record all by-products and wastes from different operations or processing areas.
- Consult with department managers and custodians to determine if the waste streams fluctuate during the day, week, or at different times of the year.
- Identify the location of outside waste collection dumpster(s), additional space available near dumpsters for placement of outside recycling containers (e.g., dock areas). Also, include any existing recycling containers.

## **Step 3. Asking Questions**

- Work with the department manager in each area to gather complete information on why things are done in a particular manner and to identify potential alternative methods of reducing/handling wastes.
- Discuss waste generation with custodians, officer managers, and others who may also have valuable input, including any fluctuations in generation that occurs.
- Determine how trash is removed from work areas and transferred to collection dumpster (employees, custodial employees, or contracted service). Consult with the facility waste hauler to get actual weights or volumes of the garbage generated at the facility. Determine how full the waste containers are prior to being pulled for disposal.
- Obtain current recycling tonnages, revenues earned, and a copy of the recycling contract from the recycler.

## COMPREHENSIVE WASTE ASSESSMENT

A comprehensive waste assessment provides a facility with a detailed examination of all parts of its operation and origins of waste—a walk through and waste sort. Facilities with multiple waste streams can benefit from knowing exactly what is in the waste, sources, weights and volumes. Multi-tenant office complexes can learn about the waste management needs of its tenants. This exercise can also be educational for students to experience at school. If a comprehensive waste sort is impractical, a departmental waste sort combined with a walk-through assessment, can provide a snapshot of waste management needs.

### Step 1. Preparing for the Waste Sort

- Obtain supplies.
  - Rubber gloves for the recycling coordinator or for each recycling team member,
  - Containers or plastic bags for weighing the sorted materials,
  - Scale for weighing bags or containers of sorted materials, and
  - Tarp or plastic sheet for spreading out the materials and sorting by waste types.
- Arrange with custodial services to gather a day's worth of garbage (or series of days) and place in a designated waste sort location. Garbage should be collected in bags and labeled to indicate the point of generation. If containers without bags are used, label the containers.
- Email an announcement to all employees to inform them about the waste assessment.



### Step 2. Conducting the Waste Sort

- Record the point of generation for each garbage bag or container.
- Spread the material out on the tarps and sort by type (e.g., paper, beverage containers, food waste, cardboard boxes, production waste, etc.).
- Weigh all the waste and record on the waste assessment sheets. Schools may want to leave materials on tarps once weighed to create a visual “display” of results for the students.

**TIP:** If conducting a waste assessment in a facility with a large amount of food generation, advanced sorting may be done at the time it is disposed. This allows for a cleaner assessment. This can be accomplished by putting out a range of trash cans lined with plastic bags and labeling them as: “food waste”; “paper products”; “plastic bottles”, etc.

## Appendix C. Waste Assessment Sheets

<b>Name of Facility:</b>		<b>Key Contact:</b> Phone extension:		Date:
Administrative:		Shipping/Receiving:	Production:	Other:
<b>Facility/Building</b> Own    Lease    Sole-Tenant    Multi-tenant		<b>Property Management Contact/Phone:</b>		
<b>Custodial service</b> In-house    Covered in lease    Contracted		<b>Contact:</b>		<b>Phone:</b>
Frequency of in-house garbage collection:		daily	every other day	weekly
<b>Waste Hauler:</b> In-house		Contact: Municipal service	Phone: Contracted/Private hauler	
<b>Container location; size (gallon or cubic yard); type; and number of garbage dumpsters (outside bins)</b>		<b>Frequency of refuse collection (e.g., 1 pick-up/wk)</b>	<b>c. Percent Full</b>	
#1:		#1:	#1:	
#2:		#2:	#2:	
#3:		#3:	#3:	
#4:		#4:	#4:	
a. Total yards or gallons (size x number of containers): <i>Ex. #1: behind building, 4 cubic yard dumpster.</i>		b. Collection frequency =	c. Average percent full	
<b>Estimated Monthly Waste Generation</b>				
a. (total yards or gallons) x b. (collection frequency) x c. (% full) x 4.33 = estimated monthly waste generation <i>Example: 4 cubic yards x 2 containers = 8 cubic yards (a) x 2 pick-ups per week (b) x .90 (c) x 4.33 = 62 cubic yards generated per month</i>				
Is garbage compacted? Size of compactor:	Is compactor owned? _____ Or leased?	Does the building have a loading dock? Extra room for a recycling bin?		

