



# **Best Operational Practices For Recycling Drop-off Operations**

**Prepared for the  
Illinois Recycling Association**

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**Prepared by the  
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The Illinois Recycling Association is the only collective voice for recycling within the critical waste management issues facing this state; we represent recycling interests at the state level. The Illinois Recycling Association (IRA) is a not-for-profit organization formed in 1980 as the Illinois Association of Recycling Centers, which then changed its name to the Illinois Recycling Association (IRA) in 1990. IRA currently consists of 250 members including municipal, county and state recycling and waste management coordinators, businesses, haulers and processors, not-for-profit organizations, consultants, and manufacturers of recycled-content products.

It is the mission of the Illinois Recycling Association to encourage responsible use of resources by promoting Waste Reduction, Re-Use, Composting and Recycling.

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# Best Operational Practices for Recycling Drop-off Operations

## Why Best Operational Practices

This document is provided by the Illinois Recycling Association (IRA) as a resource to promote professional recycling in Illinois. IRA gratefully acknowledges the Illinois Department of Commerce and Economic Opportunity (DCEO) for funding the development of this guide and its ongoing support of recycling in Illinois. DCEO is the lead agency in implementing waste reduction and recycling programs in the State.<sup>1</sup>

Whether your community is rural or urban, recycling drop-off programs serve an important role in the diversion of materials from the waste stream. Many items are removed from the waste stream for a number of reasons, including materials that:

- Have value and can be sold (paper, aluminum cans, metal, etc.)
- May be hazardous (such as antifreeze)
- Are difficult to handle in landfills (such as tires)
- Take up large amounts of landfill space (such as construction debris)
- Still have usefulness (reusable items)

Drop-off centers provide a valuable community service by offering convenient and cost-effective recycling opportunities for residents, schools and businesses. In rural areas and small towns, drop-off programs may provide the only opportunity for recycling. In other areas, they may supplement curbside collection, especially for those materials not accepted at curb (e.g. often, glass and corrugated cardboard.) Drop-off services provide a recycling opportunity for residents of multi-family dwellings, for those located outside curbside service areas, as well as for those unable or unwilling to pay subscriber fees.

In communities where curbside recycling is offered every other week, drop-off centers provide a recycling opportunity for residents who generate more recyclables than are conveniently collected with bi-weekly curbside collection. Schools, non-profits and small businesses can benefit from being able to take traditional recyclables to recycling drop-off centers.

### About this Guide

Recycling operations vary and may not accept all materials discussed in this guide. The intent is to showcase a range of best management practices applying to a variety of drop-off operations. Some methods or materials mentioned may not be relevant to all operators but will provide lessons and examples from which everyone can learn.

Implementing best management practices or enhancing existing procedures in the operation of drop-off centers will help facilities better meet the needs of customers, provide communities with more efficient and more cost-effective services, reduce environmental impacts, and provide operators with a safer working environment.

This guide is designed to support Illinois counties, municipalities, businesses, and not-for-profit organizations that own or operate recycling drop-off centers by presenting best operator practices that are both recommended and proven effective.

In addition to research conducted for this guide, several recycling drop-off center operators from communities around Illinois, as well as industry representatives, were consulted to provide insights and recommendations.

Drop-off programs provide an effective means to collect materials, including corrugated cardboard, textiles, electronics, used oil and other items not easily served by curbside collection. Recycling drop-off centers may also allow non-profit organizations and schools to raise funds by providing recycling rebates for materials such as white office paper and aluminum cans.

Grants for Illinois recycling drop-off facilities may be available; please see IDCEO's website at for more information: [www.illinoisrecycles.com](http://www.illinoisrecycles.com)

*Communities benefit from a recycling program that accepts as many materials as possible at one site.*

A "one-stop-drop" benefits customers and will encourage greater participation, diverting more from the waste stream. Customers are less likely to recycle and will recycle less overall if they have to take different materials to different locations. Whether collecting traditional recyclables and/or items not included in curbside collection, the drop-off center can practically and effectively capture multiple materials when properly designed and operated.

### Reduce and Reuse *Before* Recycling

Consider including a swap shop area or partnering with a local reuse operation to allow collection of reusable items (see Best Operational Practices: Reuse). Hosting periodic drives or special collection events for items not regularly collected such as reusable household items, hard bound books or bulky items will encourage diversion of these items back into the useful economy, bring more customers to the drop-off center and provide regular publicity for the program.

Drop-off recycling programs offer communities a cost-effective way to capture recyclables and if managed successfully, can result in a relatively high disposal diversion rate. Implementing best operational practices, negotiating workable collection strategies and effective ongoing public promotion will help get new recycling drop-off programs successfully off the ground or allow for more effective operation and expansion of existing programs.

### The Role of the Drop-off Center

Consider the goals for your community and the role the drop-off recycling program plays when establishing or expanding a program. If the drop-off recycling program is supplementing a curbside program to provide recycling opportunity for multi-family dwellings and perhaps schools and small businesses, the same materials as collected curbside should be ideally included in drop-off collection. Curbside programs that collect recyclables every other week may also rely on drop-off recycling centers as a way to provide opportunities for residents to recycle in between curbside collections.

Even as communities with existing drop-off centers move to implement or expand curbside collection services, drop-off operations can still hold a valuable position. By adding materials not previously collected such as, textiles, reusable items or electronics the drop-off center can supplement curbside collection with new or enhanced opportunities for the community.

If drop-off recycling is the primary way recyclables are diverted in a community, "traditional" recyclables will be collected. Markets for traditional recyclables— metal, plastic, glass, paper and cardboard – fluctuate but do exist and can be effectively captured through drop-off programs. Communities in more rural areas and with limited access to material recovery facilities<sup>2</sup> (MRFs) may consider designing the drop-off program in

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<sup>2</sup> A materials recovery facility or materials recycling facility ("MRF" - pronounced "murf") is a specialized facility that receives,

accordance with available markets and materials that will provide the greatest diversion opportunity.

*Contracting for hauling long distance can be costly and will need to be balanced by material revenues.* If the community can provide its own hauling, the type of hauling equipment and containers available will also need to be carefully considered. Recycling centers may also want to consider investing in basic equipment such as a baler or compactor, in order to increase the weight of materials being transported and significantly reduce hauling costs.

Drop-off collection programs can be suitable for collecting both traditional and nontraditional recyclables—from textiles to electronics. When deciding what materials to accept there are several factors to consider:

- End markets: Look at local, regional, state, and even international markets for the materials.
- Materials often excluded from curbside collection:
  - Cardboard is often excluded from curbside collection due to its bulk, but can be effectively collected at drop-off centers (see Paper Best Management Practices). Including cardboard in a drop-off program can also benefit small businesses and schools through pay-back arrangements.
  - Glass also may be excluded from curbside. However, glass can be included in a drop-off program and potentially provide increased market value as glass can be accepted in separate bins sorted by color (see the Glass Best Management Practices).
  - Plastics, including plastic bags and film.
  - Electronics, appliances and bulky metals can be readily handled at a drop-off center.
  - Some communities use drop-off programs to supplement curbside services by collecting items with emerging markets, such as aluminum foil and trays, empty steel aerosol cans, and drink boxes/juice pouches (also called Aseptic Packaging,) and also through special arrangements to accept used paint and paint cans (see Case Studies section.)
- Disposal bans: Consider items which are banned from disposal in Illinois, such as electronics (see the Electronics Best Management Practices). Any collector accepting consumer electronics and/or processor of e-scrap in Illinois must register with the Illinois Environmental Protection Agency and meet the standards/requirements in recent producer responsibility legislation:  
<http://www.epa.illinois.gov/topics/waste-management/electronics-recycling/index>

Adding materials in a recycling drop-off program as a pilot prior to adding or starting a curbside program can also be beneficial. For example, accepting plastic containers, such as tubs or buckets, in a drop-off collection can allow for markets to be explored, help to determine the volumes that are likely to be collected, and serve to educate the community about expanded recycling opportunity.

Whether designing a new program or overhauling and expanding an established one, a plan and goals for the recycling program should be outlined. Consider the following:

- Determine the type of collection system that is best—single-stream, dual-stream, sorted, or a combination system.
- Communities establishing a drop-off recycling program for the first time or opening a new center will need to determine container types—whether trailer, roll-off, traditional dumpster style, compactors, Gaylord boxes on pallets or a mix of these. Will containers be rented from a hauler or purchased?
- A decision on hauling—whether the municipality or volunteers will provide hauling, or if these services will be contracted also needs to be determined.

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separates, and prepares (through baling or other processing) recyclable materials for marketing to end-user manufacturers.



- If the program will collect nontraditional items such as electronics, then enclosed containers, storage sheds, or other protective structures will need to be included in the plan. (See IEPA Link for information on electronics collectors/processors in Illinois <http://www.epa.illinois.gov/topics/waste-management/electronics-recycling/index> )
- Recycling markets and technologies change regularly, so designing or expanding drop-off programs with flexibility in mind is crucial to ensure long-term success.

Designing a drop-off collection site to maximize space and provide program efficiency will minimize costs while allowing for potential expansion. Incorporate creative thinking into best operational practices, and consider the following:

- The most expensive aspect of any recycling program is collection/hauling and transportation; whether collected curbside, through drop-off centers, or both. Hauling fees—labor, fuel, and equipment costs—can add up quickly.
- Design drop-off centers to maximize services that best meet the needs of the community. Evaluate contracts to ensure the community is receiving the best services for the money spent.
- Consider regional partnerships for programs (see the Electronics Case Study).
- Cooperatively purchasing hauling vehicles, equipment and providing services that are cost-shared by multiple municipalities or regional agencies may be more cost-effective than contracting for individual hauling services.

## Collection Systems for Traditional Recyclables

Technological advances in MRF design provide more options for collection of traditional recyclables. Depending on locally-available processing services and markets, drop-off centers can choose from single-stream recycling, dual-stream, sorted or a combination collection system to best meet the needs of the community.

### *Single-Stream Recycling*

In the single stream collection method, unsorted or “commingled” recyclables—all traditional recyclables—are collected completely mixed in one container at the drop-off center. Materials are transported to a material recovery facility (MRF) specially designed for sorting and processing commingled loads of recyclables. Single-stream collection has grown in popularity because of its convenience—no pre-sorting required. Higher participation rates are frequently attributed to the adoption of single-stream; however, materials contamination is also typically higher.

### *Dual-Stream Recycling*

In dual-stream collection, pre-sorted recyclable items such as glass, plastic and metal are accepted commingled in one bin/container, and all mixed paper products (cardboard, newspaper, magazines, office paper, etc.) in another.

### *Sorted Stream Collection*

In a sorted stream, materials are separated even further. In some instances paper may be collected separately by grade, such as newspaper, mixed paper and cardboard. Sometimes newspaper and mixed paper are collected together and cardboard separately. Programs allowing small business access may opt to collect/accept office paper separately due to its higher value. Some centers will only accept aluminum separately from other containers for the same reason. Scrap metals are usually sorted by type for increased revenue potential.

Drop-off programs sometimes feature a system that includes a mix of single- or dual-stream *and* sorted stream collection. The benefits of dual-stream and sorted stream collection include lower levels of contamination and typically higher quality/more valuable materials, due to lower processing costs and higher resale value at the MRF. Drop-off center hosts or service providers must determine whether it is more beneficial/effective to educate their program users and rely on them to accurately sort and place items in proper bins, or to rely more on staff, volunteers or automated equipment to conduct materials sorting. Single-stream collection allows for fewer bins/containers, thus fitting into more host locations and allowing drop-off centers with freed up space to collect additional materials. Yet, higher contamination rates are a reality and must be offset to maintain high end market values.

Contamination of recyclable materials includes foreign objects or materials that do not belong in the recycling stream. In order for recycling resources to maintain value and be useful in manufacturing operations, the materials must be relatively clean and contain few or no off-specification (“off-spec”) items. Common contaminants found in recycling loads that can cause recyclables to be rejected at the MRF or manufacturer include:

- Plastics in paper or glass bottles/jars
- Paper in plastic bottles/tubs
- Glass shards in paper
- Glass shards in plastic
- Ceramics or Pyrex containers in glass bottles/jars
- Non- food and beverage glass bottles, such as perfume bottles, in glass bottles/jars
- Plastic-coated paper or foil metallic paper in paper loads
- Wax-coated food service paper or boxes mixed in with paper/cardboard

While labor to remove such contaminants represents a significant cost, the investment pays off at the end market or MRF. Too often, loads that come directly from drop-off programs without being screened for contaminants end up being rejected or “docked”, meaning reduced value is paid per ton/pound due to the level of contamination. Some loads are filled with enough contaminating materials that the load is rejected entirely and must be landfilled. The higher the recycling rebate for tons/pounds of recyclable materials, the more stringent the standards will be for cleanliness or purity of materials. High grade, clean recyclables are valuable resources that are made into high grade new products. Low grade, contaminated materials have limited uses and limited market value. Thus, it is strongly advised that drop-off recycling programs invest in efforts to educate program users to “recycle right” and/or in sorting systems/labor to pre-sort materials before sending them to end markets, ensuring low levels of material contamination.

System design will depend on the arrangement with the hauler and material recycling facilities (MRFs.) Many MRFs are moving toward single-stream, and may prefer to work with haulers that collect single-stream. Haulers often choose to offer only single-stream collection as it reduces at-curb service requirements and reduces frequency of required pickup service at drop-off sites. With single-stream recycling, more recyclables can be compacted into a collection container or vehicle and this significantly reduces transportation costs.

Communities should explore collection options with potential haulers, MRFs and end-markets before initially selecting a system or modifying an existing system. Collection options for recyclables will vary depending on the hauler providing services, the processor/MRF accepting the materials and available end-markets. Recycling operators need to consult with the hauler/processor about exactly what types of materials are acceptable, how the materials should be collected and what kind of collection bins/containers will be provided. Consider all related costs and benefits when determining the type of collection system. Each has its benefits and these

should be weighed along with collection costs, available space at the drop-off center(s) and the type of materials being considered for collection.

If adopting single-stream program, specific contract language should be carefully crafted so that material contamination does not become an issue and revenues can still be received throughout the arrangement. Identify remedial actions required and who is responsible for any related expenses should greater steps be required to reduce problematic contamination. See the Designing a Collection Contract section of this guide.

### **Collection of Nontraditional Recyclables—Electronics, Textiles, Used Oil, etc.**

Programs that collect reusable materials, textiles, used oil, electronics, etc. will be best served by speaking with haulers and processors prior to designing collection systems. Collection containers/storage and processing services for these nontraditional recyclables will be different than those used for traditional recyclables. Scrap metals are typically collected in an open top container and processed by a scrap or salvage yard. Electronics may be collected loose, in Gaylord boxes on pallets and/or in shipping containers, and will be processed by companies specializing in electronics recycling. Used oil and other universal or hazardous wastes require specially designed containers and will be processed by facilities specifically licensed to process these materials. Speak directly with companies offering the specific processing services needed. Consult state or local government agencies for a list of qualified or registered/licensed service providers. Consult with other communities to see what has worked effectively for them. See the Best Operational Practices Fact Sheets for guidance on specific items.

### **Recycling Drop-off Facility Hosts**

Potential Partners or “Hosts” Include:

- |  |  |
|--|--|
| -Local Governments                     | -Business/Workplace interested in providing services for employees/customers     |
| -For-Profit -Recycling Processors/MRFs | -Retail Merchants providing enhanced store services and increasing store traffic |
| -Non-profit Recycling Processors/MRFs  | -Reuse Businesses as a value-added service for customers                         |

Communities lacking sufficient municipal property for a drop-off center or needing additional sites should work to find an appropriate “host.” The role of the drop-off recycling program should again be considered when selecting a host organization. Collection of traditional recyclables can be conducted at an unstaffed host site; collection of *nontraditional* recyclables, however, should only occur at hosted sites where staffing can be provided.

#### **There are many options for drop-off collection *sites* for traditional recyclables:**

- Schools provide a convenient location for parents to drop off materials and for the school to participate. School yards often have large parking lots and sufficient space for collection bins/containers. Schools may be more willing to host drop-off bins if they are able to earn some related funds.

- Local churches or Boys and Girls Clubs, YMCAs or similar non-profit associations may become drop-off hosts or program volunteers not only to earn funds but also to provide service opportunities for their members.
- Stores and malls serve as viable drop-off locations as they are common destinations typically located in high traffic areas. Store owners/managers may wish to be a recycling drop-off host as a strategic way to attract greater numbers of visitors to their store/s.

A well-designed and maintained drop-off location can be appealing to business or mixed demographic areas. Consider the role of the host and the needs of the program when negotiating for a site. A lease agreement and appropriate insurance should be in place for all sites.<sup>3</sup>

A host for collection of nontraditional recyclables, including reusable items, textiles, electronics, paint or other materials must be willing to provide staffing and a secure, enclosed space sufficient for the materials to be safely collected and stored. Township offices or fire departments are potential locations. Fire stations are often staffed 24 hours a day and/or feature camera security. Stations are typically visible and well known in communities. Private sector computer retailers or repair businesses may be willing to host a drop-off site for collection of electronics.

When partnering in this manner to provide drop-off recycling services, let the site host set the hours of operation. Even if only open one day per month, as long as the hours are regular and well publicized, customers can include the drop-off in their routine. Be sure to recognize hosts in program publicity. See Case Study on Electronics Collection at the end of this guide for additional tips on partnering with drop-off center hosts.

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<sup>3</sup> See sample, <http://www.dswa.com/pdfs/rdlease.pdf>

## Siting a Drop-Off Center

Drop-off centers can be successfully established in a wide variety of locations. Ideal locations include public works sites or other municipally-owned buildings or land. Utilizing publicly owned land avoids having to establish host agreements and existing staff can often oversee the site or at least assist in monitoring and providing security. See the Case Study section of this guide for ideas about where some communities have located their drop-off collection sites.

If the recycling drop-off center is the primary option for residential recycling, it is recommended that one drop-off location be established for every 3,000 to 3,500 people,<sup>4</sup> although other factors, such as the facility access and location, as well as costs should also be considered. If the drop-off program is used to supplement a curbside collection program, fewer sites will be necessary. A drop-off program primarily providing access for multi-family residents will want to consider the number of multi-family dwellings in the community when deciding locations and how many centers to establish.

The Illinois Recycling Association with support from IL DCEO provides a companion document to this Guide, titled “[Best Operational Practices Manual for Materials Recovery Facilities and Recycling Drop-Off Facilities](#).” This Manual is referenced throughout this document as it provides more extensive information on siting stand-alone drop-off facilities, including tips on location, site characteristics, local zoning and permitting requirements, facility design and layout, process/operational flow, and employee/visitor safety.<sup>1</sup>

It is important to consider ease of access when siting a drop-off center, including for people of all ability levels. Customers will typically find sites to be most convenient if they are within about two miles driving distance from their home or on their way to common destinations.<sup>5</sup> Distributing sites strategically and geographically will help to meet the needs of all areas of the community. Recycling centers located along the way or near supermarkets or other popular destinations are effective since customers can plan their recycling with other errands. Locations on well-known streets or near popular destinations are likely to be attractive to avid recyclers, as well as to those who may only recycle when it’s convenient. Posting signs at major intersections will help direct people to the site and impart the importance of the recycling drop-off to the community. Installing ramps or including drop-off containers at ground level helps to make recycling easier and available to everyone.

Sites in higher-density population areas and commercial areas whether small town or urban, are well suited for drop-off centers. Local planning departments may be able to provide demographic and traffic information.

## Site Design/Expansion Considerations

Best operational practices for recycling centers require that they are designed to efficiently accept materials and avoid contaminants, in order to ensure that the materials are marketed and recycled. Materials contaminated with non-recyclable items may not be marketable. Site design, best operational practices, and effective public promotion and education are all integral to the success of drop-off recycling programs. Work with haulers and processors to understand exactly what is acceptable and what is not for each commodity. Also discuss what to expect in hauling and/or processing service provisions. Explore site designs and operational procedures with other communities to see what has worked best for them.