**A. CURRENT WASTE MANAGEMENT COSTS<sup>2</sup>**

	Monthly (\$)	Annually (\$)	Description
Container/compactor rental/lease (if not owned)			
Hauling			
Disposal (if not included in hauling)			
Confidential destruction costs			
Equipment costs (compactor, baler, etc., if owned)			
Vehicles/fuel (If self-transported)			
Other			
Custodial labor (in-house or contracted)			
<b>Total monthly disposal charges</b>			

**B. CURRENT RECYCLING EFFORTS (formal or informal)**

(List tonnage collected per week/month, if known.)

White paper	Other paper	Electronics	Other:
Mixed paper (separated)	Aluminum cans	Printer & toner cartridges	Other:
Mixed paper (w/white)	Plastic bottles	Scrap metal	Other:
Cardboard	Other food/beverage containers	Pallets	Other:
Newspaper	Other Plastic:	Other:	Other:

**Description of waste prevention and recycling efforts currently in place:**

Recycling company/contact:

Is any paper or cardboard baled or compacted?

Is there a separate container/roll-off for scrap metal?

<b>NET Costs (costs minus revenues) of existing recycling program (use the formula for waste management costs above to determine recycling costs.)</b>	Monthly (\$)	Annually (\$)	Description

<sup>2</sup> If possible, determine container rental charges vs. hauling and disposal charges; ask your hauler if you do not know.

**WASTE SORT SHEETS**

**Department Name:**

**Department Activities:**

**Contact/Phone extension:**

<b>Material Type</b>	<b>Percent Of Total</b>	<b>Estimated Volume</b>	<b>Currently recycled?</b>	<b>Source/Description</b>
<b>Office Area/Classroom Paper</b>				
Office, printing paper ("high grade")				
Writing paper, tablet paper				
Envelopes; colored paper; junk mail				
File folders, manila envelopes				
Magazines/catalogs/directories				
Newspapers				
Books/telephone books				
Shredded documents				In-house or contracted?
Boxboard/paperboard				
Other paper—				
Other paper—				
Other paper—				
<b>TOTAL OFFICE PAPER</b>				
<b>Office Equipment/Supplies</b>				Note: # of machines, age, lease
Cell phones				leasing include end-of-life recyc
Computers & peripheries				
Copier				
Fax machine				
Microwave				
Printers				
Office Machine Cartridges				
Rechargeable batteries (nickel cadmium batteries)				
Button batteries				
Other—				
Other—				

Material Type	Percent Of Total	Estimated Volume	Currently recycled?	Source/Description
<b>Packaging/Shipping/Receiving</b>				
Corrugated cardboard				
Reusable boxes				
Waxed cardboard boxes				
Film/stretch wrap/shrink				
Polystyrene foam blocks (EPS)				
Polystyrene packing peanuts				
Bubblewrap/plaster pack				
Tyvek envelopes				
Plastic bags				
Pallets				
Cardboard cores				
Gaylord boxes				
Drums				(metal, plastic, or fiber)
Spools				
Bulk containers				(metal or plastic)
Totes				(returnable or one-way)
Steel strapping				
Other packaging—				
Other packaging—				
Other packaging—				
Other packaging—				
<b>Employee Lounge/Food Service</b>				
Redeemable cans/bottles				
Aluminum cans				
Glass beverage bottles				
Plastic beverage bottles				
Aseptic packaging (e.g., juice boxes)				
Paper milk cartons				
Other food containers ("clam shells," foam trays, etc.)				
Paper packaging/paperboard				
Plastic bags				
Material Type	Percent Of Total	Estimated Volume	Currently recycled?	Source/Description
Other plastic packaging/cutlery				
Aluminum foil				
Paper cups				
Paper towels/napkins/paper plates				
Food waste				
Grease/cooking oil				
Other—				
<b>Scrap Metals</b>				
Aluminum (nonferrous)				
Brass				
Copper				
Chromium				
Iron & steel (ferrous)				