<sup>4</sup> <http://www.epa.gov/region04/rcra/mgtoolkit/starting.html#identify>

<sup>5</sup> [http://deq.state.ms.us/MDEQ.nsf/pdf/Recycling\\_DropoffRecyclingTips/\\$File/DropoffProgramTips.pdf?OpenElement](http://deq.state.ms.us/MDEQ.nsf/pdf/Recycling_DropoffRecyclingTips/$File/DropoffProgramTips.pdf?OpenElement) & <https://www.plasticsindustry.org/AboutPlastics/content.cfm?ItemNumber=824&navItemNumber=1125>

### *Efficient and effective operations will:*

- Have procedures and training in place to ensure that all operators know what is acceptable and what is not
- Monitor and enforce what goes into recycling bins/containers
- Post signage that clearly indicates what is acceptable and what is not
- Place containers appropriately so that operators can readily view what generators are putting into them<sup>6</sup>
- Have the ability to handle missed container pick-ups or broken compactors that may result in material overflow
- Know how to address contamination and emergencies
- Be able to adapt to changes in markets and to add additional materials

### **Site Layout and Operations**

When designing the site, it is important to consider the materials to be collected and the services that will be necessary to meet the needs of the center and customers. Plan for potential future expansion—will materials with emerging markets potentially be added? Will a covered area or shed be set up for a reuse station or electronics collection? The ability to include additional materials can better serve the community and maximize the space and operation of the center. Hours of operation should be planned with customer convenience in mind; for example, Saturday hours and at least one weeknight should be considered. Open hours should ideally be consistent and well publicized.

The collection system to be used—single-stream (all materials in one container), dual-stream (food/beverage containers in one bin and paper in another), or sorted (single, sorted materials in separate containers), or some combination of the above, will be the dominant factor in determining the amount of space needed for the site. Operations with limited space whether planning to collect traditional recyclables or nontraditional materials, may wish to consider single-stream to maximize space utilization.

The site layout should be planned with customer convenience and safety in mind. The site should allow ample room for customers to safely park and unload recyclables. A drive-through design is best. Several 20-30 cubic yard collection containers can be accommodated in approximately 75 x 75 yards (225 feet x 225 feet) of space, while allowing easy access for a collection vehicle to swap out or remove full containers for emptying.<sup>7</sup> An area as small as 50 feet wide by 10 feet deep with a vehicle access area can suffice for smaller drop-off sites.

Bins or collection containers need to be located so that the hauler can quickly and easily remove or empty them. It is critically important that there are no overhead wires or low branches over the collection container area that might interfere with the collection vehicle. Adequate lighting is important for winter afternoons or evening hour use, as well as for security.

Site appearance is important in order to keep customers coming back. Keeping customers and neighbors happy by maintaining a clean and inviting center will help prevent any issues from developing that may need more costly mitigation. Consider the following:

- The entrance to the drop-off center should be clean and welcoming
- Landscaping, a demonstration garden using locally produced compost or a compost bin demonstration site will help make drop-off centers more attractive and can serve as an educational opportunity
- Paint and maintain building exteriors, including the employee office
- Keep buildings and grounds clean and litter free

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<sup>6</sup> Unstaffed sites can monitor collection containers using cameras or web cams. Unstaffed sites are ideally visited daily to check containers for contamination and provide any necessary site cleanup.

<sup>7</sup>Skumatz, Economic Research Associates Inc., [Revised Westminster Trash and Recycling Report](#)

- Keep the area free of snow or ice
- If something goes wrong, deal with it immediately

Placing bins/collection containers on a well-drained and paved surface is preferable in order to ensure that collection vehicles, as well as customer vehicles, do not get stuck in soft or muddy soils and that customers do not need to traverse long distances through mud, snow, or water to get to drop-off containers. Placing large roll-off containers on concrete pads will be longer lasting and not rut like asphalt or gravel surfaces. Sites with dirt access roads or parking lots may need to wet these down in dry weather in order to control dust created by traffic. Plowing and/or sanding in the winter is another important consideration.

Staffed centers will want to consider employee shelter, provisions for a telephone, restroom access, etc. Programs with unstaffed centers should consider providing mobile phones or communication radios to operators so that full containers can be called in for pickup and other issues such as illegal dumping or emergency situations can be quickly and efficiently handled.

#### *Additional Operation Factors to Consider:*

##### Traffic control

- Intersection/entrance design with adequate sight distance and stopping distance
- Signs, signals, and pavement markings
- Acceleration/deceleration lanes exiting or entering facility as necessary, depending on traffic density and the size of the center
- Designated routing of vehicles using cones, signs or lane markings
- Ensure that haulers adhere to site traffic rules, signage, etc.
- Arrange operating hours and container collection schedules to mitigate traffic issues

##### Noise abatement

- Include proper setback distances in the placement of bins/containers so that loading and offloading containers causes minimal disturbance to neighbors
- Consider structures to block noise, including berms, walls, fencing, or trees/shrubs

##### Vector prevention

- Prevent illegal dumping of trash with adequate monitoring and locked access or fencing. Unstaffed sites ideally should be visited daily and any dumped items or litter removed
- Periodic washing of collection containers/bins can help to reduce odors that attract vermin
- Routine inspection of the site and/or buildings and treatment by professionals as needed, to control insects and pests
- Ensure that containers are emptied regularly to prevent overflow of materials onto the ground

Recycling centers, especially in warmer weather or in enclosed operations, may encounter issues with mice or rats. Periodic professional treatment may be necessary. More natural methods for capturing vermin can also be effective (such as a cat on the premises.) Maintaining a clean site and immediate removal of full containers will help to reduce odors which may attract mice and other vermin. Bees or yellow jackets in beverage can/bottle recycling bins can pose problems in the summer and early fall. It is important to keep collection bin lids closed at all times to discourage bees and other insects from entering them. If a problem develops, spraying may be necessary. Warning signage should also be placed on bins/containers to caution customers, especially those who may have bee or wasp sting allergies.



Being a good neighbor is very important to successful operation of a drop-off recycling site.<sup>8</sup> Incorporating the above design considerations and implementing best operational practices will help to keep customers and neighbors satisfied.

## Traffic Flow

Traffic should flow through recycling drop-off centers with customer ease, safety and efficiency in mind. A circular flow or flow-through design will allow for safe and easy in-and-out access for customers. Layouts which require crossing incoming traffic should be avoided. Also, backing up should only be allowed in areas for dumping of scrap metal or heavy bulky items, where vehicles may back in to offload materials.

Planning for at least five cars to use the site simultaneously is optimum, if space allows. Traffic flow should ideally include adequate space for recycling collection trucks or service vehicles to maneuver even when customer vehicles may be present.<sup>9</sup>

## Signage

Signs and instructions should be visible, brief and easily understood so that as customers enter the facility and proceed to the recycling bins/containers they know what to do. Signage, facility layout and container design that foster easy and convenient recycling will satisfy customers and reduce material contamination. Use clearly visible signage to direct traffic as customers enter the facility, as needed. Be sure to include a telephone number or website for additional information or in case of emergencies.

Use of roadside signs near the drop-off site will help to promote the center and provide an ongoing reminder about the importance of recycling in the community. Be sure to list the program owner and operator (and site host, if different than the municipality) of the recycling drop-off center. Consider welcoming language—“Welcome to the <town name> Recycling Center.”

Visible and clearly understandable signage will help customers recycle easily and properly. Large signs are most effective, consisting primarily of graphics and simple text, clearly denoting exactly what materials are acceptable in each bin/container. Photographs or graphic images/line drawings are more effective than text at guiding users in properly placing only acceptable materials, and use of color coding is becoming more common. Signs should be posted at eye-level for the average height, standing adult. If a community has multiple drop-off locations, be sure to use consistent colors and graphics at all sites to promote uniform outreach and avoid customer confusion. Operations located in communities with large non-English-speaking communities may want to consider signage in appropriate language(s) to meet the needs of these customers. Investing in high quality photographs that instruct without words is useful in any setting and for all ages. Such investments pay off in properly sorted and uncontaminated recycling materials.

***“A picture is worth 1,000 words” was never truer than in drop-off recycling! Investing in attractive, easily understandable photos or images of acceptable items can literally “pay off” in cleaner, less contaminated materials. Be sure to select signage that is durable, weather- and UV-resistant, and preferably made with post-consumer recycled content materials.***

Signs which simply say ‘glass’ will inevitably be interpreted as all glass, including light bulbs, dishware, and other glass which is not recyclable. Signs should instead state “glass bottles and jars only” and show examples of acceptable items. Similarly, define what types of plastics are acceptable—“plastic containers: bottles, tubs,

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<sup>8</sup> See the Illinois Recycling Association’s [Best Operational Practices Manual for Materials Recovery Facilities and Recycling Drop-Off Facilities](#), Potential Impacts on Neighbors and Mitigation Measures, p. 55 for additional information.

<sup>9</sup> [http://deq.state.ms.us/MDEQ.nsf/pdf/Recycling\\_DropoffRecyclingTips/\\$File/DropoffProgramTips.pdf?OpenElement](http://deq.state.ms.us/MDEQ.nsf/pdf/Recycling_DropoffRecyclingTips/$File/DropoffProgramTips.pdf?OpenElement)



cups, jugs, and jars”—not just “plastics.” It can be helpful to hang actual examples of acceptable recyclables near collection containers or from signs posted next to containers.

Signage that only lists acceptable materials has proven to be more effective and less confusing than signs also showing or listing non-acceptable items. Printed literature and information posted online can provide more details about what is acceptable, what is not and reason/s why. For signs depicting both acceptable and unacceptable items, use larger and brighter fonts and illustrations on the ‘acceptable’ list. The unacceptable or ‘don’t’ list can be in black and white, featuring the familiar red-barred ‘NO’ symbol.

Depict accurate images of materials as you want them. For example, if you want papers loose, do not show them in a paper or plastic bag or bound with wire/twine. Show containers with their screw-on caps left on, unless caps are not acceptable in the local program.

Instructions painted or stamped directly on recycling bins can be effective, if the bins/containers are used for the same recyclables each time. If containers are swapped out, magnetic signs can be used and transferred to new, empty containers.

### ***Suggested additional language to include on educational signage near the collection containers:***

#### ***“PLEASE...***

- Rinse all containers lightly. It is not necessary to remove any labels.
- Place items to be recycled into designated receptacles loose, not in bundles, bags or other containers.
- Do not leave boxes, bags, or other materials outside of the collection containers.
- Take all items that cannot be recycled back home with you to dispose of as trash.

***...and Thank You for recycling!”***

### ***Illegal dumping signs***

Use of large signs informing customers that ‘depositing non-recyclable items in collection containers or leaving items or trash on the ground is illegal’ should help to keep materials clean and discourage illegal dumping. The municipal ordinance and potential punishment (fines) should be noted on the sign and enforced.

For a minimal cost, consider investing in a 24-hour hotline phone number for receiving messages or texts, and/or post an email address on drop-off center signage so that customers can report when containers are overflowing or if items have been illegally left outside of the containers or fencing.

## **Site Administration**

In Illinois a permit is *not* required to operate a recycling center. However, it is helpful to prepare a basic facility operation and maintenance plan for site management.<sup>10</sup> Most of the information to be contained in such a plan can be derived from information contained in this guide, as well as through everyday practices at the facility.

*The plan may include the following:*

- Facility operating schedule
- Operator responsibilities and duties

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<sup>10</sup> U.S. EPA’s [Waste Transfer Stations: A Guide for Decision-Making](#) has information for developing basic operational plans for recycling centers. See p. 27.

- Description of acceptable and unacceptable materials
- Collection procedures and methods for material handling
- Description of maintenance procedures for buildings, grounds, and equipment
- Employee training program
- Safety rules and regulations
- Recordkeeping procedures
- Contingency plans for overflowing containers, equipment failure
- Emergency procedures

### **Insurance**

Sites should include insurance coverage to protect the site owner (including a site host) from liability. Centers that collect electronics, used oil, or household hazardous materials, or sites which offer special collection events may require more extensive insurance coverage. Consult with municipal attorneys (or company/agency attorneys, if owned/operated privately) for recommendations.

### **Finances**

While not discussed here, a balanced budget and financial plan is an integral part of any recycling business venture, whether a for-profit or non-profit business. The Illinois Department of Commerce & Economic Opportunity provides guidance for small to medium size businesses. See link here:

<http://www.illinois.gov/dceo/SmallBizAssistance/Pages/default.aspx>. Small Business Development Centers are available at several sites across Illinois and are a resource for small businesses at any stage of development. See link here: <https://www.illinois.gov/dceo/SmallBizAssistance/BeginHere/Pages/SBDC.aspx>

### **Recordkeeping and Reporting**

Illinois law requires that sales of metal loads to recycling buy-back centers exceeding \$100 in value require a photo ID from the seller and a tagging and tracking process. Communities may want to track the number of customers using the facility. Monitoring and recording the container service pulls can help verify service billing. Maintenance records should be kept for equipment, site repairs, and container upkeep. Employee training and health and safety records are also recommended. Material tonnage reports can be requested from the haulers, recyclers, or processors, to facilitate data tracking.

### **Container Service Frequency**

Service can be on-call or scheduled. Sites which are regularly monitored may benefit from having an on-call service so that when containers are full they can be picked-up. In this way, money is saved by avoiding the cost of pulling partially full containers. However, on-call service risks the possibility of overflow issues. Operations where containers fill up rapidly and regularly will benefit from working out a scheduled pick-up service with haulers.

## **Designing a Recycling Collection and Processing Contract**

Most drop-off recycling programs in Illinois contract for hauling services. New drop-off programs will need to develop a collection service Request for Proposals (RFP.) Communities with established programs should consider re-evaluating hauling contracts periodically and re-bidding or renegotiating, as appropriate. Hauling or processing contracts may be negotiated with multiple vendors, particularly for centers that collect materials beyond traditional recyclables, such as textiles, electronics and scrap metals.

Recyclables have value although the cost of accepting, handling and transporting them may at times exceed the value of materials collected. Include sufficient flexibility in the contract for program modifications. Consult

with other communities prior to issuing an RFP or negotiating a hauling or processing agreement to help determine the best arrangements to meet your community's needs. Asking the following questions of neighboring or similarly-sized community programs will provide valuable information while crafting your RFP:

- What contracts do they have in place? What level of service is/was provided and at what cost? Were the services satisfactory?
- What were the lessons learned? Compare local service needs and goals with those of neighboring municipalities that have successful drop-off recycling programs in place.
- Where and how do other communities have materials processed? What materials do they accept?
- What companies do the hauling? What type of collection bins/receptacles do they use?
- What are the various material end markets?

You can learn a great deal from your peers, especially those in nearby communities dealing with the same or similar service providers. Tailor contract provisions that best meet the needs of your community.

If curbside trash or recycling services are provided by a private hauler in the community or target area, speak with them first about potentially adding drop-off services. If seeking new service options, consult with the [Illinois Recycling Association](#); IRA's members include recycling companies and local governments that collect a wide variety of recyclables under a wide variety of service agreements.

Promote the concept that recyclable materials are a valuable resource rather than a "waste" to be managed. Adopting this perception prior to contract negotiations can benefit a community. In resource management contracts, contractors are sometimes compensated based on their performance in achieving your organization's waste reduction and recycling goals.<sup>11</sup>

Once other community drop-off programs have been consulted and program goals are determined, an RFP can be developed and issued. Review RFP responses in a consistent manner based on publicly known criteria. Before beginning negotiations with prospective hauler/s, create a draft contract reflecting the role of the drop-off center in the community and recycling program goals, including incentives and options for revenue-sharing. Do not rely *solely* on a contract provided to you by the company. A poorly written contract can be costly and may turn public opinion against recycling if contracted services fall short of expectations. When the time comes to renegotiate or re-evaluate a hauling and/or processing contract, follow the approximate same steps while also incorporating lessons learned and considering the current economic or competitive conditions.

#### *Request for Proposal/Contract Specifications:*

- Be sure to explicitly detail expected services in the RFP and resulting contract
- State what type of collection program is desired—single-stream, dual-stream or sorted
- Specify or request proposed options for desired collection bins/containers
- Possibly include training for drop-off center operators and/or program volunteers
- If you want the hauler to provide public promotion, specify this
- Include reporting requirements for data tracking, specify what information will be gathered, in what format
- Ask for details about how and where the hauler markets recyclables
- In the case of electronics collection, require that the recycler is R2 Standard or e-Steward certified
- Include applicable insurance requirements

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<sup>11</sup> See examples of resource management program stipulations and tips for incorporating into contracts at the [WasteWise website](#).

- Consider negotiating revenue-sharing provisions
- If appropriate, request quotes for payments per pound/per ton for revenue-based contracts
- Include flexibility in the contract so it can be modified as needed to increase services and add new or remove materials
- Include a 60-day termination clause in case the contractor wishes to exit the contract suddenly, to allow time to negotiate with a new contractor so services can continue uninterrupted
- You might ask for home storage containers (such as “blue bin” curbside containers) or smaller bins/durable bags for residents in multi-family dwellings who will use the drop-off recycling center
- Be sure to evaluate whether the prices received from the hauler are locally cost competitive
- Consider whether procuring services through a collaborative, regional service contract might be beneficial and cost effective
- Indicate whether and how you want the hauler to be responsible for handling complaints or feedback about unstaffed drop-off locations
- Indicate whether you require the hauler’s contact information to be displayed on collection bins/receptacles
- If your program has an existing contract, compare it with that of neighboring communities or similar programs around the state

Discussions with haulers should also include inquiries into their current drop-off center operations/experience and any recycling promotion/training they can provide. Be sure to ask for references in order to verify the hauler’s performance.

An innovative approach to contract negotiations/agreements can result in successful partnerships between communities, residents, recyclers and processors. Such agreements will feature the flexibility to adapt to market changes, program modifications and collaborations to benefit all parties and thereby, divert maximum possible amounts of material resources from the waste stream.

## Agreement Details

### *Market prices*

- How will the contract reflect current market value for materials? Who will monitor these regularly fluctuating commodity values?
- What are the prices that materials recovery facilities (MRFs) are currently paying?
- How will the hauler ensure they are getting the best revenues for your materials?
- Do the revenues reflect regional commodity value trends?
- Would a separate contract with a MRF for processing/marketing of materials be beneficial? Independent calls to material recovery facilities can be useful to verify current commodity prices they are offering.
- Would it be beneficial to use a materials broker to help market recyclables? For small recycling operations, brokers provide the advantage of steady/stable end markets, although sometimes at slightly lower pay-backs than individually marketed materials.

*Revenue-sharing.* Include discussions about revenue sharing in your hauling or processing contract(s). Depending on local markets and volumes available, some materials such as aluminum cans, scrap metals and cardboard, may cover the cost of hauling, container rental and processing, as well as generate revenue-sharing opportunities. Revenue-sharing may benefit both the community and the hauler/processor. As a hauler incentive, revenue-sharing can help to maximize recycling. In addition, program participants want to know that their recycling helps to defray the costs of the program. In the case of materials such as electronics or textiles, the collection services may be provided under a cost-free, revenue-earning contract.

Contractual incentives encourage haulers to help promote the program, handle materials properly and provide services as contracted. Such stipulations foster a partnering relationship with the hauler/processor for recognized mutual benefits to increase recycling. Consider clauses that can motivate your hauler to provide quality service and help promote recycling to improve participation. Incentivized contracts include clauses that reward haulers for higher volumes of materials recycled. Instead of paying haulers a fixed fee for each container pulled, consider a fee that includes hauling, but also includes a share of revenue for tonnage recycled.

*Program promotion.* Collection bin signage, website promotion on the hauler's website and bill inserts are commonly important program promotional tools. Including education as part of the hauler contract requirements will provide for long-term program promotion. Contractually required promotions should not however, be a replacement for public education and promotion provided by the municipality or host organization.

*Program Expansion.* Include flexibility to add other materials and increase hauling services or the number of bins/receptacles in order to include new materials and/or additional participants, such as schools, small businesses and/or multi-family dwellings.

*Bins/Containers.* Will the hauler provide collection bins/containers? What type? Include specifications, paint color, logo/signage and maintenance schedule (cleaning, painting) in the contract.

*Collection/Transportation Service Schedule.* Will the hauler collect materials in the early morning or during hours when the center is closed to the public? If the center is fenced or bin is locked, how will the hauler gain access? How often will bins/containers be pulled for service: regularly scheduled or on call, as needed?

*Contamination.* How much contamination is allowed by the processor or end markets? The allowable percentage of contamination per material should be clearly stated in contract agreements with any hauler, processor or material end market. What will consequences to the recycling center be if material loads are delivered to the end market/processor with too much contamination? Any consequences from having a load with excessive contamination should be negotiated and stipulations regarding remedies and related expenses included in the final contract agreement.

*Recordkeeping/Reporting.* The contract should have a record keeping requirement that includes:

- Number of pulls per container, per month (estimated if an on-call basis)
- Weight or tonnage of each commodity collected; reported on a monthly, bi-monthly or quarterly basis
- Estimated or agreed hauling/pull costs per month or reporting period
- Estimated or agreed processing costs per month or per reporting period
- How revenues will be credited against charges or paid to the drop-off center/program host
- Specific issues, such as contamination consequences and what steps the service provider and/or program owner/host will take to prevent rejected loads in the future
- Bi-annual review and recommendations on possible changes to pick-up schedule or bin/receptacles that will maximize efficiency and minimize cost
- How outreach and education requirements will be met and documented

Reporting programs such as [Re-Trac](#), a software program that keeps track of recycling and diversion rates, costs, revenues and more, can be effective for monitoring and managing a drop-off center's diversion success and related costs.

*Flexibility.* Keep in mind the role of the recycling drop-off program in the community. Does the center collect traditional recyclables? Will it likely expand into other material collections, such as reusables, textiles or electronics? Is it likely that the center might move to single-stream collection in the future? It's important to include flexibility in contracts that allows for additional materials to be added and/or other modifications in response to changes in markets/technology.

## Processing Contracts

Some municipalities may provide their own hauling from drop-off centers to processors or end markets. In this situation, apply similar concepts/methods in negotiating contracts with processors. Long-term contracts with material recovery facilities for traditional recyclables can help establish a relationship that provides consistent services even during times when material markets decline. Issue an RFP for materials processing to determine what the best services and processing fees are in the region. Speak with MRF operators about how materials are to be delivered—single-stream, dual-stream or separated. What are the revenue benefits of each balanced against the related costs?

Drop-off center operators who market their own materials must stay on top of current market prices and/or commodity values. To bring the greatest benefit to their program recycling owners/program managers must stay up-to-date on market trends<sup>12</sup> and evaluate operations regularly.

Marketing materials directly to end market users will likely require that materials be baled in order to earn the highest possible revenues. Prior to investing in equipment, consult with processors to determine the best way to deliver materials. Find out if processors pay a premium for sorted materials and quality/quantity specifications for each material type.

Work with the processor/end market to determine how to earn maximum revenues from your drop-off center. Again, consult with other communities that haul and market their own materials. What are the lessons learned in these community programs? It may make sense to focus on baling, sorting and/or hauling only some materials, such as aluminum cans. Discuss options with end market representatives, materials brokers and/or trade association representatives.

### *Clauses for Single-Stream Collection*

If collecting materials using a single-stream system, consider additional contract language which might include the following:

- Exact specifications on the types of materials to be collected and how material types will be processed and marketed
- The quality or condition of each of the materials to be marketed
- Allowable contamination or residue rates in collected materials
- Percent of recyclable materials not marketed and why
- A resolution clause for disputes over the quality of incoming materials and rejected loads
- Requirements for maintaining records of materials, contamination levels, rejected loads
- Penalties for not achieving the required specifications/volumes
- Incentives for exceeding the required specifications/volumes

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<sup>12</sup> [Recycling Today](#) magazine offers regular updates on material prices paid. Also consult with trade associations—see the Resources and Best Operational Practices sections of this guide for more information.

- Revenue-sharing, including a guaranteed “floor price” for processing during periods of low-paying material markets and/or for loads that do not meet premium quality specifications, but which are nonetheless marketed
- Revenue-sharing, including the split of revenues beyond a guaranteed “ceiling price,” the level or percentage beyond which program revenues are earned at higher rates

## Recycling Promotion and Education

Ongoing public education is the best way to encourage recycling and limit contamination of materials at recycling centers, ensuring the highest value and marketability of recyclables. Brochures, fliers and signage are an essential aspect of all recycling center operations, serving to educate customers about what is acceptable and what is not acceptable. Private and not-for-profit operators may want to partner with public agencies to provide effective, widespread public education.

### Customer Education Tip

Be sure to include the benefits of participating, such as saving landfill space and reducing disposal costs for the community. People want to know the positive gains from taking action. Also point out how easy it is to ‘recycle right.’

Education can be provided to customers both before and after they arrive at the site through online educational materials, fliers, media stories and advertisements. If people are unfamiliar with what is acceptable, they are more likely to bring unwanted materials and simply toss them into recycling collection bins/containers to avoid having to take the items back with them for disposal. Use of website information, mailers in water/sewer bills or other distribution will help to remind customers about what is recyclable and what is not. Operations located in communities with large non-English speaking immigrant populations may want to consider including Spanish or other appropriate language in promotional materials to meet the needs of these customers.

The importance of “recycling right” can be emphasized in fliers announcing special community events such as household hazardous waste collections and in news announcements regarding new items or changes to the program. Such instructions reinforce what is printed on the drop off site signage.

Consider making a short video of the drop-off center in action with accompanying instructions about the proper way to recycle, what goes in the collection bins/containers, etc. Post the video on YouTube and on the processor’s or city’s website. Set up display boards or host an information booth at the drop-off center and other public gathering places. Solicit students, community volunteers, and Master Gardeners/Extension to help staff these. A volunteer speakers’ bureau can provide presentations to schools, neighborhood associations, churches, and other groups to promote recycling.

Media news stories offer free publicity and small newspaper ads are low-cost; both help with community education and support for recycling. An annual newspaper “how to” or “where to” is very effective. Place quarterly announcements in customer water/sewer bills, neighborhood newsletters, regular mailings or by separate mailing. Speak with program users at the recycling center or drop-off site to see if they are receiving the information they need about recycling and if signage at the drop-off center conveys clear and understandable instructions for proper recycling.

Be sure to include information about the recycling program on the local government/municipal website. Include a recycling section in ‘welcoming information’ for new residents. Use of websites and social media for education and promotion is a cost-effective way to provide easily updateable information on the recycling



program. Work with the contracted hauler to also include information on their website. Many people will not take the time to read newspapers or other written promotional materials, but find online information readily available and user-friendly. Promotion of recycling on the municipal website and displaying educational messages shows that recycling has the backing of local government leaders. When the public perceives this support more people will be influenced to participate. As with recycling signage, include attractive, simple language with clearly written messages and visual images describing the recycling program. Explain why all materials are not acceptable and the importance of keeping unwanted materials out of collection containers.

Positive operator interaction with customers will help ensure that recycling is done correctly and helps to develop community support for recycling and the center. Operators who observe customers unloading materials can help to eliminate material contamination and help to alleviate customer confusion. Most customers will want to do the right thing, especially if they know why certain materials cannot be accepted.

## **Collection Bins or Containers**

Collection containers/bins for traditional recyclables should be selected with the customer in mind. User-friendly containers are important, including accessibility for people of all abilities. If wheelchair accessible collection sites are unavailable, consider publicizing where and how handicapped customers can receive assistance with dropping off their recycling. Containers/bins must adequately protect materials from the weather. Container lids should be easy for customers to lift or slide. Lids that are too heavy and must be held up may be too awkward for many people and will encourage customers to simply place full bags into the containers, leading to contamination and plastic bags in the materials. Lids should be able to be latched shut or slide shut to help prevent materials from blowing out, particularly when the site is closed.

***User-friendly containers are important, including accessibility for people of all abilities. If wheelchair accessible collection sites are unavailable, consider publicizing where and how handicapped customers can receive assistance with dropping off their recycling.***

Appropriately sized and shaped openings through which recyclables are deposited can be an effective deterrent for reducing improperly disposed materials. Holes should be about 12 inches in diameter to allow for acceptable larger items, such as big enough for a 2-gallon water jugs and 2-liter plastic bottles. Unstaffed centers in particular, may be best served with bin/container lids that have appropriately sized openings in them. This eliminates the need to lift lids and forces customers to deposit recyclables a few at a time in order to reduce material contamination. Lock lids or doors to prevent after-hours or unauthorized access.

*Appropriately sized openings/ holes will serve to:*

- Keep bags of trash from being dumped.
- Encourage customers to remove recyclables from bags.
- Ensure that materials are sorted as required—for example, paper and containers are separated from each other and deposited into the proper dual-sort receptacles.

Smaller openings encourage customers to break down cardboard boxes to conserve space and help discourage dumping of larger non-recyclables.

There is a wide range of opinions about collection container lids and the use of openings or “holes” through which materials are deposited. Customers may complain about having to insert recyclables one or two at a time into holes and this lack of convenience may deter them from using the drop-off.



Depending on the type of containers/bins used and the height of lids/holes, secure stairs and/or an accessible ramp should be constructed to allow for easy access by all customers. For most recycling drop-off centers in Illinois, collection bins/containers are provided by the hauler. Work with the hauler to ensure that lids are appropriate for recycling and that containers are visibly labeled (either using plastic decals or metal signs.) Self-haul operations should consider available hauling equipment, site space constraints, anticipated volumes and best options to both meet the needs of customers and to meet diversion goals.

## Types of Collection Containers

**2 to 8 Cubic Yard:** Collected with a front-loader truck. Containers should have holes or slots through which recyclables are dropped inside. This will reduce contamination and illegal dumping of materials that may occur if lids can be completely opened (as with trash dumpsters.)

**20 to 30 Cubic Yard:** Collected with a roll-off truck. Containers may be compartmentalized to hold multiple types of materials. Properly sized and shaped openings through which separated recyclables are deposited are also important. If equipped with sliding doors, the doors should be able to be secured to prevent water from getting in and to close drop-off access if the compartment becomes full.

Painting collection bins/containers a bright color such as green or blue, is appealing to customers and can draw more attention to the drop-off center. Consider painting bins for different materials a different color, such as green for paper and blue for container recyclables.

***A competition for painted bin designs is a fun way to engage schools and interest the public in recycling!***

**Compactor Box:** Collected with a roll-off truck. Compactor boxes may be designed to hold one material type or multiple materials depending on the collection system (single-stream, dual-stream, or sorted.)

**Igloos:** These are containers, shaped like “igloos,” which typically hold single commodity types. A specially designed truck is required for emptying the containers. These containers work well in unstaffed situations as they are effective in ensuring that the right materials are deposited in the containers due to smaller openings through which materials are deposited.

Place a small trash can near each collection bin/container (or attach a trash bag to each container) so that customers can deposit plastic bags and products not accepted in the program. While this practice requires emptying by employees, it will significantly reduce contamination in the collected recyclables and help reduce litter. It is inevitable that customers will use plastic bags to bring recyclables to the site. Providing a trash can keeps bags out of the materials and provides a service to customers who do not want to carry the bags back home. Permanently affix the trash can/container lid to the can so that it does not blow away and so the lid can be used to prevent bags from blowing out of the can. Include additional signage to explain the location and purpose of the trash can.

It is important that unstaffed sites be inspected frequently to promptly remove any litter or dumped trash. Any necessary repairs or vandalism should be dealt with promptly to keep such issues from growing. Unstaffed operations may consider securing trash collection bags to posts to prevent them from blowing away. The use of trash cans or trash dumpsters may attract illegal dumping of refuse and bulky discards.

Collection options for nontraditional materials vary. Scrap metals will typically be collected in open-top roll-off dumpsters or metals may be placed on the ground for later loading directly into a truck without being baled. Textile recycling companies will typically provide collection containers for textiles that protect them from the weather.

Electronics are typically collected in Gaylord boxes on pallets and/or stacked directly on pallets. It is critical that as E-scrap items are collected and stored they are wrapped in plastic film and kept dry. Used oil and hazardous materials require specific handling and collection procedures. See the Best Operational Practices Fact Sheets for additional storage and handling recommendations.

Communities may want to consider sponsoring, distributing or selling home collection/storage containers for recyclables (such as “blue bins” or durable, washable, rigid plastic bags for apartment dwellers) to help increase participation in the drop-off recycling program. Such sponsored collection receptacles can display sponsor logos and also list items accepted for recycling.

## Material Baling and Compaction

Some recycling centers may opt to invest in baling equipment. Baling of materials such as sorted fibers, plastics and metals can help improve the efficiency of onsite storage and offers communities the option to market baled material directly to buyers, thus providing increased revenues. However, there are many considerations to be addressed prior to adding a baler to any recycling operation. These include: operator training and safety, pre-baled material storage, bale handling and storage and transportation/sale of materials to market. (See Equipment Safety.)<sup>13</sup>

Haulers/processors may be willing to provide compactor equipment for cardboard collection. Compactor units are relatively easy to operate and allow for a more efficient way of collecting large amounts of cardboard. If a compactor, baler or other automated equipment is used, electricity and appropriate power outlets will be required.

## Site Maintenance

Ongoing site and facility maintenance is cost effective as it keeps the drop-off center in good condition and preventive equipment maintenance keeps equipment in good running order, reducing downtime for repairs and the need for site improvements over the long-term. A good preventive maintenance program will include building and site upkeep, equipment maintenance and collection bin cleaning and painting.

Regular site maintenance is crucial to encourage proper recycling and discourage dumping of non-acceptable materials or trash. A clean and orderly site will be more inviting to customers and foster an understanding of the importance of recyclables as valuable resources, not trash.

If customers consistently see a clean site they are more likely to work to keep their materials free of contaminants and keep the ground free of litter. Good site housekeeping helps to ensure a safe employee and customer environment.

<sup>13</sup> The Illinois Recycling Association’s [Best Operational Practices Manual for Materials Recovery Facilities and Recycling Drop-Off Facilities](#) offers an in-depth discussion of baler options, operation efficiencies, bale storage guidelines, and safety (see Section 3.5-Baling Materials, p.37; see also Section 3.8 Maintenance, p. 43 and Table 6.0).

Over-flowing collection bins look unsightly, attract pests, deter participation, and can promote inappropriate dumping. Hosted sites will be particularly concerned about maintaining a clean and attractive site. Unstaffed sites should be monitored daily, cleaned, trash emptied, containers checked for contaminants, and checked to see if service is necessary. Poorly maintained unstaffed sites will have trouble keeping hosts if maintenance and upkeep is not consistent.

Monitor and maintain adequate collection and storage space at drop-off centers to prevent overflow. If containers are regularly overflowing, renegotiate collection frequency to allow for more frequent pick-ups or for increasing on-call pulls. To help keep centers and collection bins attractive, schedule periodic cleaning and painting with the hauler (or municipal maintenance).

Schedule regular downtime for baling and compaction equipment to allow for proper maintenance. This can be done when the center is closed or during open hours when customer patronage is less frequent. Equipment operators should be trained in the proper operation of equipment and learn to be alert for potential problems and maintenance issues. Daily, weekly, and monthly schedules should be included in the operation plan for common maintenance tasks such as visual inspection, lubrication, cleaning, tightening belts and rollers, and scheduled parts replacements. Recommended equipment manufacturer maintenance schedules should be followed; and equipment problems, maintenance issues, and performed maintenance kept on record.

Security cameras or web cams can significantly reduce illegal dumping and help staff to monitor collection sites. Cameras should be visible and mounted securely in vandalism-resistant boxes. It is important to post signage notifying users that the site and their actions are being monitored on camera. Cameras can also help staff monitor sites to know when containers are full and need to be serviced.

Surveillance is a major operational strategy to deter illegal dumping. Motion-detector cameras, high-resolution surveillance cameras, digital or video filming, and similar technologies can capture images from a range of up to 100 feet. Cameras can be monitored and images downloaded remotely to a computer. License plate numbers and violators' faces are captured; the images can be combined with other evidence to form a criminal case or to redirect program users.

## Site Security

### *Lighting*

Drop-off centers, whether staffed or unstaffed, should be well lit to discourage illegal dumping or theft and provide for the safety of customers and employees.

Drop-off centers, especially unstaffed sites, should be clearly visible and identifiable from main roads. Having a site in full view of a road allows for added security to deter illegal dumping and offers added safety for customers.

### *Site Access*

Controlling access to sites, especially sites collecting a variety of potentially valuable materials will help to limit potential liability issues. A buffer or fence that restricts access is important as a security measure to help keep sites clean and discourage improper dumping, vandalism and theft. Staffed and unstaffed sites can limit operating hours by using gates and fencing to secure centers.

### *Surveillance*

Surveillance technology and availability has advanced considerably in recent years, helping to make security systems affordable and cost effective. One recent study estimates operational surveillance camera systems at

an average cost of \$1,200 - \$3,000.<sup>14</sup> A power source will be needed or a battery system; solar-powered units are also available. Some centers use fake cameras which have been shown to be effective<sup>15</sup> and are certainly lower in cost. Speak with other communities, haulers, and private recycling processors to find out what they have put into place. An Internet search can easily identify local companies offering this technology who can help determine how to best meet the operation's needs.

## **Illegal Dumping Ordinance and Enforcement**

Deterring material contamination and illegal dumping is only effective if there are local ordinances that prohibit dumping. Similarly, ordinances are only effective if they are enforced and offenders are prosecuted. Without a viable ordinance, substantial penalties and an active enforcement program, illegal dumpers are unlikely to change their behavior and the community will not see a reduction in illegal dumping. Illegal dumping always encourages more dumping.

Enforcement activities against illegal dumpers include administrative actions, civil prosecutions, and criminal prosecutions. To be effective, local governments/municipalities must provide sufficient staff resources and trained personnel to pursue action, along with support from the judicial system. Responsibility for issuing citations varies widely; citations may be issued through health departments, solid waste departments, code enforcement staff, inspection actions and/or police departments, depending on the unit of government. Regardless of who is authorized to issue citations, communication between recycling operators and the enforcing agency is important. It is advisable to work with the local police department to see if they will add the drop-off center(s) to their regular patrol route.

Enforcement must also include education and messaging—such as “Warning: Illegal Dumping is a Crime” or “Scavenging and Theft are Chargeable Offenses.” Signage and recycling literature can help to make it clear to dumpers that dumping is a crime and that enforcement is taken seriously. Communities that issue tickets and follow through with collecting fines will discover that word gets around that illegal dumping is not tolerated. Publishing the names of individuals prosecuted and their resulting punishment can help to reinforce the message throughout all sectors of the community.

New Mexico's [How To Establish And Operate An Illegal Dumping Prevention & Clean Up Program](#) provides an excellent overview of the steps for setting up an illegal dumping prevention program.

The [CalRecycle](#) website also has information and examples of local ordinances and surveillance programs.

## **Anti-Scavenging Ordinance**

Communities should consider adopting an anti-scavenging ordinance to deter illegal theft of revenue generating materials, such as aluminum cans, scrap metals and electronics. Recent issues with copper theft have resulted in a host of updated laws regarding scrap metal theft; research local ordinances for your area.

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<sup>14</sup> Skumatz, Economic Research Associates Inc., [Revised Westminster Trash and Recycling Report, 2010](#)

<sup>15</sup> Ibid.