Aerosol cans				
Construction scrap				
Turnings, process wastes				
Metal fines/dust				
Scrap parts				
Sub-assemblies				
Lead				
Precious: gold, silver, palladium, etc.				
Zinc				
Other metal—				
<b>Lighting</b>				
Fluorescent tubes				
Light ballasts				
High intensity lights				
Other—				
<b>Miscellaneous</b>				
Construction & demolition debris				
Furniture				
Landscape trimmings				
<b>Material Type</b>	<b>Percent Of Total</b>	<b>Estimated Volume</b>	<b>Currently recycled?</b>	<b>Source/Description</b>
Other—				
Other—				
Other—				
Other—				
Other—				

Tips for conducting the waste assessment:

- Depending on the size of the facility, it may work best to complete one waste composition form per section, or floor.
- Bring along scratch paper to record estimates of each trash can looked into. Then average the total the category amounts and record on the form.
- Don't worry about figuring out the percents of all materials, focus on the obvious high-generation materials that can be targeted in the facility's waste prevention and recycling efforts.
- If materials are supposed to be recycled or treated as hazardous waste and are still ending up in the trash, it is important to track the source of generation.
- To get the material volume: Figure out the monthly waste generated (from page one of this form). To get the volume of the material, take the percentage and multiply by the monthly waste generated. For example, if the percentage of total office paper in the waste cans is 50 percent and the facility has 62 cubic yards of waste generated per month, *then 62 cubic yards x .50 = 31 cubic yards.*
- Don't be overwhelmed by the categories and recording all the details. The importance of the exercise is to get a picture of the facility's waste stream. It should provide a facility overview that will contribute to a waste prevention and recycling plan—it does not have to be an exact measurement!!



Millwrap				
Manufacturing scrap				
Other—				
Other—				
<b>Plastics</b>				
Acrylonitrile, butadiene, styrene (ABS)				
Acetals				
Acrylics				
Bags				
Film/stretch wrap/shrink				
HDPE (#2)				
LDPE (#4)				
LLDPE				
MDPE				
<b>Material Type</b>	<b>Percent Of Total</b>	<b>Estimated Volume</b>	<b>Currently recycled?</b>	<b>Source/Description</b>
Nylon				
Other (#7)				
PC: polycarbonate				
PET (#1)				
Polypropylene (PP#5)				
Polystyrene (PS-#6)				
PVC				
Vinyl building products				
Plastic turnings				
Polyurethane (foam, carpet padding)				
Mixed plastics				
Other—				
Other—				
Other—				
Other—				
<b>Textiles</b>				
Clothing				
Factory cuttings				
Rags & wipers				
Work glove & wiper laundering				
<b>White goods/appliances</b>				
With Freon				
Without Freon				
<b>Wood waste</b>				
Clean lumber				
Dunnage				
Landclearing debris				
Railroad ties, utility poles (creosote treated)				
Sawdust				
Other—				
<b>Miscellaneous</b>				
Ash				
Asphalt, brick, concrete				
Carpet				
<b>Material Type</b>	<b>Percent Of</b>	<b>Estimated Volume</b>	<b>Currently recycled?</b>	<b>Source/Waste prevention ideas/Comments</b>