## Staffing

A very important consideration for recycling drop-off centers is staffing. Obviously the cost of having employees is an issue, however, unstaffed centers often encounter higher levels of illegal dumping and material contamination. Providing staff, even if on a limited basis, allows for better site maintenance, management and customer assistance. Staffing allows for effective interaction with the public and collection contractors.

If funding is problematic, consider staffing sites part-time. Employees could check sites in the morning and conduct basic maintenance, clean-up, and bin/container monitoring in the evening. With this arrangement, fenced sites can be locked during evening hours to deter illegal dumping and theft, and open during daytime hours. If the site cannot be staffed during all open hours and/or is open 24 hours a day, consider monitoring traffic at the site for a period of time in order to determine periods of peak usage. This can identify for program owners/hosts which high traffic hours are best to strategically provide limited staff resources.

Ensure all employees and volunteers are trained in acceptable material specifics, sorting requirements, the collection system and basic recycling education, in order to interact effectively with customers. Equipment operation and safety must also be included, as appropriate. Creating a basic site training guide that presents a brief overview of the collected materials, answers to common customer questions, and operational procedures will be beneficial for employees and/or volunteers.

## Employee Health and Safety

Human health and safety are essential in daily operations and should be placed at the forefront of best operational practices for recycling drop-off facilities. All operators must be trained in safe equipment operating procedures and policies/practices must be enforced by management. Fire and hazardous emergency response should be included in employee training (see below), along with appropriate first aid procedures. All centers should be equipped with first aid supplies, fire extinguishers and basic spill kits per OSHA guidelines. All suggested training and safety precautions should apply whether the drop-off center uses paid staff or volunteers.

Recycling operators must be aware of common practices and conditions which may pose safety concerns, including:

- Proper lifting techniques for unloading customer vehicles and providing assistance
- Awareness of potential hazards, such as snow, ice and objects left on the ground, clearing pathways, ramps and stairs to drop-off bins/containers will help to keep the facility safe for employees and customers
- Detection of risky or dangerous situations, such as prohibited materials brought in by customers (chemicals, fluorescent bulbs, mercury containing devices, etc.)
- Proper handling and storage of potentially dangerous materials accepted at the center, such as electronics which may be bulky and heavy, or used oil or fluorescent bulbs which are potentially hazardous if hauled or stored improperly.
- Safe operating procedures for balers, compactors, forklifts and automated equipment.
- Knowing when wearing personal protective gear is necessary, such as hearing protection when operating equipment and gloves/eye protection when handling electronics or hazardous materials
- Proper materials storage and loading procedures, especially if baling or material compaction is conducted

Operators should be aware at all times of potential problems and ways to prevent injury, as well as preventing equipment from being damaged. Programs run by a government unit or private organization should establish safety procedures and training as a regular part of the center's operation. Centers run by volunteers should check with their affiliated host agency or the municipality if municipally-owned, to be provided training on equipment and safety procedures.

The recycling operation supervisor should typically take charge of overall safety for the operation and ensure that regulations and recommended safety practices are followed. Larger operations may want to have a designated safety officer or safety committee. Consider rotating the position of safety officer, so that all employees are well versed in safety procedures and practices for the facility.

The safety officer will be responsible for safety training, including posting of written procedures, and ensuring that all practices are followed by employees, including the wearing of personal protective equipment. If an accident occurs, the safety officer will investigate the cause of the accident and write a follow-up report. A disciplinary procedure should be in place related to willful misconduct or negligence by employees. An incident review committee is advisable, to create/adjust policies and procedures for maximizing safety conditions.

It is important that all recycling center employees be trained in proper equipment operation. Compactors, balers and any other automated power equipment should be equipped with emergency shut-off switches to cut power in case of an emergency or when maintenance is required. *If equipment stops operating or becomes blocked by material, the power should be shut off and access to the machine blocked prior to any attempt at repair.* Advise employees never to climb on equipment or attempt to remove blocked materials unless the power is off and the equipment lockout system is in place. Procedures for removal of jammed materials in compactors and balers should be posted next to or on equipment. Procedures should be discussed at employee trainings and consistently followed.

For more detailed information, the National Waste and Recycling Association's [Manual of Recommended Safety Practices](#) includes safety procedures and recommendations for equipment operators at transfer stations and material recovery facilities (MRFs) which would also be applicable to drop-off centers operating similar equipment and vehicles, such as forklifts.

The Waste Equipment Technology Association holds the Secretariat for the American National Standards Institute (ANSI) Z245 Committee, which develops all of the equipment safety standards for the waste industry.

A [Copy of Standards](#) can be ordered through the Association. The Standards include: Baling Equipment – Safety Requirements and Mobile Wastes; Recyclable Materials Collection, Transportation; and Compaction Equipment – Safety Requirements.

#### **Operator Training Tip**

Recycling center employees and/or volunteers should be trained (and training should be regularly updated) in proper equipment operation and safety practices. It is important that shut-off and lockout practices be emphasized and procedure signage posted next to all equipment. Training should include manufacturer recommendations for equipment issues and removal of jammed materials.

For detailed examples of safety procedures for operation of baling, compacting or other automated equipment, refer to the Illinois Recycling Association's [Best Operational Practices Manual for Materials Recovery Facilities and Recycling Drop-Off Facilities](#).



The Occupational Safety and Health Administration (OSHA), which enforces Federal safety regulations, provides [training guidelines, standards, and resources](#) for free download. Publications include [Fire Safety](#), [Job Safety and Health](#), [Recycling](#), [Training](#) and more. The [Illinois On-Site Safety and Health Consultation Program](#) offers free and confidential safety and health advice for improving workplace safety and health. The National Institute of Occupational Safety and Health (NIOSH) [Preventing Deaths and Injuries While Compacting or Baling Refuse Material](#) describes the safety risks of operating baling equipment and provides recommendations for preventing injury.

## Fire Safety

Fire safety measures, including how to use a fire extinguisher, should be included in employee training. Load inspections can help to prevent potentially ignitable substances or “hot loads” from being improperly disposed at the recycling center. Fire extinguishers should be placed at key locations around the facility, including equipment areas and hazardous material collection areas. Fire extinguishers should be included in the annual calendar of equipment maintenance and visually examined and tested for operability each year.

Priority actions in recycling drop-off center emergencies:

1. Ensure immediate employee and customer safety
2. Notify appropriate emergency personnel – fire, medical, safety

Recycling operations handling paper/fiber materials unfortunately experience fires all too often. An inspection of stored paper and cardboard should ideally be conducted at each business day’s end, to ascertain there is no “hot load” before closing. A small paper fire started by a cigarette can be extinguished relatively easily but if left to smolder unchecked for hours, can become a large fire causing major damage.

Operators should be trained to handle small fires using onsite fire extinguishers. In the event of building or equipment fires that cannot be controlled safely with onsite equipment, the fire department should be immediately contacted and the area evacuated. Check with local fire officials to review fire safety at the center and to train operators in the use of fire extinguishers. Centers located in enclosed buildings may be required by law to have ceiling-mounted sprinklers and fire dampening equipment. Check with fire department officials for applicable regulations.

## Spills and Facility Clean-up

The best way to protect employees, customers and the environment is to operate in a safe manner at all times to avoid spills and hazards. All recycling center operators should know how to handle chemical spills and breakage of items such as lead-acid batteries, fluorescent light bulbs, electronics and similar items which may pose hazards. Inevitably, even if publicized as not acceptable, drop-off centers will sometimes receive these undesirable materials.

If used oil, fluorescent light bulbs, or other hazardous materials are collected at the center, operational procedures should be in place for inspection, handling, and storage of collected materials. Employee training and training updates in these procedures is critical. Spill and clean-up plans should be in operations procedures; if these are not properly controlled, the storm drain system and receiving lakes, rivers and streams can be adversely affected. Spill prevention and response procedures should be clearly presented in a procedures guide and posted. Keep an adequate supply of dry cleanup materials and a spill kit readily accessible for emergency cleanups. Also keep emergency contact information visibly posted in work areas.

See the Household Hazardous Waste and the Universal Waste Best Operating Procedures section of this guide for a discussion on collection of used oil, paint, and household hazardous materials. More information on managing [hazardous wastes](#) can be found on the Illinois EPA's website.

*A recommended spill response and control plan includes:*

- Spill/leak prevention measures
- Spill response/cleanup procedures—spill identification, location, deployment of absorbent materials
- Availability and proper use of PPE to mitigate the effects of chemical vapors/fumes
- Emergency contacts
- Reporting content, format and schedule
- Training for all of the above

*Prevention Measures*

- Berm storage areas so that if a spill or leak occurs, the material is more easily contained
- Cover outdoor storage areas with a permanent roof and/or protective walls
- Check bins/containers (and any containment sumps) regularly for leaks and spills
- Replace containers that are leaking, corroded, or otherwise deteriorating
- Collect all spilled liquids and properly dispose of them
- Recycling centers that accept paint, used oil, and other hazardous materials should collect these items indoors or under cover and away from storm drains, streams or bodies of water
- Properly label all containers so that the contents are easily identifiable
- 

A regular sweeping and cleaning schedule around any processing equipment/storage containers will remove any fluids and particulate residue which may have spilled.

Post a list of emergency numbers in several highly visible locations around the center; the list should include key emergency spill response contacts. See Appendix B.

*Spill Response/Cleanup Procedures for **unknown** or hazardous materials*

- Store and maintain appropriate spill cleanup materials (absorbents) in a clearly marked location near hazardous material storage areas (if applicable) or locations where they are readily available
- Train employees to ensure familiarity with proper spill cleanup procedures
- If an unknown or hazardous material spill occurs notify the fire department immediately
- Utilize all necessary PPE (such as breathing masks, gloves) and if appropriately trained and equipped for the situation, and if deemed safe, attempt to contain the spilled material, blocking any nearby storm drains to minimize the area impacted
- If cleanup of the material poses a health or safety risk to personnel, the site should be evacuated and secured to prevent entry
- Wait for properly trained fire department personnel to contain spilled materials.
- For hazardous or very large spills, a private cleanup service or HazMat team may be needed to assess the situation, conduct cleanup of the area and provide disposal of the materials.

*Spill Response/Cleanup Procedures for **known** substances, such as paint and oil*

- Use absorbent materials to soak up liquids, then use brooms or shovels to scoop up and contain contaminated absorbent materials.
- Clean or dispose of any equipment used to clean up the spill.



- If water is used, it must be collected and properly disposed of; contaminated wash water cannot be allowed to enter the storm drain.
- Properly Dispose known unusable waste materials as hazardous waste.

### *Reporting*

- Report any large or dangerous spills immediately to the identified key municipal or state spill response personnel.

A spill kit generally consists of a container (leak-proof drum, large pail, storage box, etc.) that includes absorbent granular, flaked or powdered material (such as cellulose, vermiculite, or similar material), absorbent socks/booms and pads, safety glasses, and nitrile gloves. Rubber drain covers, used to prevent spills from spreading or entering storm/sewer drains, should also be included, particularly at centers that collect used oil or household hazardous wastes. A spill kit can be purchased or made. Inexpensive spill kits can be purchased from many vendors. Consult with fire department or municipal safety personnel for suggestions. Label the spill kit with large letters and store it in a dry, accessible location. Be sure that operators know where the spill kit is located and how to properly use it in an emergency.

### *Fluorescent Tube/Bulb Cleanup*

- If the break occurs indoors, ventilate the area for several hours. In an enclosed space, effective ventilation of the area may require use of fans or automated air purifiers.
- Wear rubber or puncture-resistant nitrile gloves to protect your hands from the sharp glass.
- Carefully remove the larger pieces and place them in a secure closed container, preferably a large glass container with a metal screw-top lid. A large plastic container or bucket with a lid will suffice. Work safely but quickly to gather the pieces, in order to reduce the amount of mercury vapor that gets into the air.
- Collect the smaller glass shards and dust using two stiff pieces of paper (such as index cards or playing cards) to scoop up pieces.
- Pat the area with the sticky side of duct tape, packing tape or masking tape to pick up fine particles. Wipe the area with a wet wipe or damp paper towel to pick up very fine particles.
- Put all waste and materials into the container, including all material used in the cleanup that may have been contaminated with mercury. Label the container as 'Broken Lamp.'
- Employees who were in the area when the breakage occurred and the employee who did the cleanup should thoroughly wash their hands and face. Employee clothing worn during the spill/cleanup should be washed separately from all other clothing.
- Take the Broken Lamp container to a facility that accepts [household hazardous waste](#). If there is no permanent facility nearby, keep the container in a safe place until the next one-day household hazardous waste collection occurs in the area. Do *not* take a *broken* compact fluorescent lamp (CFL) to a retail collection facility.

### *For Small Mercury Spills*

Recycling operations should keep a mercury clean-up kit at the center or make their own kit with the following: gloves; an eyedropper; two thin but stiff pieces of paper or cardboard; two plastic bags; a large tray or box; duct tape or packing tape; a flashlight and a wide mouth container that can be closed tightly.

To clean up the amount of mercury in a typical mercury fever thermometer or less:

- Keep people away from the spill area.
- If the spill occurs indoors, turn off any heaters and any air conditioners and/or air purifiers to minimize the mercury that vaporizes. Ventilate the area by opening windows and, if possible, keep open for at least two days.
- Do not touch the mercury.

- Remove all jewelry and watches from your hands, as mercury will bond with the metal.
- Put on gloves, preferably rubber gloves to minimize contact with mercury.
- Use the flashlight to locate the mercury. The light will reflect off the mercury beads and make them easier to find.
- Any tools used for cleanup should be considered contaminated and disposed of along with the mercury.
- Use stiff paperboard to push beads of mercury together. Use the eyedropper to suction the beads of mercury, or working over the tray to catch any spills, lift the beads of mercury with the stiff paper.
- Carefully place the mercury in a wide-mouth container. Pick up any remaining beads of mercury with sticky tape and place the contaminated tape in a plastic bag, along with the eyedropper, stiff paper, and gloves. Label the bag as 'Mercury Waste.' Place this bag and sealed container in the second, sealed bag. Label the second bag "Mercury Waste."
- Employees who were in the area when the breakage occurred and the employee who did the cleanup should thoroughly wash their hands and face. Employee clothing worn during the spill/cleanup should be washed separately from all other clothing.
- The mercury waste must be handled as a hazardous waste. For more detailed information, go to the [Mercury Recycling/Disposal](http://www.epa.illinois.gov/topics/pollution-prevention/mercury/recycling-disposal/index) section of IEPA's website <http://www.epa.illinois.gov/topics/pollution-prevention/mercury/recycling-disposal/index>

For more information on [mercury or fluorescent tube cleanup](#) visit the Illinois EPA website. For larger spills of more mercury than is contained in the typical mercury fever thermometer, contact the Illinois Department of Public Health Division of Environmental Health at (217) 782-5830.



## Best Operational Practices: Metal Cans and Scrap Metals

Metals recycling—ferrous (includes steel and iron) and nonferrous (includes aluminum, copper and brass)—plays an integral role in the United States economy and offers many environmental benefits. Some recycling drop-off centers will collect only metal cans; others will include scrap metal as well.

### Aluminum Cans

Just over 58% of the aluminum cans used in this country are recycled. Aluminum cans are one of the highest valued recyclables. Due to the economic benefits of recycling aluminum cans, many recycling drop-off centers will collect them separately from other metal cans.

Aluminum cans are easily marketed by drop-off centers and their light weight allows for relatively easy storage and transport.

### Steel Cans

Steel is the most recycled material in the United States and worldwide. In the United States, the 2011 recycling rate for steel cans was 71%.<sup>16</sup> All steel food and beverage containers, including “tin” (steel cans with a thin coating of tin) and lined cans are all acceptable for recycling. Empty, clean steel paint cans and steel lids and bottle caps are acceptable along with metal can recycling in some programs or in scrap metal collections.

### Scrap Metal

Steel, aluminum and other metals are found in a range of consumer products such as appliances, building materials and vehicles. In the United States, the 2011 recycling rate for appliances was 90% and for cars it was 95%.<sup>17</sup> Many drop-off centers will accept scrap metals. Some may only accept appliances or “white goods” such as washing machines. Others will collect a varying range of scrap metals, depending on site availability for storage, local hauling services and markets.

When managing appliances, it is important that any coolants – such as CFCs – be removed by authorized professionals. CFCs are commonly found in air conditioners, dehumidifiers, refrigerators and freezers. These appliances, along with ranges, water heaters and similar large appliances that have not had their components removed are **banned** from disposal in Illinois. Special requirements for removal and handling are in place not only for CFCs/Freon but also for mercury switches and other hazardous components. It is strongly recommended that CFCs and mercury components be removed by recycling professionals who are certified to provide these services.

### Aerosol Cans

Empty steel aerosol cans may be included with metal can collection. All empty steel aerosol cans including health and beauty products, food products, laundry products, spray paint, lubricants, cleaning products and asthma medications



<sup>16</sup> <http://www.isri.org/CMDownload.aspx?ContentKey=1d7c41b3-68a6-46a6-a128-ae75323136f4&ContentItemKey=a8f72d4b-1a1f-482d-ab98-f45f9a4d579b>

<sup>17</sup> <http://www.isri.org/CMDownload.aspx?ContentKey=1d7c41b3-68a6-46a6-a128-ae75323136f4&ContentItemKey=a8f72d4b-1a1f-482d-ab98-f45f9a4d579b>

(inhalers) can be recycled. These must be completely empty to prevent combustion and fires; no air or noise should come from the nozzle when pressed. Do not puncture, pierce, flatten or remove nozzles prior to recycling. Educate program users to completely expel contents and air pressure before dropping off to be recycled.

Aerosol cans that still contain hazardous materials or chemicals may be delivered to a household hazardous waste (HHW) collection facility or collection event. For a list of facilities and schedule of collection events please visit <http://www.epa.illinois.gov/topics/waste-management/waste-disposal/household-hazardous-waste/collections/index>.

### Metals Recycling Benefits

Once collected, metal cans are transported to a materials recovery facility (MRF) and baled for marketing. Scrap metals will be transported to a metals recycler or “scrap yard” to be sorted by metal type. Recycling operations which collect aluminum cans separately may also transport the cans to a scrap yard for recycling.

At a MRF, if metal cans are collected together, steel cans will be separated from aluminum cans by magnets. The cans will then be baled separately and transported to smelters for additional processing prior to being manufactured into new products. At a scrap metal yard, ferrous and nonferrous metals are also efficiently separated by use of magnets.

#### Recyclable Metals

- Aluminum beverage & pet food cans
- Clean aluminum foil & foil containers
- Steel (“tin” & lined) cans
- Empty steel aerosol cans
- Empty, clean steel paint cans
- Steel lids and bottle caps
- Scrap metal—wire, sheet, rebar, gutters, piping, siding, fixtures, shelving, appliances, microwaves, fans, bicycles, etc.

When metals are recycled, metal products (such aluminum or steel cans) are heated in order to melt the metal and mix with virgin materials such as bauxite ore in the case of aluminum and iron ore for ferrous metals. The molten mix is treated with other additives and poured into ingots or slabs, which are rolled or formed into flat sheets or other shapes then ready to be made into new metal products.

Recycled steel (“ferrous”) scrap is now used to produce more than 60 percent of total raw steel produced in the United States. The US is also the largest exporter of scrap steel.<sup>18</sup> Once collected, aluminum cans are used in the manufacture of new aluminum cans in as little as 60 days. The average recycled content of an aluminum can manufactured in North America is around 68 percent.<sup>19</sup>

The energy saved by using scrap metals to manufacture new items is around 92% for aluminum and 90% for copper.<sup>20</sup> Recycling one ton of steel conserves 2,500 pounds of iron ore, 1,400 pounds of coal and 120 pounds of limestone. Recycling a ton of aluminum conserves more than 5 metric tons of bauxite ore and 14 megawatt hours of electricity.<sup>21</sup>

<sup>18</sup> <http://www.isri.org/CMDownload.aspx?ContentKey=1d7c41b3-68a6-46a6-a128-ae75323136f4&ContentItemKey=a8f72d4b-1a1f-482d-ab98-f45f9a4d579b>

<sup>19</sup> <http://www.aluminum.org/Content/NavigationMenu/NewsStatistics/Sustainability/default.htm#Aluminum%20Can%20Recycling>

<sup>20</sup> <http://www.isri.org/CMDownload.aspx?ContentKey=41c2f107-0576-4a61-a0aa-078cab920e84&ContentItemKey=f08c8afb-2927-4820-84bd-19eeada22839>

<sup>21</sup> <http://www.isri.org/CMDownload.aspx?ContentKey=1d7c41b3-68a6-46a6-a128-ae75323136f4&ContentItemKey=6ea979cb-689a-4fec-aff9-f31b0d22ddd7>

Use of recycled metals in manufacturing processes:

- Requires significantly less energy than processing raw materials
- Replaces environmentally costly virgin materials
- Reduces overall environmental impacts of resource extraction, including potential pollutants and greenhouse gases

Making new products from local/regional recycled material sources can help to increase overall manufacturing efficiency.

### **Collection Options**

Collection options for metals will vary depending on the hauler providing services and the processor accepting the metals. Drop-off operators need to consult with area haulers/processors to determine exactly what types of metals are acceptable, how they should be separated, and what kind of collection bins/containers will be provided.

Most haulers will collect all metal cans together. Collecting aluminum cans separately and transporting the collected cans to a scrap metal recycler will allow for revenues to go directly to the recycling center. However, separating aluminum cans and marketing them alone may lower the revenues received from other collected materials or require additional collection charges due to the decreased revenues received from the materials without aluminum. If aluminum cans are collected separately it is important that the cans remain free of contaminants including dirt, glass shards, plastic bottles, ferrous cans and paper.

*Single-Stream:* In this type of collection all recyclables—food/beverage containers and paper—are collected in one container. Some recycling drop-off centers may collect aluminum cans separately for direct marketing.

*Dual-Stream:* All acceptable metal beverage and food cans are collected in one collection bin, along with glass and plastic food/beverage containers.

*Sorted-Stream:* Steel and aluminum cans will be collected together in a separate container from glass and plastic food/beverage containers (and sometimes collected separately).

*Scrap metal:* Scrap metal will be collected separately from food and beverage containers. Some recycling centers may also participate in special “bulky waste” collection events for appliances and other scrap metals. Check local listings for area service calendars or community drive events.

### **Collection Containers**

For most recycling drop-off centers in Illinois, collection bins/containers are provided by the hauler. Work with the hauler to ensure that lids are appropriate for recycling and that containers are labeled (either using plastic decals or metal or magnetic signs). Self-haul operations should consider available hauling equipment, site space constraints, anticipated volumes, and the best options to meet the needs of customers. Always place trash barrels or other receptacles near recycling containers for deposit of non-acceptable items (such as plastic bags). Not providing receptacles for non-recyclable trash can lead to contamination of desirable materials.

Due to the high monetary value of aluminum cans, copper piping and other nonferrous metals, precautions should be taken to lock container doors or secure collection bins to prevent scavenging at unstaffed and/or unsecured centers. See the Site Design/Expansion Considerations section of this guide for more specifics on site design, bin/container placement and signage.

There are many collection bin/container options for steel and aluminum cans:

- *2 to 8 Cubic Yard:* Collected with a front-loader truck. Containers should be designed with holes or slots through which recyclables are dropped into the container. This will reduce contamination that may occur if lids can be completely opened (as with trash dumpsters).
- *20 to 30 Cubic Yard:* Collected and transported with a roll-off truck. Bins/containers may be compartmentalized to hold multiple, sorted materials. Properly sized and shaped openings through which recyclables are deposited can help to reduce material contamination, particularly at unstaffed sites. If equipped with sliding doors, the doors should be able to be secured to prevent water from getting in and to close off if the compartment becomes full.
- *Compactor Box:* Collected with a roll-off truck. Compactor boxes may be designed to hold one material type or multiple material types depending on the collection system (single-stream, dual-stream, or sorted).
- *Igloos:* These are containers shaped like “igloos” which typically hold single commodities. A specially designed truck is required for emptying the containers. These containers work well in unstaffed situations as they are effective in limiting material contamination due to smaller openings through which materials are deposited and ample area to display photographs/graphic images identifying acceptable items.



Scrap metals are typically be collected in 20-30 cubic yard “open-top” containers called “roll-off” containers due to the manner in which these bins are delivered/picked up. If room allows for separate on-ground storage of designated scrap metal materials such as aluminum siding and copper, higher revenues may be received for these segregated items. Appliances may be stored on the ground for later removal by a hauler, provided they have been inspected and proven not to be leaking chemicals or gases/vapors. Prior to storing appliances outdoors before sending to end markets, it is advisable to have a certified professional remove all special and/or hazardous components and liquids.

### Signage and Promotional Information

- Include what is acceptable on signage and on containers, such as “Metal Food and Beverage Cans”
- Pictures or line drawings of acceptable metal cans will help customers identify and sort materials properly
- Additional language to include on signage or in brochures and on website promotional materials:
  - Empty contents and rinse lightly
  - Labels may be left on
  - Do not flatten cans
  - No plastic bags



### Other Collection Tips

- Try to keep collection container lids closed at all times. This will help keep metal materials dry and keep lightweight, individual aluminum cans from becoming blowing litter.
- Periodically inspect collection containers and remove any contaminants.
- Ensure that education labels/signage are in place and legible.



## **Additional Information**

Drop-off centers considering marketing their own metals should consult [The Institute for Scrap Recycling Industries](#) guidelines for ferrous and nonferrous metals. The [Scrap Specifications Circular](#) provides guidelines for buying and selling a variety of processed scrap commodities, including ferrous and nonferrous metals.

The [Steel Recycling Institute](#) also provides [educational](#) and [marketing](#) resources. The [Aluminum Association](#) provides educational information as well as [industry standards](#) for marketing aluminum.

The “[Household Scrap Infographic](#)” presents an excellent overview of household opportunities for recycling scrap metals and the benefits of metal recycling.

It is important to provide a secure location for scrap metal containers if you wish to prevent theft of these materials. Illegal scavenging (also known as “scrapping”) is an issue at some facilities. Installing security cameras and posting signs about relevant fines for theft will help prevent theft.



## Best Operational Practices: Plastic Bottles



Plastics are used to manufacture common products such as food/beverage containers, toys, clothing, electronics and furniture. Because plastics are so widespread and their use continues to increase, it is important to recycle as many plastic products as possible.

In 2011, 32 million tons of plastic waste was generated, comprising about 13% of the municipal solid waste stream. The largest category of plastic waste included containers and packaging, such as soft drink bottles and shampoo/detergent bottles (14 million tons.) However, the amount of discarded plastics used in durable goods such as appliances, furniture, and electronics (11 million tons) and nondurable items such as diapers, trash bags, cups/utensils and disposable medical items (7 million tons) is growing.<sup>22</sup>

Recycling rates for different types of plastic products vary widely, resulting in an overall average US plastics recycling rate of only 8%, or 2.7 million tons in 2011.<sup>23</sup> Plastic bottles, however, had a recycling rate of 30.5% in 2012.<sup>24</sup>

### Plastics Recycling

Once collected, plastics are transported to a material recovery facility (MRF), where the plastics are sorted by plastic type or “grade,” then baled and sent to a reclaiming facility. At these facilities, the plastic is washed and ground into small chips or flakes. A “flotation tank” is used to remove contaminants or undesirable resins, based on the different densities of materials. The resulting plastic flakes are dried, melted, filtered, and formed into pellets. The pellets are then shipped to manufacturing plants to be used to make new plastic products. The primary market for recycled PET (soda bottles) is fiber for carpet and textiles. The primary market for recycled HDPE (milk jugs, and detergent/shampoo bottles) is new bottles.

#### Common Grades of Recyclable Plastics

PET (#1) - Polyethylene Terephthalate  
HDPE (#2) - High-density Polyethylene  
LDPE (#4) - Low-density Polyethylene  
PP (#5) - Polypropylene  
Other (#7) - Other Plastics

NOTE: PVC (#3) -PolyVinylChloride and PS (#6) Polystyrene lack wide acceptance due to very limited end markets in Illinois and the US.

Most plastics are primarily made from oil and other petrochemicals.<sup>25</sup> As a result, recycling a ton of plastic bottles saves about 3.8 barrels of oil<sup>26</sup> and reduces related environmental costs of extraction and transportation.

“Compostable” plastics are made from organic materials such as potato starch, bamboo and sugar wastes. These natural materials degrade in high temperatures in carefully managed compost operations. Some compostable plastic items are not compatible with traditional petroleum-based plastics and are contaminants in most composting drop-off programs.

### Collection Options

<sup>22</sup> <http://www.epa.gov/osw/conserve/materials/plastics.htm>

<sup>23</sup> Ibid.

<sup>24</sup> [http://www.plasticsrecycling.org/images/pdf/resources/reports/Rate-Reports/National-Postconsumer-Plastics-Bottle-Recycling-Rate-Reports/2012\\_US\\_National\\_Postconsumer\\_Plastic\\_Bottle\\_Recycling\\_Report.pdf](http://www.plasticsrecycling.org/images/pdf/resources/reports/Rate-Reports/National-Postconsumer-Plastics-Bottle-Recycling-Rate-Reports/2012_US_National_Postconsumer_Plastic_Bottle_Recycling_Report.pdf)

<sup>25</sup> “Compostable” plastics are made from potato starch, bamboo, and sugar wastes which allow them to degrade in high temperatures in properly managed compost operations.

<sup>26</sup> <http://www.plasticsindustry.org/Recycling/content.cfm?ItemNumber=1271&navItemNumber=12122>



Collection options for plastics will vary depending on the hauler providing services and the processor accepting the plastics. Drop-off operators need to consult with the hauler/processor to determine exactly what types of plastics are acceptable, how the plastics are to be separated and what kind of collection bins/containers will be provided.

Most haulers will collect plastic PET and HDPE bottles together. An increasing number of programs are including all plastic bottles in their collection. Some also accept plastic containers such as tubs/bowls and microwave trays. Special collections are available in some areas for non-bottle, bulky rigid plastics (#2 LDPE), found in large toys, garbage cans, lawn furniture and other items. These collections can be permanent drop-off programs or special event collections. Plastic bags (that are clean, dry, and empty) and plastic film can often be recycled separately but are rarely, if ever, accepted with mixed recycling.

*Single-Stream:* In this type of collection all recyclables—food/beverage containers and paper—are collected completely mixed in one bin.

*Dual-Stream:* All acceptable plastics go into one single bin, along with glass and metal food/beverage containers. Paper is collected in a separate bin.

*Sorted-Stream:* Plastics are collected in a separate bin from paper, glass and metal bins/containers.

### Collection Containers

For most recycling drop-off centers in Illinois, collection bins/containers are provided by the hauler. Work with the hauler to ensure that lids are appropriate for recycling and that containers are labeled (either using plastic decals or metal or magnetic signs). Self-haul operations should consider available hauling equipment, site space constraints, anticipated volumes, and the best options to meet the needs of residents and program users. Always place trash barrels or other receptacles near recycling containers for deposit of non-acceptable items (such as plastic bags.)

See the Site Design/Expansion Considerations section of this Guide for more specifics on site design, bin/container placement and signage.

### Special Plastics Collections

#### Bags

- Grocery sacks
- Reusable (woven)
- Produce, bulk, bakery
- Dry cleaner
- Soil, bark, compost
- Insulation
- Pellet
- Lumber wrap
- Silage sacks

#### Film/wrap

- Cling wrap ("Saran™")
- Shrink wrap
- Magazine/mail covers
- Bubble wrap
- Poly sheeting
- Painters' drop sheets
- Pallet wrap
- Tarps (remove grommets)

#### Non-bottle rigid plastics

- Plant/garden pots or trays
- Hinged containers (deli, to-go, etc.)
- "Blister" packaging (toys, electronics, toiletries, batteries, etc.)
- Buckets (remove metal handles)
- Toys, lawn furniture
- Pipe (HDPE #2 & PVC #3)
- Hangers

### Signage and Promotional Information

- Include what is acceptable on signage and on containers, such as “Plastic Bottles and Food/Beverage Containers.”
- Pictures or line drawings of acceptable plastic items will help customers identify and sort materials properly.
- Additional language to include on signage or in brochures and on website promotional materials:
  - Empty contents and rinse lightly
  - Labels may be left on bottles
  - Put plastic caps back on empty bottles
  - Bottles, tubs, bowls, cups, jugs and jars
  - No trays or black plastic
  - No flat lids (from dairy products)
  - No plastic bags



**Plastic Bottles and Containers #1-7**

Ascertain local program guidelines to learn if bottles that contained antifreeze, bleach, chemicals, motor oil or other potentially hazardous materials are acceptable at end markets and processors before educating/allowing residents to place these in recycling drop-off bins.

### Other Collection Tips

- Try to keep collection bin/container lids closed at all times. This will help keep materials dry and keep lightweight plastic materials from becoming blowing litter.
- Periodically inspect collection bins/containers and remove any contaminants.
- Ensure that education labels/signage are in place and legible.

### Additional Information

Drop-off centers considering marketing their own plastics should consult the [Association of Post-Consumer Plastic Recyclers](#) (APR). APR provides information on baling specifications for plastics, as well as buyer and seller resources for recycling operations that are considering baling and marketing plastics.

[PlasticFilmRecycling.org](#) provides resources on setting up a collection program for bags, film or wrap; sample promotional materials; and, a [Recycling Directory](#) of film collection providers.

## Best Operational Practices: Glass Bottles and Jars



Approximately 33% of glass containers were recycled in the United States in 2010.<sup>27</sup>

Glass food and beverage containers are 100% recyclable but cannot be mixed with other types of glass. Window pane glass, ovenware, Pyrex, crystal, ceramics, etc., are manufactured through a different process and cannot be recycled with glass food/beverage containers. If these contaminating materials end up in the glass container manufacturing process, they can cause serious safety issues and problems with defective containers.

Glass containers must be kept free of contaminants such as metals, ceramics, gravel and stones. Color sorting may be required, depending on available markets. Keeping glass sorted by color is beneficial when the recovered glass is used to manufacture new glass containers.

### Recycling Glass Bottles



When glass bottles are collected they are first transported to a materials recovery facility (MRF) where the glass is sometimes sorted using optical sorters and crushed into cullet. Sometimes glass is transported directly to a glass recycling plant where contaminants are removed, possibly hand-sorted by color and then washed. The cullet is first dumped onto a conveyor belt where a magnet pulls out metal caps, lids, tin cans and other metal items. Optical sorting machines use air jets to blow glass onto different conveyor belts. The clean glass cullet is sent to bottle/jar manufacturers where it is mixed with soda ash, sand and

limestone and melted in a furnace heated to about 1,700 degrees Fahrenheit. The molten glass is molded into new products, usually new food/beverage bottles and jars.

An estimated 80% of recovered glass containers are made into new glass bottles, jugs and jars.<sup>28</sup> Recycled glass can be substituted for up to 70% of raw materials used in making new glass bottles.<sup>29</sup>

Other markets for glass, particularly colored glass and mixed glass include:

- Fiberglass insulation
- Abrasive media/sand blasting
- Filtration media
- Cement replacement
- Porous pavement and concrete pavement
- Decorative glass and glass tile
- Roofing granules
- Aggregate/filler

Using recycled glass to manufacture new glass bottles uses about 34-60% less energy than when using all virgin feedstock,<sup>30</sup> which also means reduced greenhouse gas emissions. For every six tons of recycled glass containers used in manufacturing of glass bottles, approximately one ton of greenhouse gas emissions are

<sup>27</sup> <http://www.isri.org/CMDownload.aspx?ContentKey=1d7c41b3-68a6-46a6-a128-ae75323136f4&ContentItemKey=6ea979cb-689a-4fec-aff9-f31b0d22ddd7>

<sup>28</sup> <http://www.isri.org/CMDownload.aspx?ContentKey=1d7c41b3-68a6-46a6-a128-ae75323136f4&ContentItemKey=22a477a5-a83d-41b2-a743-930d7d0e9cb2>

<sup>29</sup> <http://www.isri.org/CMDownload.aspx?ContentKey=1d7c41b3-68a6-46a6-a128-ae75323136f4&ContentItemKey=6ea979cb-689a-4fec-aff9-f31b0d22ddd7>

<sup>30</sup> <http://www.isri.org/CMDownload.aspx?ContentKey=1d7c41b3-68a6-46a6-a128-ae75323136f4&ContentItemKey=6ea979cb-689a-4fec-aff9-f31b0d22ddd7>

avoided. Recycling also conserves other resources—for every ton of glass recycled more than a ton of raw materials is saved, including 1,300 pounds of sand, 410 pounds of soda ash, 380 pounds of limestone, and 160 pounds of feldspar.<sup>31</sup>

### **Collection Options**

Collection options for glass will vary depending on the hauler and/or processor accepting the glass. Drop-off operators need to consult with the hauler/processor to determine whether glass is to be collected separately by color, collected mixed in one container or collected mixed in with other beverage containers and paper. Some areas may have limited markets for glass bottles and jars, and so may elect not to collect glass or to collect only clear glass. Alternative markets for glass, such as for fiberglass or filtration media, may present opportunities for communities to recycle glass for use in local or regional markets.

*Single-Stream:* In this type of collection all recyclables—food/beverage containers and paper—are collected completely mixed in one bin.

*Dual-Stream:* Glass bottles/containers are collected in one bin, along with glass and metal food and beverage containers. Paper is collected separately.

*Sorted-Stream:* Glass bottles/containers are collected in a separate bin from mixed or separate plastics and metal food/beverage bottles/jars/jugs/cans. Glass may also be required to be separated by color (clear, green, brown) depending on requirements by the hauler/processor.

### **Collection Containers**

For most recycling drop-off centers in Illinois, collection bins are provided by the hauler. Work with the hauler to ensure that lids are appropriate for recycling and that bins/containers are labeled (either using plastic decals or metal or magnetic signs). Self-haul operations should consider available hauling equipment, site space constraints, anticipated volumes, and the best options to meet the needs of residents. Always place trash barrels or other receptacles near recycling containers for deposit of non-acceptable items (such as plastic bags).

See the Site Design/Expansion Considerations section of this Guide for more specifics on site design, container placement and signage.

There are many glass collection container options:

- Glass in particular, among all types of traditional recyclable materials, poses a potential risk both to program users dropping materials off and to service provider/s managing the materials. Specially designed receptacles to accept glass include those with deposit openings/holes covered with flexible safety material that allows user access but helps keep glass shards or pieces from flying and causing injury or litter.
- Properly sized and shaped openings through which glass recyclables are deposited can help to reduce material contamination, particularly at unstaffed sites. If equipped with sliding doors, the doors should be able to be secured to prevent water from getting in and to close off if the compartment becomes full.

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<sup>31</sup> <http://www.isri.org/CMDownload.aspx?ContentKey=1d7c41b3-68a6-46a6-a128-ae75323136f4&ContentItemKey=22a477a5-a83d-41b2-a743-930d7d0e9cb2>

### Signage and Promotional Information

- Include what is acceptable on signage and on bins/containers, such as “Glass Food/Beverage Bottles and Containers.”
- Pictures or line drawings of acceptable glass bottles and jars will help customers identify and sort materials properly.
- Additional language to include on signage, in brochures and on website promotional materials:
  - Empty contents and rinse lightly
  - Labels may be left on bottles
  - No dishware, Pyrex, light bulbs, windowpane or other type of glass
  - No plastic bags



### Other Collection Tips

- Periodically inspect collection containers and remove any contaminants.

### Additional Information

Drop-off centers considering marketing their own glass should consult [The Institute for Scrap Recycling Industries](#) guidelines for recovered glass. The [Scrap Specifications Circular](#) provides guidelines for buying and selling a variety of processed scrap commodities, including glass.