	<b>Total</b>			
Dirt, soil				
Disposable gloves, gowns, etc.				
Disposable diapers				
Imaging films – x-rays, lithographic				
Lab equipment				
Lead aprons				
Mattresses				
Off-spec product				
Other construction/demolition				
Rock, clay, sand				
Rubber (cured, uncured, other)				
Plaster				
Silica/Alumina				
Other—				
Other—				
Other—				
Other—				
Other—				
Other—				
Other—				
Other—				
Other—				
<b>Hazardous Materials</b>				Note if handled as hazardous w
Absorbents & rags (contaminated)				
Anti-freeze				
Disinfectant solutions				
Filters (oil, paint, other)				
Filter cake				
Hydraulic fluids/lubricants				
Mercury containing thermostats				
Mercury containing thermometers				
Mercury switches				
Other mercury containing devices				
Oil				
<b>Material Type</b>	<b>Percent Of Total</b>	<b>Estimated Volume</b>	<b>Currently recycled?</b>	<b>Source/Waste prev ideas/Commen</b>
Paint				
Pharmaceuticals (expired)				
Photographic chemicals				
Sharps				
Sludge				
Solvents/fixers				
Thinner				
Transmission fluid				
Wastewater				
Other—				
Other—				
Other—				
Other—				



## **Appendix D. Paper Waste Prevention and Reuse Tips**

Recycling makes good business sense, but waste prevention and reuse are more cost effective and should be considered first. Preventing waste helps to lower collection costs and reduce unnecessary expenses.

### **REDUCE**

#### **Go Electronic When Possible**

- Use interoffice e-mails in place of hard-copy memos, announcements, and documents.
- Send memos and information to colleagues, customers, and clients via e-mail.
- Store documents electronically rather than in hard copy, whenever possible.
- Edit and proofread documents on-screen and check "print preview" prior to printing.
- Consider installing computerized purchasing and record-keeping systems to keep track of inventory.
- If publishing a newsletter, offer it on-line as an option.
- Send out bid requests electronically and request that responses be submitted in the same manner without extraneous materials.

#### **Centralize Information**

- Post a single copy on bulletin boards or circulate a copy.
- Create a shared, centralized filing system.

#### **Efficiency Saves Time and Reduces Waste**

- Do away with unnecessary forms, and redesign them to use less paper.
- Eliminate fax cover sheets by using a stamp or sticker designed for fax use.
- Fax directly from a computer to reduce unnecessary printouts.

#### **Reduce Mail**

- Cancel multiple subscriptions and keep just one in a company "library" or route it to employees.
- Take steps to reduce unsolicited mail.
- Design mailers that avoid the use of envelopes (fold and staple the paper).
- Keep mailing lists current. Remove duplicate names and out-of-date entries.

#### **Make Furniture and Equipment Last**

- Purchase high quality, durable, and/or repairable office equipment and furniture.
- Consider leasing or renting equipment that is used infrequently.
- Purchase remanufactured equipment.
- Perform routine preventative maintenance and follow manufacturer's recommendations on all equipment to ensure longer life.
- Repair, rather than replace, equipment.

#### **Waste Conscious Breaks and Lunches**

- Encourage employees to keep reusable cups, plates, and silverware at their desks, or provide employees with an area to store dishes and silverware.
- Work with cafeteria and food vendors to reduce food and packaging waste by giving customers a discount when they use their own cups, etc.

- Provide condiments, such as sugar and salt, in bulk containers for employees to use.
- Encourage the use of cloth towels instead of paper towels. Ask someone to take the towels home to wash on a regular basis.

## **REUSE**

### **Double-Side (Duplex) Documents and Copies**

- Purchase printers and copy machines that make two-sided copies reliably.
- Recover single-sided sheets of paper for reuse in printing draft copies, for use in fax machines, or as scratch paper.
- Place a tray near the fax machine or printer for placement of single-sided sheets for reuse.

### **Establish a System & Central Location for Reusable Office Supplies**

- Manila envelopes can be reused by placing a label over the old address or used for interoffice mail.
- Set-up a box for reusable file folders. Store file labels next to them.