The [Glass Packaging Institute](#) website provides a list of glass manufacturers, cullet processors and recyclers. Recycling collection tips and educational materials can also be found on the website.

The [Pennsylvania Department of Transportation](#) provides information on its use of glass as backfill and aggregate.

The Texas Department of Transportation utilizes specifications for use of glass cullet in embankment fill, flexible base, retaining walls, and in other applications <http://www.txdot.gov/inside-txdot/division/general-services/recycling/glass.html> .



## Best Operational Practices: Paper



Paper (“fiber” in market terms) makes up more than half of all recyclables collected, by weight, in the United States.<sup>32</sup> In 2012, the recovery rate for paper was just over 65%.<sup>33</sup> About 31% of the paper and paperboard recovered in the U.S. went to produce containerboard (i.e. the material used for corrugated boxes) and 12% went to into manufacturing boxboard, which includes folding boxes and gypsum wallboard facings. About 41% of the paper collected was exported to China and other nations.<sup>34</sup>

Cardboard boxes (OCC – old corrugated cardboard) & brown paper bags (Kraft paper) had a recovery rate of 91% in 2012.<sup>35</sup> More than 70% of old newspaper (ONP) and coated newspaper inserts were recovered in 2012. Newspaper is typically used to make newsprint, tissue and other products.

Paper recycling offers many benefits:

- Reduces emissions that can contribute to climate change by avoiding methane emissions (from landfill disposal or incineration) and reducing energy required to manufacture new paper products
- Extends the fiber supply used to manufacture new paper/paper products and contributes to carbon sequestration (by allowing more trees to grow to maturity)
- Reduces energy and water consumption when recovered paper is used in new paper manufacturing
- Decreases the need for disposal and related costs
- Saves landfill space

Recycling one ton of paper<sup>36</sup>:

- Saves enough energy to power the average American home for six months
- Saves 7,000 gallons of water
- Conserves approximately 3.3 cubic yards of landfill space
- Reduces greenhouse gas emissions by one metric ton of carbon equivalent (MTCE)

### Acceptable Paper

- Old Corrugated Containers – “OCC” commonly known as “corrugated cardboard” includes boxes and other cardboard product packaging
- Mixed Paper – a broad category of paper that includes “junk” mail, catalogs, phonebooks, magazines, writing and craft paper, paperboard (food & cereal boxes). Some programs may accept paperback books & shredded paper (bag in recyclable paper bags)
- Old Newspapers – “ONP” or newsprint. Some programs include newspaper with mixed paper
- High Grade Deinked Paper – Typically recovered from businesses, this quality paper includes: envelopes, copy paper, and letterhead

### Collection Options

Collection options for paper will vary depending on the hauler providing services and the processor accepting the paper. Recycling operators need to consult with the hauler/processor on exactly what types of paper are acceptable, how the paper is to be separated and what kind of collection bins/containers will be provided.

<sup>32</sup> <http://www.epa.gov/osw/conserve/materials/paper/faqs.htm>

<sup>33</sup> <http://www.paperrecycles.org/statistics/paper-paperboard-recovery>

<sup>34</sup> <http://www.paperrecycles.org/statistics/where-recovered-paper-goes>

<sup>35</sup> <http://www.paperrecycles.org/statistics/recovery-use-of-old-corrugated-containers-%28occ%29>

<sup>36</sup> <http://www.epa.gov/osw/conserve/materials/paper/basics/index.htm>



**Single-Stream:** In this type of collection all recyclables—food and beverage bottles/jars/packaging and all paper (sometimes excluding cardboard)—are collected mixed in one bin.

**Dual-Stream:** All acceptable paper grades go into one bin; cardboard may be collected separately. Acceptable metals, glass, and plastics are collected mixed in a separate bin.

**Sorted-Stream:** Paper grades are collected in separate bins/receptacles. Typically newspaper, mixed paper and cardboard will each be collected separately. Metals, plastics and glass are collected in separate bins/containers.

**Corrugated Cardboard:** Often cardboard is collected separately from mixed paper due to its higher recovery value when marketed separately. Some haulers may provide a compactor for cardboard in order to increase the weight of collected loads. Alternatively, some operations may opt to bale cardboard to increase the marketability of cardboard or to market the material directly. See the Employee Safety section in this manual

### Collection Containers

For most recycling drop-off centers in Illinois, collection bins are provided by the hauler. Work with the hauler to ensure that lids are appropriate for recycling and that containers are labeled (either using plastic decals or metal signs.) Self-haul operations should consider available hauling equipment, site space constraints, anticipated volumes and the best options to meet the needs of customers. Always place trash barrels or other receptacles near recycling containers for collection of non-acceptable items (such as plastic bags).

See the Site Design/Expansion Considerations section of this manual for more specifics on site design, bin/container placement and signage.

### Signage and Promotional Information

- Include what is acceptable on signage and on bins/receptacles, such as “Mixed Paper and Cardboard.”
- Photographs, pictures or line drawings of acceptable paper items will help residents identify and sort materials properly.
- Be sure to state on the sign or bin/container that plastic bags are not acceptable and paper must be removed from bags.
- Additional language to include on signage or in brochures and on website promotional materials:
  - Flatten cardboard boxes
  - Keep materials clean and dry.
  - Clean paper only, no food residues
  - No fluorescent, foiled/metallic or plasticized paper
  - No waxed or plastic coated paper or paperboard (i.e. milk cartons)
  - No plastic
  - No juice boxes/cartons or 3-layer boxes (aseptic packages)



### Other Collection Tips

- Try to keep collection container lids closed at all times. This will help keep materials from blowing out and becoming litter, as well as keeping paper materials dry – *note: this is especially an issue with end markets for paper/fiber materials.*
- Periodically inspect paper collection bins and remove any contaminants.



**Common Questions – Are these recyclable?**

*Shredded paper*—Typically yes, although it depends on the processor or end market. Be sure to ask the processor if the shredded paper can be contained in a paper or plastic bag; if not, it is important to be clear (on signage and/or educational materials) that paper materials must be put into the collection bins/receptacles loose. If not carefully managed, collecting loose, shredded paper can create litter issues at recycling centers and during transport.

*Staples, paper clips, spiral bindings, sticky notes and envelope windows*—Yes, these are acceptable. Equipment at the paper mills will screen out these “contaminants”, however, reuse of paper clips should be encouraged.

**Additional Information**

Drop-off centers considering marketing their own paper should consult [The Institute for Scrap Recycling Industries](#) guidelines for recovered paper. The [Scrap Specifications Circular](#) defines each “grade” or type of recovered paper and provides general guidelines for sorting, packing, buying and selling recovered paper. The specifications also include information about acceptable levels for contaminants (such as plastics) and “out-throws” (paper that does not fit the definition for a specified paper stock grade.)

## Best Operational Practices: Reuse



Reuse helps a community reduce the amount of trash it has to dispose. Reuse programs educate residents about making waste reduction and reuse part of their regular routine. Reuse events and programs can instill a sense of community pride by reducing landfilled waste and making useable items available for those who may want or need them.

Reuse options for recycling drop-off centers include hosting one-time or periodic drives/events, or hosting an ongoing, permanent reuse program.



Textile drives, “swap days” and community tag sales are examples of reuse events that can be hosted at recycling centers. Textile collection boxes (see the “Best Operational Practices: Textiles” section) are an example of an ongoing reuse program. Another example is a reuse or swap station.

### *What to consider prior to program development:*

- Available space and storage for collected items
- Staff or volunteer time for overseeing the event/program
- Types of acceptable materials
- Costs
- Level of resident interest and participation

### **Reuse Events**

A reuse drive or event held at a recycling center is a great way to rally community interest in reuse. Residents benefit from learning more about reuse and recycling in the community and having an organized way to donate or swap items with others who can use them. The community gains from the spirit created and the diversion of materials from disposal. A regular once-a-month, spring/fall, semi-annual or even annual event can encourage greater community participation.

### *Possible reuse drives or events:*

- Swap Day, Trash-to-Treasure or “take it or leave it day”—Residents leave items for others to take and take items they want. Swap days can be organized for items not commonly collected in recycling programs, such as paint, books, toys, etc.
- Drives for specified beneficiaries—Residents drop-off usable items for designated beneficiaries, such as a library (books), a shelter (clothing, linens, toiletries), or charitable organization (household items, clothing, etc.)
- Community yard sale—Annual or semi-annual community yard sale where residents bring items for sale or giveaway
- Toy exchange—Great event for the holidays
- Paint swaps—May be held prior to household hazardous waste collections to encourage paint reuse and promote the collection events
- Planting pots and garden tools swap—Great event for early spring and community gardeners
- Prom or professional clothing – youth or service organizations may sponsor at strategic times of year

### **Examples of reusable items**

- Art & craft supplies
- Books
- Clothing/other textiles
- Furniture/office supplies
- Planting pots
- Small appliances
- Sporting equipment
- Toys & games
- Household tools/utensils

Reuse events are typically organized and staffed by volunteers. Recycling centers may provide space and possibly tables for the event, as well as assist with promotion and management/disposal of items not exchanged during the event. Partnering with a local charity or thrift store to take away any remaining items after the event will help ensure that all items can be reused.

### **Reuse Station/Shed**

A reuse station or “swap shop” is a permanent storage shed, building or even designated portion of a building where residents leave useable items they no longer need in order that others may use them. Household items are left in the designated reuse area so these items can be exchanged rather than landfilled. A reuse station provides an organized opportunity for residents to exchange and swap materials, bringing visible and immediate benefits to the community.

A reuse station offers recycling centers a low-cost way to divert materials from disposal. For a relatively small investment, a community can construct or purchase a suitable storage shed or small, portable building that will serve to meet program needs for long-term reuse. Reuse is typically a popular community activity, thus providing increased traffic for the recycling center and greater exposure for available services.

A relatively small space of 100 to 200 square feet (10 x 10 feet or 10 x 20 feet) will suffice for most communities’ reuse station. A reuse shed can be constructed out of new or salvaged wood or purchased as a prefabricated unit. The shed should sit on a concrete pad for foundation and stability. A three-sided shed with a roof may work, although fully enclosing the shed will protect items (and “swappers”) against the weather. The inside should be equipped with shelves, tables and hooks on which materials can be placed.

Reuse or swap stations can be set-up to accept a wide range of items—from textiles to working appliances. Stations/sheds can also be set up exclusively for specific items such as a book swap, gardeners’ swap or textiles swap. Organized “paint swap” stations allow residents access to usable paint. Partnering with a local charitable agency or thrift shop can help to ensure a home for items that stay on swap shop shelves too long.

### **Operation and Staffing**

A successful, long-term reuse program requires careful planning, monitoring and ongoing educational outreach. Reuse stations work best at staffed collection centers where an attendant can maintain the area to ensure that only acceptable items are left and keep the site neat and clean. It’s important that the reuse station be kept orderly to encourage residents to leave only usable items, and to keep the area ‘inviting’. Items that remain in the shed for a long period of time can be taken to local thrift shops to make room for new items. This will help to keep reuse sheds from becoming overly cluttered and help to ensure that customers return to look for new items. The station/shed should be kept clean, swept regularly, etc. to maintain an inviting atmosphere for users and donors.

If staffing by recycling center operators is a concern, volunteers can be solicited. The reuse station can be opened only during times that volunteers are available. Alternatively, the reuse shed can be monitored by recycling center staff during operating hours, and volunteers asked to come in on a weekly basis to clean out old items, organize, dust, etc.

“Pre-screening” items by recycling operators or a reuse station volunteer can help to ensure that only usable and acceptable items are left.

A reuse station with a professional appearance where items are organized with like items, signage is posted and items are stored neatly will encourage residents to use the station appropriately.

Consider placing a limit on the number of items that can be taken or dropped off at one time. This will promote greater involvement by a wider community, discourage people from taking items just for resale at flea markets and help keep the reuse station from becoming too cluttered.

A notice board may be posted on a wall or door of the reuse station/shed for people to post notices of items they have for exchange but are too big to leave at the reuse shed.



### **Promotion and Signage**

Reuse programs directly involve communities and depend heavily on support from residents. Outreach and program publicity are essential for success and help ensure that only useable items are dropped-off at a reuse station or brought to a reuse event.

Signage at reuse events should clearly state and show acceptable items and any event procedures to be followed.

Reuse station signage should clearly indicate acceptable items and procedures for leaving items, such as “check with attendant prior to leaving items.”

Signage can also express community benefits of the reuse station, state the importance of only leaving clean, usable items and emphasize keeping the site orderly/clean. If dumping of inappropriate items occurs, the community’s illegal dumping ordinance can also be cited on signage. A “first come, first served” sign helps to discourage potential conflict over donated items.

Recycling centers may also seek to limit liability by including signage (both at events and permanent reuse boxes or stations), indicating the municipality or recycling center owner/operator does not own any of the items in the swap shop and does not accept liability for any items swapped. Check with appropriate municipal/county staff or attorney for assistance in developing appropriate language. A list of acceptable items can be printed on a flier and/or posted on the municipal or host organization website for additional outreach.

### **For Additional Information**

- North Carolina Division of Pollution Prevention and Environmental Assistance provides a short guide about how to set up a swap shop - [Swap Shops: Cost-Effective Residential Reuse](#)
- Recycle New Mexico provides a [Case Study: Swap Shop & HHW Re-Use](#) that presents a model for a reuse station and also a household hazardous materials swap shed set up at a transfer station
- The American Coatings Association provides a [Guidance Manual for Paint Reuse Programs](#)
- The Reuse Alliance provides a list of [resources](#) on reuse
- Visit [www.freecycle.org](http://www.freecycle.org) to check for programs in your area providing online matching services for unwanted items (from donors) with users, finding new homes for good, used stuff.

## Best Operational Practices—Textiles



According to the U.S.EPA, each person in the United States generates about 82 pounds of textile waste per year. Currently, however, only about 15% of the textiles generated nationwide are collected for reuse or recycling.<sup>37</sup> Thus, 85% of potentially valuable used textiles end up in landfills and/or incinerators.



Collecting used textiles at recycling drop-off centers can help communities decrease the volume of their trash, save money on disposal fees, and conserve a usable resource. There is a viable and extensive infrastructure for the collection, distribution, reuse, and recycling of textiles that can meet the service needs of recycling drop-off centers. A growing trend around the country is for communities to partner with vendors in promoting textiles collections.<sup>38</sup>

### Textile Recycling Facts

- One ton of reused or recycled textiles saves approximately 11 cubic yards of landfill space.<sup>39</sup>
- One ton of reused textiles saves more than 3 million gallons of water, 1,318 pounds of fertilizer and 391 ounces of pesticides when replacing virgin/raw materials.<sup>40</sup>

### Textile Reuse & Recycling Markets

According to the [Council for Textile Recycling](#) (CTR) and the [Secondary Materials & Recycling Textiles Association](#) (SMART), 45% of the collected textiles in the U.S. are sold and reused as secondhand apparel, 30% are used to manufacture wiping and polishing cloths, 20% are reprocessed into fiber, and 5% are unusable.<sup>41</sup> Usable clothing is marketed throughout the United States, Canada, Mexico and internationally.

### Textiles Collection Options

Acceptable textiles can include a wide range of materials—new, old, stained, ripped or torn clothing and leather products, shoes, belts, bedding, draperies/slipcovers and stuffed animals. Consult with area textile service providers to determine the range of materials accepted and services provided. Both private sector companies and charitable organizations provide collection services. Charitable organizations typically provide collection services at no cost. Private sector service providers may provide services at no cost and may also return revenues for materials collected or support a local charity with the profits.

*Box Collection System:* These large metal collection boxes are increasingly common in communities for accepting textiles. Certain precautions are recommended to reduce illegal fly dumping, i.e. government requirements that all collection containers be clearly labeled with identifying contact information for the container owner/collector.

*Special Collections or Drives:* Textile collection special events can also be held at recycling centers. These events can be held for a set amount of time (perhaps in conjunction with America Recycles Day or Earth Day/Earth Month.) Collection containers or boxes are supplied by the textile vendor.

<sup>37</sup> [EPA Municipal Solid Waste in The United States, 2009 Facts & Figures](http://www.epa.gov/osw/nonhaz/municipal/pubs/msw2009rpt.pdf) (<http://www.epa.gov/osw/nonhaz/municipal/pubs/msw2009rpt.pdf> )

<sup>38</sup> “Best Operational Practices—Textiles” is adapted from [Collecting Textiles – Make it Work for Your Community](#) by Mary Ann Remolador, Northeast Recycling Council, Inc.

<sup>39</sup> [EPA’s Standard Volume to Weight Conversion](http://www.epa.gov/osw/conserve/tools/recmeas/docs/guide_b.pdf) ([http://www.epa.gov/osw/conserve/tools/recmeas/docs/guide\\_b.pdf](http://www.epa.gov/osw/conserve/tools/recmeas/docs/guide_b.pdf))

<sup>40</sup> [www.teximateam.com](http://www.teximateam.com)

<sup>41</sup> [http://www.smartasn.org/about/SMART\\_PressKitOnline.pdf](http://www.smartasn.org/about/SMART_PressKitOnline.pdf)

## Starting a Textile Collection Program

### Step 1. Develop a plan

- Is there an appropriate location for the collection box?
- How often would you want the collection box emptied?
- Do you expect to gain revenue from the collected textiles?
- Do you expect data on the amount of textiles collected?

### Step 2. Find Companies or Organizations that Collect Textiles in Your Geographical Area

There are many ways to find entities that collect textiles in your area. Following are a few strategies to use:

- Search the Internet under “textile collection” or “recycling textiles”
- Visit the [Council for Textile Recycling](#) and the [Secondary Materials & Recycling Textiles Association](#) for vendor listings
- Contact the [Illinois Recycling Association](#)

### Step 3. Conduct Due Diligence on Potential Vendor(s)

It is important to ensure that the vendor is reputable and that they meet expectations and requirements for effective service.

#### *Strategies for Researching Information on Vendors*

Visit the vendor’s website to determine the services offered, how materials are collected and how and where collected textiles are marketed. Check the provider’s references—find out where they provide collection services and contact the recipients to determine the quality of services provided.

If the service provider is a not-for-profit organization, conduct a search on [Charity Navigator](#) and/or [Charity Watch](#) for an independent rating of the organization.

Research the vendor on the Internet to learn what others are saying about them. Contact the Illinois Environmental Protection Agency and ask if the vendor is in compliance with state requirements. Contact the Better Business Bureau and inquire if there are any complaints against the vendor.

### Step 4. Develop & Sign a Contract Agreement with the Selected Vendor

Once steps 1 – 3 are completed and a service provider has been determined, contact the vendor to negotiate details of a service agreement and schedule a start date for the collection program.

### **Acceptable Textiles (new, old, stained or torn)**

#### **Clothing & Accessories**

- Accessories: Belts, hats, scarves, purses, ties
- Coats, jackets
- Dresses
- Pants, jeans
- Pajamas
- Shirts, blouses, T-shirts
- Shoes, boots, (single or in pairs)
- Shorts
- Skirts
- Socks (single or in pairs)
- Suits
- Sweaters
- Sweatpants & sweatshirts
- Undergarments, bras

#### **Bedding**

- Blankets, quilts, comforters
- Pillows
- Sheets & pillow cases

#### **Home Furnishings**

- Curtains/draperies
- Decorative pillows
- Napkins (cloth)
- Slip covers
- Table cloths & runners

#### **Other**

- Pet beds & clothing
- Stuffed animals
- Textile remnants/rags
- Unusable cloth bags



### Step 5. Promoting the Program

As with any recycling program, it's important to let residents know about the textile collection and its benefits. Some low-cost outreach strategies are:

- Announcements in local newspapers and on local television and radio stations
- Outreach to schools, churches, not-for-profit organizations, and civic groups
- Facebook and Twitter announcements
- Add the information to recycling lists and announcements
- Include in recycling center signage and brochures
- Articles in neighborhood and/or service organization newsletters



Textile collection box in West Deerfield Township, Illinois

*Photo courtesy of [US Again](http://www.usagain.com)*



## Used Electronics Recycling



Used electronic equipment, otherwise known as “e-scrap” or “e-waste”, includes a wide range of consumer items—from televisions and computers to cell phones and mice. These items contain hazardous materials such as lead, mercury, and cadmium, which can be harmful to the environment if disposed or handled improperly.



For example, circuit boards, cathode ray tube (CRT) monitors and televisions contain lead. Mercury is used in the backlighting lamps of LCD monitors (flat screen TVs and many laptops). Laptop batteries, and some cables and wiring contain cadmium.



[Public Act 97-0287 - Electronic Products Recycling & Reuse Act](#) establishes a statewide system in Illinois for reusing and/or recycling 17 “covered electronic devices” and 4 “additional electronic devices” discarded by residents. The law requires electronic manufacturers to participate in the management of discarded and unwanted electronic products.

*In Illinois, the following covered electronic devices are banned from disposal:*

- Televisions
- Monitors
- Printers
- Computers (laptop, notebook, tablet, desktop)
- Electronic keyboards
- Facsimile machines (fax)
- Videocassette recorders
- Portable digital music players
- Digital video disc players
- Video game consoles
- Small scale servers
- Scanners
- Electronic mice
- Digital converter boxes
- Cable receivers
- Satellite receivers
- Digital video disc recorders

*Additional Eligible Electronic Devices:*

- Cell phones
- Portable digital assistant (PDA)
- Computer cable
- Zip drive

Government-operated recycling centers can register to accept electronics with the [Illinois Environmental Protection Agency](#). Grant [funding](#) is available to recycling coordinators to promote the Illinois legislation. For additional information on the Electronics Products Recycling and Reuse Act, contact the Illinois Environmental Protection Agency, Electronic Waste Recycling program at (217) 524-6713.

Providing collection of electronics at recycling centers or other community drop-off points provides residents with a convenient place for electronics recycling and helps to ensure that used electronics are recycled and do not end up in the trash. Government agencies can look for partnerships with other municipal and regional government agencies, as well as not-for-profit organizations, and private-sector businesses for drop-off site hosting and promotion of electronics recycling.

## Responsible Electronics Recycling

When electronics are collected for recycling, the generator of the equipment is ultimately responsible for selecting a reputable recycler. The US Environmental Protection Agency promotes [responsible electronics recycling](#) by encouraging electronics collectors to partner with recyclers that are certified through an accredited, independent third-party auditor. Currently there are two accredited certification standards: R2Standard and e-Stewards.

*Responsible electronics recycling provides significant benefits, such as:*

- Reducing environmental and human health impacts from improper disposal or recycling.
- Providing quality reusable and refurbished equipment.
- Conserving natural resources, and reducing energy use and other environmental impacts associated with mining and the processing of virgin materials by remanufacturing new products with recycled materials recovered from in used electronics.

Contracting with an [R2 Standard](#) or [e-Steward](#) certified processor assures drop-off center operators and communities that their electronic equipment will be reused and recycled under strict environmental, health and safety requirements, thus lowering any potential liabilities associated with improperly handled or illegally disposed electronics.

## Recommended Best Management Practices

The [Electronics Recycling Coordination Clearinghouse \(ERCC\) Collection Site Best Practices](#) guide provides recommended best management practices for collection sites that accept used electronics. As defined by the document, a “collector” is a person or entity who owns or operates a collection or storage site for the purpose of receiving and/or consolidating used electronics prior to sending it to recyclers or consolidators.

*The following is a synopsis of recommended best management practices<sup>42</sup>:*

- Collectors should comply with all applicable local, state, and federal requirements, including but not limited to environmental, health, and safety requirements.
- Electronics collection sites should be staffed during operating hours in order to protect against theft and prevent mishandling and breakage of electronics.
- Electronics should be properly stacked and kept in secured and enclosed storage areas or containers in order to protect collected electronics from the weather.
- All employees should be trained to properly handle and store electronics in such a way as to minimize breakage. Training should include proper lifting techniques and emergency procedures.
- Any broken electronics should be managed according to the State of Illinois solid and hazardous waste management laws and regulations. Any containers of broken Cathode Ray Tube (CRT) glass should be labeled: “waste cathode ray tubes – contains leaded glass” or “used cathode ray tubes – contains leaded glass; do not mix with other glass materials.”

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<sup>42</sup> All collectors should review the complete document to fully comply with recommended best practices. The document can be downloaded at no cost at <http://www.ecycleclearinghouse.org/documents/Collector%20Best%20Practices%20Final.pdf>.

- Work with haulers/processors to learn how to safely stack and package electronics on pallets, in Gaylord boxes, or other provided containers. Ensure that items stacked on pallets are stable; use shrink wrap to secure each layer and the entire pallet. Items should not be stacked higher than 7 feet or as instructed by the hauler/processor. Put Gaylords on pallets prior to placing materials in them. Pack laptops in cardboard layers to protect them. Place monitors and televisions screen face down on pallets with cardboard between each layer; stack with the largest units on the bottom; wrap with shrink-wrap. Keep flat screen units upright, with screens facing inward, to avoid breakage; brace with cardboard.<sup>43</sup>
- Each collection container should be labeled according to the predominant device type it holds, such as computers, televisions, mixed electronics, etc. In general, collectors should not disassemble, dismantle, shred, transform, or de-manufacture collected electronics.
- Keep bills of lading and other documentation noting the number of containers (pallets, Gaylords) collected by the hauler and the approximate weight of each total shipment, if known. The Illinois Electronic Products Recycling and Reuse Act requires collectors to report only the amounts collected from residential sources.
- Use only R2 Standard (including R2/RIOS<sup>44</sup>), or e-Steward certified processors for handling collected electronics.

## Collection Options

*Permanent Collection Sites:* Electronics should be stored in metal containers (such as shipping containers) or enclosed buildings or sheds to protect items from the weather. Depending on the volume of items collected and the type of collection provided by the contracted service provider, items may be stacked directly in the shed or in Gaylords, on pallets, or in other containers provided by the recycler.

*Special Collection Events:* Electronics recyclers will partner with communities to host electronics collection events. Recyclers will provide Gaylords and pallets for stacking collected items and will arrange for transportation.

Consult the [State of Illinois](#) or the [Illinois Recycling Association](#) for certified recyclers that provide services in Illinois.

It is important that electronics collection sites are kept orderly and neat in appearance. A clean and secured site encourages residents to feel more comfortable in dropping of items; it provides a better sense of security and assurance that the items are being properly recycled. Staffed and secured sites prevent materials from being looted. Staff can also assist residents in dropping off materials and help to prevent damage of material from accidental dropping. Overflow can also be prevented as staffed sites can regulate their pickup schedule to ensure timely collection.

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<sup>43</sup> Alternative stacking methods can be used depending on the types of items collected. Check with the hauler/processor for specific guidelines.

<sup>44</sup> [www.certifymerecycling.org](http://www.certifymerecycling.org) information provides additional information on the importance of working with certified electronics recyclers and about certified recyclers

## Electronics Drop-Off Instructions

Include information on signage next to electronics collection containers, on municipal websites, and recycling promotional materials. See the Will County Residential Electronic Recycling [brochure](#) for suggested promotional language.

The following is some suggested text:

- Only residentially generated electronic items are accepted. No business generated electronics.
- Remove personal information from computer hard drives & cell phones by reformatting the hard drive or rewriting over the disc.
- No illegal dumping! Items are ONLY accepted during staffed hours.
- Place materials carefully in boxes or ask attendant for assistance.
- DO NOT TAKE any items that have already been dropped off. Once items have been placed in the box they are part of the recycling program.



## Best Operational Practices: Universal Wastes



Universal wastes include designated hazardous materials that can be managed according to streamlined hazardous waste management handling, storage, and transportation requirements.

[Illinois Universal Waste Management Regulations](#) encourage recycling and/or proper disposal of:

- Batteries
- Pesticides
- Mercury-containing thermostats
- Fluorescent bulbs (lamps)

Universal waste regulations govern the collection and management of these wastes, thus facilitating environmentally sound collection and proper recycling or treatment. The regulations serve to promote the collection of designated materials by municipalities and commercial entities and offer an alternative to disposal. Universal waste handlers, such as recycling center operations, do not need to obtain hazardous waste management permits but must manage these wastes in compliance with [state regulations](#).

Taping all small battery ends prior to transportation (by air or ground) to recycling end markets is required by federal law: <http://hazmat.dot.gov/HMpubsreview/docs/shipBatt.pdf>. Educating residents/program users to take this safety precaution helps them understand the environmental impact of the products they buy. When small batteries are received already properly taped this saves significant employee/volunteer labor for the recycling drop-off center.

### Batteries

*Alkaline batteries* are the most common household batteries. Alkaline batteries manufactured since 1994 do not contain mercury or other hazardous materials. These batteries can be disposed in the trash if the trash goes to a landfill. However, if the trash goes to an incinerator, residents should be encouraged to hold onto the batteries for disposal at a household hazardous waste collection. Instruct residents to tape over the ends of each battery, particularly the terminals of 9V and lithium batteries before dropping off for recycling. This will help prevent fires during storage and transport.

*Button batteries* are commonly found in watches, toys, hearing aids and some electronics, and are a hazardous material and are often collected at recycling drop-off centers or household hazardous waste collections. Ask residents to tape both ends of each battery before dropping off for recycling in order to help prevent fires during storage and transport.

*Lithium batteries* are used in a variety of applications, are commonly used in cameras and may look like AAA alkaline batteries, only shorter; some are almost rectangular in shape. The word "lithium" is printed on the battery. Residents and program users should be instructed to completely tape around Lithium batteries before dropping off for recycling, in order to help prevent fires during storage and transport. Lithium batteries should be collected with button batteries or collected at household hazardous waste collections.



*Rechargeable batteries* contain cadmium and are considered a hazardous material. Recycling centers can easily collect rechargeable batteries and receive free collection containers, transportation and processing of collected rechargeables through [Call2Recycle](#). If rechargeable battery collection is not offered at the drop-off center or other permanent location, residents should be instructed to hold onto batteries for proper disposal at a household hazardous waste collection. Ask residents to tape both ends of each battery before dropping off batteries for recycling, in order to help prevent fires during storage and transport.

Rechargeables represent a wide range of battery types, including:

- Lithium-Ion (Li-ion) - typically found in laptop computers and other portable consumer electronics
- Nickel-Cadmium (NiCad) - used in power tools and rechargeable appliances, such as rechargeable toothbrushes and razors
- Nickel Metal Hydride (Ni-MH) batteries - used in digital cameras, flashlights, power tools, and other electronics



Call2Recycle collection box

**All small batteries should be taped over prior to dropping off for recycling: Alkaline, Button, Lithium, NiCad and Rechargeable, in order to help prevent fires during storage and transport!**

- Nickel-Zinc (Ni-Zn) rechargeable - used in cordless power tools, cordless phones, digital cameras, battery operated lawn and garden tools, and electric bikes
- Small, sealed-lead rechargeable batteries - found in computers, electronic equipment, power tools, exit lights, security systems, weed trimmers, wheelchairs and personal UPS units and can be recycled through Call2Recycle
- Larger sealed lead acid batteries can be collected at household hazardous waste collections
- Rechargeable batteries that cannot be removed, such as in an iPod or iPad, can be collected at electronics collection site or household hazardous waste events

*Automobile batteries* or lead acid batteries are banned from landfill disposal in Illinois. The Illinois Environmental Protection Agency recommends that old motor vehicle batteries be exchanged for new ones at auto suppliers when purchasing a battery. Used motor vehicle batteries can also be sold to salvage yards or recycling centers, or brought household hazardous waste collections. They can also be recycled at some hardware stores.

### **Used Fluorescent and High-Intensity-Discharge Lamps as Universal Wastes**

Fluorescent lamps—including compact fluorescent bulbs—are becoming common in our homes, schools and businesses. HID lamps (mercury-vapor, metal-halide and high-pressure sodium) are used for floodlights, street lights and industrial lighting.

Improper handling or disposal of used fluorescent and high-density discharge lamps can release mercury and other toxic substances into environment.





The Illinois Universal Waste Rule encourages recycling or proper disposal of waste lamps and bulbs. Illinois provides a factsheet—[Facts on Compact Fluorescent Lamps & Proper Disposal](#)—for general information on proper disposal of used fluorescent bulbs.

In Illinois, recycling centers that collect fluorescent lamps may follow the information contained in the fact sheet (and in [state regulations](#).) Small quantity generators or “handlers” are defined as those accumulating less than 11,000 pounds of universal waste at a time. (note: It takes about 17,000, 48-inch lamps to equal 11,000 pounds.) Most recycling centers collecting only from residents will likely qualify as small quantity handlers or generators.

Handlers are prohibited from disposing, treating (which includes intentionally breaking), or recycling waste lamps. Lamps must be sent to a facility that is certified to accept universal-waste lamps for recycling, treatment or disposal. A list of [fluorescent lamp recyclers](#) is available from the Illinois EPA. Collected lamps or bulbs must be handled so as to minimize breakage. Recycling center operations which collect fluorescents should ensure that all staff are trained in the proper handling of lamps, as well as emergency procedures for cleanup of broken or damaged lamps. Operators must be prepared to respond to dropped or broken lamps immediately to prevent release of lamp fragments and residues. The Illinois EPA recommends storing broken lamps in nonmetallic packaging because mercury tends to accumulate on other metals.

Individual waste lamps or containers must clearly state one of the following:

- Universal Waste Lamps
- Waste Lamps
- Used Lamps

Handlers can accumulate universal wastes for up to one year (or longer if they can demonstrate more time is needed to collect quantities necessary for proper recovery). Handlers must record on each lamp or lamp container the date lamps became waste. In most cases, this will be the date received at the drop-off center. Small-quantity handlers (as defined by the IEPA: [LINK Please](#)) are not required to keep records under Illinois law. Be sure to consult with the universal waste transporter regarding any records they require.

Under Illinois law, mercury-containing lamps discarded by *households* are not subject to hazardous waste rules and can be accepted by municipal-waste landfills. However, the Illinois EPA recommends that lamps be taken to household hazardous waste collection events/centers, transfer stations or participating recycling drop-off centers as universal wastes.

Recycling center operators with questions on the handling and collection of fluorescent lamps in Illinois should contact the Illinois EPA's Bureau of Land Permit Section at (217) 524-3300.

### **Pesticides**

Pesticides are not commonly collected at recycling centers. Residents needing to dispose of unused pesticides should be instructed to deliver them to a household hazardous waste collection center, or hold onto the items for proper disposal at a household hazardous collection event. If a resident needs immediate disposal, they can be encouraged to give the items to friends or relatives for use or to hold until a collection event.

### **Mercury-Containing Thermostats**

Mercury-containing thermostats are typically not collected at recycling centers. The [Thermostat Recycling Corporation](#) provides collection opportunities to businesses for thermostat recycling.

A purple rectangular label with the words "UNIVERSAL WASTE" in large white capital letters at the top. Below the title, there are five white rectangular boxes with black text labels and lines for information: "SHIPPER", "ADDRESS", "CITY, STATE, ZIP", "CONTENTS", and "ACCUMULATION START DATE".



## Best Management Practices: Household Hazardous Waste (HHW) and Used Tires

Neither used tires nor household hazardous wastes (including used motor oil and paint) are typically accepted in curbside collection programs, but some of these materials may be collected at recycling drop-off centers or transfer stations. It is important to manage tires and HHW properly to protect the environment and health of our communities. Even if these items are not collected regularly at recycling drop-off programs, operators should know and be able to advise residents on how to properly recycle or dispose of them.

Training staff to greet customers and watch what is deposited in recycling containers is the best way to avoid potential problems. If a drop-off program accepts special or hazardous materials, customer education must include instructions for proper storage, transport and deposit of these potentially risky items. Customer education should include instructions on how to label unmarked containers for delivery. Signage at the entrance to the facility should include explicit information regarding prohibited materials. Hazardous materials not accepted at the drop-off site should be rejected and the customer informed about how best to store the material for a household hazardous collection event and/or how to manage the material for proper disposal.

### Used Oil Management

Improper disposal of used motor oil can have significant, negative impact on the environment<sup>45</sup> it should always be recycled and never thrown in the trash, dumped on the ground, poured into the sewer or down the drain. Just one gallon of oil can cause a million gallons of fresh water to become undrinkable.<sup>45</sup> If used oil is poured down the drain and enters a sewage treatment plant, a very small concentration of oil can contaminate the treatment process. Oil that enters waterways prevents oxygen from entering the water, blocking sunlight and inhibiting plant growth, as well as harming aquatic animals. Used motor oil can be re-refined or used in approved burners to create heat. State law [bans the disposal of used motor oil](#) in Illinois landfills. The ban does not include oil filters, absorbents used to clean up oil spills or containers which previously contained oil.



Used oil can be collected at recycling centers and stored for transport by a registered special waste transporter. [Used oil collection centers](#) must be registered with the Illinois Environmental Protection Agency (EPA.) Only staffed recycling drop-off centers should collect used oil.

If the recycling center does not collect oil, residents can be encouraged to store it for a household hazardous waste collection, or take it to a local gas station, auto repair or oil change shop that accepts used oil.

#### *Collection options for used oil at recycling drop-off centers:*

- Collection containers or tanks for used oil should be in good condition, free of severe rust, have no apparent structural defects or deterioration and must not be visibly leaking. Oil can be stored on pallets in original containers, in 55-gallon drums on a pallet or in used-oil collection tanks.
- Collection receptacles should include a secondary containment (a container that can hold at least 110 percent of the volume of the largest used oil container or 10% of the total volume of all containers,

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<sup>45</sup> <http://www.epa.state.il.us/land/citizen-involvement/usedoil.html>

whichever is greater.) An example is an impervious floor covering, such as heavy-duty/rigid plastic or intact/epoxy-coated concrete with a dike, berm or retaining wall. Secondary containment structures should also be equipped with a sump to collect spills or overfills and to remove precipitation. Containers should be under cover to keep the storage receptacle and secondary containment dry. Storage areas should never be located in flood plains.

- Clearly label each container "Used Oil."
- Clearly mark each container or tank with the date the used oil was first added.
- Keep the containers tightly closed except when actively adding material. Utilize tarps or cover the ground when adding used oil to larger receptacle/s, to reduce chance of leaks into groundwater and/or storm drains.
- Immediately contain and clean up all spills and leaks. Scoop up contaminated material and place it in a disposal container or suction oil leaked from sumps or secondary containment. Keep spill control instructions, supplies and equipment nearby.
- Before shipping any collected oil, make sure the shipping documents are complete and that the receiving facility has agreed to receive the shipment and is authorized under state law to receive it.

For more information on [used oil management](#) contact the Illinois Environmental Protection Agency, Bureau of Land, [Waste Reduction and Compliance Section](#) at (217) 524-3300.

### **Waste Antifreeze**

Antifreeze contains chemicals that can be toxic to people, plants and animals. The most common antifreeze solutions are mixtures of water and either ethylene glycol or propylene glycol. Ethylene glycol is much more toxic than propylene glycol and is slowly being phased out. Both types of antifreeze must be managed and stored to prevent impacts to the environment and public health. Antifreeze should never be poured into septic tanks, sewer systems, storm drains, in surface waters or onto the ground.

Residents should be instructed to store used antifreeze carefully in a leak-proof container (such as the one new antifreeze came in) with a secure lid. Antifreeze may be taken to a household hazardous material collection event/center; some auto supply stores and repair shops will also accept antifreeze for proper recycling or disposal.