### **Use Durable, Reusable Products Instead Of Single-Use, Disposable Items**

- Refillable pens.
- Rechargeable batteries.
- Reconditioned toner, copier, and printer cartridges.

### **Give It Away...Don't Throw It Away!**

- Check with local libraries, schools, nursing homes, prisons, etc. to see if they can use old trade journals or magazines.
- Tax-deductible donations of working equipment, supplies, and usable furniture can be made to schools, community groups, or charitable organizations.
- Look at free Web site listings (such as Craig's List or Freecycle) to sell or give away unwanted, usable items. Many local papers also have free or low-cost want ad listings.
- Advertise surplus and reusable materials on a Materials Exchange. See the [NERC Web site](#) for a listing of the Northeast Materials Exchanges.

### **Shipping and Receiving**

- Shred newspapers and reuse for packaging.
- Prior to recycling or disposing, check to see if anyone can reuse packaging materials. Some mail and shipping companies accept peanuts and boxes for reuse.
- Request suppliers use minimal packaging or reusable shipping containers that they take back.
- Work with suppliers to eliminate multiple packaging where possible, such as only having strapping or shrink wrap around shipments, not both.
- Smaller packages may be able to be combined into a single, more efficient size. Match product size to container size to reduce packaging requirements.
- Implement a pallet management system: Reusing and reducing pallets can save companies time and money. Manage pallets for waste reduction by sending them back to the vendor or using a returnable pallet or container system.

## Appendix E. Densities of Common Recycled Materials

Material	Volume	Estimated Weight (lbs)
Cardboard boxes: un-compacted/ flattened	1 cubic yard	50-150
Newspaper: un-compacted	1 cubic yard	360-505
Mixed paper: flat	1 cubic yard	380/755
Glass: whole bottles	1 cubic yard	500-700
Aluminum cans: whole	1 cubic yard	50-70
Plastic soda bottles: whole	1 cubic yard	40
Wood pallets	1 cubic yard	515
Food Scraps	55-gallon drum	412
Municipal Solid Waste: residential/ un-compacted	1 cubic yard	150-300
Municipal Solid Waste: commercial/ un-compacted	1 cubic yard	300-600

Source: <http://www.epa.gov/recycle.measure/docs/guide.pdf> (*Measuring Recycling: A Guide for State and Local Governments*; page 62: "Standard Waste Volume to Weight Conversion Factors")

# Recycle Containers



Please empty liquid & food!

➤ Aluminum (soda)  
cans

➤ Glass bottles

➤ Plastic bottles



Please NO TRASH!!!!!!

# Recycle Office Paper



## YES

- White print/copy paper
- Envelopes (including window envelopes)
- Color paper
- Magazines/newspapers
- File folders
- Junk mail
- Catalogues/telephone books
- Post-it notes

## NO

- Candy/gum wrappers
- Paper ream wrappers (w/plastic coating)
- Paper towels & napkins
- Tissues
- Paper cups/plates
- Self-stick labels & plastic sheet backing
- Plastic of any kind
- Food waste
- Tyvek envelopes

Staples are okay. Please remove paper clips for reuse. No plastic or metal bindings.

**PLEASE NO TRASH!!**

## Appendix G. Sample Program Training and Kick-Off Memo

To: All Employees  
From: {Facility} management

Our facility {insert name} is looking at its waste in a whole new way! We are beginning a waste prevention and recycling prevention, and ask for your support in this effort.

Paper products and beverage containers {insert other recyclables} can now be recycled simply and conveniently. Each office worker will receive a special recycling container in which to place paper instead of throwing it in the trashcan. When your container is full, please take the recyclable paper to one of the nearby “central” collection containers. These containers are conveniently located {list the locations—in the hallway, copy room, mail room, etc.}. The paper that we currently shred will continue to be shredded as usual and will be recycled.

There are also recycling containers with lids and two holes for used beverage containers and metal food cans. They are located in the employee lounge {list locations}. Please rinse the cans and make sure that they are free of liquid and food debris.

Other areas of our facility {insert locations} will have specially designated containers or areas for recycling.

On {insert date}, there will be a brief 15-20 minute training program for all employees. These training sessions will be scheduled every half-hour throughout {the day, the afternoon—depending on the size of the business, or just once}, so that all employees can attend without disrupting business. We will distribute a schedule so that you can attend this important meeting.

The success of our waste reduction and recycling efforts depends on all of us. {insert name} is doing its part to reduce waste and help our environment. Please join us and recycle!

Your insight and comments are encouraged to help improve our waste prevention and recycling efforts. Our company recycling coordinator (team) is available to answer questions or take comments. Please contact {insert name(s)} at {insert extension(s)}.

## RECYCLABLES—WHAT GOES IN THE BINS

### From the Desk and Copy Areas

- Mixed Paper
- All types of white and colored paper
- Printer and computer paper
- Copier paper
- Stationary
- Letterhead
- Envelopes (windows and clasps OK)
- Manila envelopes
- Newsprint
- Magazines
- Junk mail
- Manila folders
- NCR paper



#### **Preparation Tips**

- Staples are okay. Remove and reuse paper clips. Remove metal hangers from hanging files.
- Labels are okay.
- Any color ink is okay.
- No food wrappers or soiled paper.
- The size of the paper doesn't matter. Shredded paper is acceptable.
- Please—no trash or food waste!

### From the Employee Lounge

- Glass, aluminum, plastic beverage containers (soda, water, milk)
- Steel (tin) cans



#### **Preparation Tips**

- Empty all food and liquid. Rinse, if required.
- Lids and labels are okay.
- No polystyrene (Styrofoam) trays or containers, plastic bags, film plastic.

### Other Office Recyclables

- Computers/Electronics
- Toner cartridges
- Cell phones
- Rechargeable batteries
- Reusable office supplies



#### **Preparation Tips**

- Place in specially marked containers located {insert location}.
- Place usable office supplies, envelopes, folders in the supply cabinet.

### Receiving/Warehouse

- Cardboard
- Pallets
- Scrap metal
- Plastic film (shrink wrap)
- Drums
- Spools



#### **Preparation Tips**

- Breakdown and flatten cardboard. Place in marked containers {insert location}.
- Stack pallets {insert location}.
- Separate all scrap metal into marked containers {insert location}.
- Roll up clean film into balls and place into marked containers {insert location}.

## Appendix H. Sample Recycling Program Budget Form

<b>PROGRAM COSTS</b>			
	<b>Monthly (\$)</b>	<b>Annually (\$)</b>	<b>Description</b>
Employee area/central recycling collection bins & totes (one-time purchase, except replacement bins)			
Additional equipment (baler, compactor lease or purchase)			
Janitorial supplies—collection toter/cart, reusable bags (one-time purchase)			
Custodial labor (only if additional requirements)			
Container rental (if any)			
Hauler/collection costs (if any)			
Promotional materials, labor			
Other			
<b>Total start-up or expansion costs</b>			
<b>SAVINGS OR REVENUES FROM WASTE REDUCTION AND RECYCLING PROGRAM</b>			
	<b>Monthly (\$)</b>	<b>Annually (\$)</b>	<b>Description</b>
Disposal cost reduction			
Material supply cost reduction <sup>3</sup>			
Revenue from recyclables			
Other			
<b>Total savings</b>			
<b>NET PROGRAM COSTS</b>			
	<b>Monthly (\$)</b>	<b>Annually (\$)</b>	<b>Description</b>
<b>Net Costs = A (disposal costs) + B (existing recycling) + C (estimated start-up or expansion costs) – D (Savings/Revenues) =</b>			

<sup>3</sup> Savings from internal supply purchase reductions, such as purchasing less copy machine paper, also through material reuse initiatives, or increases in purchase of more durable or reusable products (such as pallets, packaging, etc.)