### **Waste Paint**

Paint comprises a substantial percentage of the waste materials collected at the Illinois EPA's one-day Household Hazardous Waste collection events. The Illinois EPA initiated the "[Partners for Waste Paint Solutions](#)" program to offer residents the opportunity to deliver unwanted oil-based paint to local participating "partners" where usable paint can be reformulated or remixed for reuse. Unusable paint is collected from partner locations by an Illinois EPA contractor and sent for proper disposal. Residents can be encouraged to recycle paint by visiting one of the [partners](#) in the program.

Latex paint is water-based and non-toxic, so it can be dried and disposed in trash. In some areas of Illinois, Ace Hardware stores will accept latex paint for recycling with their partners at Earth Paints Collection Systems. Check the [Used Latex Paint Disposal Alternatives](#) Fact Sheet for additional information.

As of the publication date of this manual, there is pending Paint Stewardship legislation in Illinois. The adoption of this legislation will greatly increase opportunities for recycling left-over paint. Check SB1705 for enactment status and new paint stewardship programs/policies.

### Household Hazardous Waste Collections

The Illinois EPA coordinates a limited number of one-day [household hazardous waste collections](#) each year in the spring and fall. The first collections were held in 1989, and since then 401,350 households have participated in 449 events, with more than 78,100 drums of material collected. A list of [household hazardous waste collections and permanent collection sites](#) are posted on the Agency's website.



The Illinois EPA encourages communities or organizations to cosponsor household hazardous collection events. Interested communities or organizations can download an [application](#) from the agency's website to download, complete and return or [apply online](#).

For one-day HHW collection events, the Illinois EPA provides funding and contractor oversight and assumes responsibility as the "waste generator". Cosponsors are asked to provide promotion and advertising, site location and volunteers to supervise traffic control, greet and survey participants and distribute information for the events. Collections are scheduled on Saturdays, from 8 a.m. to 3 p.m. See IEPA's [website](#) for specific information on how applicants are selected each year.

Materials accepted at the events include chemical cleansers, oil-based paints, thinners, antifreeze, weed killers, insecticides/pesticides, and similar hazardous household chemicals. Explosives, propane tanks, fire extinguishers, smoke detectors, agricultural chemicals and business wastes are *not* accepted. A complete list of [household hazardous wastes that are and are not accepted](#) at one-day collections is posted on the Illinois EPA website.

The collections are free to the public and are funded by statewide fees on landfilled nonhazardous solid wastes. An agency contractor assures that all wastes are properly containerized, manifested and safely transported to their ultimate destination. For more information on this program contact the IEPA Waste Reduction Unit at (217) 785-8604.

### Used Tires

Illinois citizens generate more than 12 million used tires each year.<sup>46</sup> While not considered a hazardous material, illegal tire dumps pose risks of fire, are unsightly and require significant funds for clean-up.

[Improperly discarded](#) tires also serve as habitat for disease-carrying vectors, particularly mosquitoes. Whole tires are banned from disposal in landfills.

Used tires can be recycled and used for road base, running tracks, playgrounds, horse arenas and tire derived fuel (TDF) that is blended with coal to produce electricity.



<sup>46</sup> <http://www.epa.state.il.us/land/tires/used-tires-facts-and-information.html>

[Illinois law](#) requires all retailers of new automobile/vehicle tires to accept used tires for recycling as part of new tire purchases. Promotion of this law and local availability of proper tire recycling can be posted on hard copy fliers at municipal/community recycling drop-off centers and on related websites.

## Summary

It is certain that not every topic or scenario presented in this BOP Manual for Drop-Off Recycling Centers will apply to every recycling drop-off program or facility. Rather, the intent of this guide is to provide basic information useful for drop-off recycling operators and host organizations from a variety of settings and programs across Illinois and beyond. The creators, editors and funders of this guide are grateful for constructive feedback, which will be considered in any future versions. Please share ideas on any missing information or related topics/resources with the Illinois Recycling Association via email:

[info@illinoisrecycles.org](mailto:info@illinoisrecycles.org) or phone: 708-358-0050, or comment at IRA's website: <http://illinoisrecycles.org>.

It has been Illinois Recycling Association's pleasure and honor to participate in creation of this guide to best management practices for recycling drop off facilities. The Northeast Recycling Council is to be commended on their fine job with the majority of writing and research for the guide. This guide would not have been possible without funding support from the Illinois Department of Commerce & Economic Opportunity, Bureau of Energy & Recycling.



## Appendices

Appendix A - Case Studies

Appendix B - Site-Specific Emergency Contact information sample form, format

Appendix C - Recycling Resources & References Cited



## Best Operational Practices in Action: Case Studies

### Carbondale

The [City of Carbondale](#) provides weekly curbside collection of residential refuse and recyclables to residents in all neighborhoods within Carbondale's city limits. This service is provided for a small monthly fee by [Carbondale's Refuse and Recycling Division](#) municipal staff.

In addition to Carbondale's curbside recycling collection program, the City provides three recycling drop-off locations for residents to use at their convenience. The drop-off locations serve to meet the needs of residents of apartments or other buildings who are not currently eligible for the City's curbside recycling program, as well as providing an additional opportunity for curbside program users to recycle between curbside pick-ups.

Drop-off locations are unstaffed and available 24 hours a day for resident use. The sites are periodically monitored by City staff. Igloo containers are used for collection.

Two of the sites contain trailers designated for cardboard only. These locations are recommended for oversized boxes and large quantities of cardboard.

Home recycling collection bins provided for residents apartments and other buildings not served by the City's curbside recycling collection program are available from the Jackson County Health Department.

#### Acceptable materials

- Plastic bottles
- Glass bottles & jars
- Steel & aluminum cans
- Mixed Paper, includes: newspapers, office paper, junk mail, magazines, books, paperboard boxes & shredded paper (bagged)
- Cardboard





## Christian County

Christian County in mid-central Illinois, population 34,800, features a drop-off recycling program for newspaper, magazines, cans and plastic bottles with ten sites scattered across the county. Services are supported by the Christian County Solid Waste Management Department (SWMD) with funds derived from the state's authorized solid waste management "tip" fees assessed at the local (privately owned) landfill. Hauling services are provided under a competitively negotiated contract agreement with a private hauler. At a private facility, electronics are accepted by a registered and certified E-Scrap processor also supported with Christian County SWMD funds.

Education on materials accepted and how they are prepared for collection is provided by Christian County's recycling educator through school and group presentations, website information, printed brochures and signage at the drop-off sites.

Christian County's program has been in existence for 20 years and analysis of program results shows there is a seasonal fluctuation in use of the drop-off bins and average amounts of material collected. As one can imagine, a program that has been in existence for twenty years has experienced changes and problems. Initially glass jars and bottles were collected for recycling. With the falling prices of that commodity and the amount of contaminant materials in the bin, glass was eliminated from the program in 2001. Corrugated cardboard was also eliminated from the list of acceptable materials in 2011 in order to reduce transportation costs. A change in an established collection site also resulted in initial program user confusion. In each instance, newspaper articles and phone conversations helped educate the public and after a period of time the residents became accustomed to the new routine.

Tonnage of material collected has slowly increased over the years, with a current estimated average of 10% of Christian County's residential waste stream recovered for recycling through its drop-off program.





## Crete

In the Village of Crete (in Will County, population of 8,281) garbage collection is provided via single hauler contractual service. The cost of garbage removal is added to residential water/sewer bills and residents are provided a tote at no charge. Seasonal (April 1 through November 30) curbside collection of yard trimmings is also provided by the vendor on the same day as garbage pickup.

Crete Lions Club operates a drop-off [recycling facility](#) for Crete residents. The recycling center is one of the oldest continuously operating drop-off recycling facilities in Illinois, especially notable because it is staffed by volunteers. Recyclables are accepted at the facility Monday through Friday from 7:00 am to 9:00 am and Saturday from 7:00 am to 12:00 noon. The recycling facility is staffed by Lions Club volunteers.

The recycling center is located in a warehouse with two garage doors, one for an entrance and one for an exit. Drivers pull in and volunteers remove recyclables from the vehicle. Residents are asked to pre-sort all materials to make the job easier. Recycling center volunteers check the materials and deposit them into appropriate collection containers.

Materials are sorted to obtain the highest possible value from materials buyers/end markets. The recycling facility is equipped with balers to bale plastics and paper. Aluminum cans are crushed to conserve space.

The Lions Club also provides a recycling hotline for Crete residents. Volunteers are available during open hours at the center to assist residents with recycling questions.

[Crete Lions Club](#) is a not-for-profit organization. All money earned from collected recyclables goes to fund the organization's community projects. The Club solicits community and student volunteers to help in the recycling operation, providing opportunity for youth engagement in services.

### Acceptable Materials

Glass Bottles (clear & brown only)

- Rinse bottles & remove lids. Separate colors and place each color in cardboard box 30 lbs or less.

Plastic Containers (Separate colors, rinse containers & remove lids)

- White Frosted Plastic #2 (Milk & Water)
- Colored Plastic #2 (Soap bottles)
  - Place in plastic bag with tie or tie together.
- Clear Plastic #1 (Water or Pop)
  - Place in plastic bag with tie.

Steel (Tin) Cans

- Rinse all food containers, place in cardboard box 30 lbs or less

Paper (Separate bundles for each item)

- Newspaper - place in paper bags or tie with string-no plastic bags, 30 lbs or less
- Magazines - place in cardboard box or double paper bags 30 lbs or less
- Stationary or Shredded - place in paper bags or plastic bags
- Computer Paper - place in cardboard box 30 lbs or less

Aluminum (Pop, Beer, Food Trays)

- Rinse all aluminum cans. Place in cardboard box or plastic bags.

Cardboard Food Containers (Juice, Milk, Pet Food)

- Rinse all food containers.
- Cardboard (Place in cardboard box or tie with string. No loose cardboard.)
- Steel, Copper, Brass & Aluminum Scrap





Images of the Crete Recycling  
Drop-off Center



## Lake Area Disposal & Recycling Service/Springfield

[Lake Area Disposal & Recycling Service](#) provides residential and commercial collection services for both household garbage and recycling materials throughout Springfield and Sangamon County. The company also provides on-demand special collection of large items and extra refuse, as well as roll-off containers for cleanouts.

Lake Area Recycling Service, a division of Lake Area Disposal, operates a full-service recycling processing facility in Springfield. The company hosts tours of the facility for students, civic groups and private parties. The company promotes its “commitment to future generations and the sustainability of our precious natural resources.”

[Lake Area’s Recycling Drop-Off](#), located at the company’s recycling facility is open 24 hours a day, 364 days a year (closed only on Christmas day.) The drop-off is operated as a sorted stream system. All metal cans and plastic bottles are collected together in the same bin. Clear and colored glass are collected in separate containers. Mixed paper (excluding cardboard) is collected in a separate bin. Corrugated cardboard is collected in separate bins and these bins fill quickly, requiring regular switch-out of full for empty bins.

Clear and colored glass is accepted at the Lake Area’s Recycling drop-off site during regular business hours. An aluminum buy-back center is also operated at the recycling facility during regular business hours. Aluminum cans, scrap aluminum, copper, brass, radiators and other scrap metals may be taken and sold to the buy-back center. All electronics, except large televisions (projection and console), can be recycled at Lake Area’s recycling facility during regular, staffed business hours.

### Acceptable Materials

Steel Cans  
Newspaper  
Aluminum cans  
#1-#5 & #7 Plastic bottles & containers  
Clear & colored glass bottles/jars  
Mixed paper, including magazines & newspaper, cereal boxes





## Madison County

The [Madison County Recycling Program](#), part of the Madison County Planning and Development Department, offers a wide range of recycling options.

All single and two-family residential dwellings are provided weekly curbside recycling services through a contract with a private hauler. These services are provided with funding from the county's solid waste fund. Implemented in 1996, the program provides curbside collection services to more than 92,000 households.

A [Recycle Station Drop-off Recycling Program](#) was implemented in 1998.

Seven drop-off stations are located around Madison County. The stations serve to provide recycling service to rural areas of the County and apartments/multiple-family households without access to curbside recycling.

The unstaffed drop-off stations are open 24 hours a day. The county partners with businesses and municipalities to [host the sites](#), located in retail store parking lots, park/playground parking lots and a township highway garage. Revenue-sharing arrangements are not in place. Madison County's investment in extensive public education shows its commitment to diverting resources from disposal back into the useful materials stream and jobs economy.

### Acceptable Materials

- Newspaper
- Junk Mail
- Magazines & Catalogs
- Corrugated Cardboard
- Aluminum Cans
- Tin/Steel Cans
- Glass Bottles & Jars
- #1- #5 & #7 Plastics



## New Lenox

[New Lenox](#) is a village in Will County with a population of 24,715. Trash and recycling curbside services are provided through competitively bid contract with private, professional service providers. The Village provides weekly trash collection services for all residential, commercial and industrial areas of the community. Recycling is collected curbside every other week. A \$2.65 per month charge for recycling collection is added to customer water/sewer bills. Yard trimmings are collected weekly on the same day as household waste from April 1 through November 30.

### Recycling Drop-off Opportunities

New Lenox offers [drop-off recycling](#) for a range of materials which serves to supplement the town's curbside collection.

The New Lenox Township Office is a drop-off collection site for:

- Aluminum foil & trays
- Empty aerosol cans
- Drink boxes/juice pouches
- Cardboard

The New Lenox Township Office is also a Will County E-Scrap recycling drop off [partner](#). New Lenox Township worked with Will County to provide an environmentally safe and convenient site centrally located in the Township office for disposal of unwanted consumer electronics. The Township has long been committed to promoting recycling in their community. According to local officials, the town's traditional recycling/electronic collection center provides New Lenox residents a place to take recyclables so they will be responsibly kept out of the landfills, cut waste disposal costs, help save natural resources to assure a clean and green environment and create jobs in the recycling industry.



### Innovative Partnership

A unique effort to enhance the town's environmental program involves a partnership with New Lenox Fire Protection District. The Fire Protection District engages their Fire Cadets (a program for students ages 16 to 21 who are interested in becoming fire fighters,) in helping to manage hazardous materials for proper recycling or disposal. The Cadets train three times per month working to receive the credentials necessary to become fire fighter candidates. Part of their training includes handling hazardous materials. In this comprehensive program, multiple benefits are derived for the students and for New Lenox residents.

Used motor oil, antifreeze, small propane tanks/cylinders, fire extinguishers and vehicle batteries can be brought to New Lenox's Recycling Yard and the town's four Fire District Stations, during regular operating hours. These items will be handled and disposed with assistance from the trained fire cadets.

In another beneficial partnership, the New Lenox Police Department provides a 24/7 Drop Box (no needles) for unwanted medication take-back. This program reduces the amount of medications brought for disposal at one-day HHW collection events and provides a convenient year-round service for area residents.

## Electronics Drop-Off Collection Case Study—Tri-County Resource & Waste Management Council

The [Tri-County Resource & Waste Management Council](#) (TCR & WMC) works to meet the solid waste management needs of the incorporated and unincorporated areas in McDonough, Mercer and Warren counties, and surrounding counties of Henderson, Hancock, Schuyler, Knox and Fulton. The council's Solid Waste program provides a comprehensive approach to solid waste issues. The TCR&WMC Solid Waste Educator provides presentations, hands-on projects and solid waste curriculum for both academic and public audiences. The TCR & WMC is administered by the Western Illinois Regional Council.

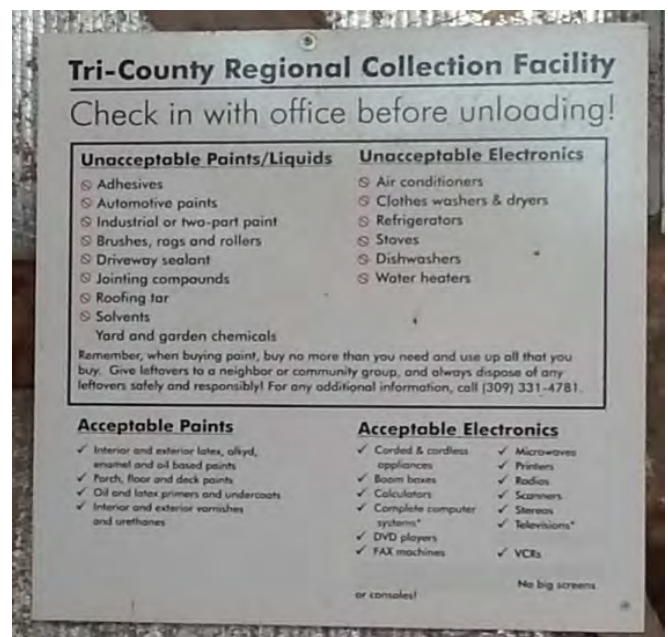
A model program started by TCR & WMC allows for free recycling of electronics, paints and other items which are collected at permanent drop-off locations. Many years of planning and building partnerships went into program development in order to convince stakeholders that the collections could be successful and highly beneficial for the Council's member counties and surrounding counties. Original funding for the program was received from the (former) Illinois Department of Commerce and Community Affairs for purchase of a collection vehicle, baler and other recycling expenses. Ongoing funding for the program is provided through grants, revenues received from material sales, surrounding county partners and TCR & WMC.

### Drop-Off Collection Sites

TCR & WMC partners with five nearby counties to provide permanent drop-off collection opportunities for electronics, paint and other materials (including mercury containing devices, unwanted medications, and batteries.)<sup>47</sup>

Drop-off collection sites (1 in each participating county) include waste transfer stations, recycling centers, town halls, health departments, and private businesses:

- Fulton County: County Health Department, Canton
- Hancock County: County Health Department, Carthage
- Henderson County: County Health Department, Gladstone
- Knox County: Bradshaw's TV & Appliance, Abingdon; Waste Management, Inc., Galesburg; Wal-Mart, Galesburg; Village Shed, Williamsfield
- Mercer County: Aledo City Hall; Sherrard Village Clerk Office
- McDonough County: Bushnell City Hall; Colchester City Hall; Tri-County Regional Collection Facility, Macomb
- Warren County: Monmouth Transfer Station
- Schuyler County: Rushville City Hall



<sup>47</sup> Most sites collect both electronics and paint, however, a few accept only one or the other commodity. Other materials listed are limited to collection at health department sites and the Tri-County Regional Collection Facility.

Tri-county also conducts approximately 15 annual Township cleanups, which accept electronics and paint.

### Collection Specifics

In order to set up the collection sites, TCR & WMC worked hard to secure public and private-sector partners to be a site host in each county. The partners/collection site hosts chose the times to allow materials to be dropped off. All sites are staffed by the hosts who agreed to take on the extra duties at no cost. TCR & WMC provides each host site with a Gaylord box and two pallets; busier sites can be provided with additional Gaylords/pallets, as needed. Each fully loaded Gaylord/pallet can hold approximately 1,000 pounds of any given item/material. Collected items are counted and recorded by site staff prior to stacking on the container or on the pallet. Each host is trained in the proper stacking of materials. When the Gaylord and pallet are full, host site staff notify TCR&WMC that a pickup is needed.

Drop-off site hosts are provided with educational information about the collection services, including what is acceptable and what is not. Hosts are provided with information to distribute to residents about the drop-off program, as well as other solid waste services offered by TCR&WMC and the host community.

The sites are promoted as being primarily for residents. Businesses are discouraged from using the sites; however, they can drop-off materials at some of the sites for a fee or call to arrange for a special pick-up.

### Tri-County Regional Collection Facility

The Tri-County Regional Collection Facility, located in Macomb, is owned and operated by TCR & WMC. The Facility uses a 24-foot box truck with a lift gate to collect materials. The truck can hold up to 6,000 pounds and the driver uses a pallet jack to maneuver collected materials into the truck.

All materials are sorted at the facility with like items – Computers (CPUs), monitors, televisions, other electronics (fax machines, etc.) and peripherals. Items are stacked according to specifications required by the electronics processor. Pre-sorting, consolidating and packing items prior to shipment helps TCR & WMC receive the highest possible revenues for collected materials. All containers are weighed and recorded prior to shipment using a scale at the facility.

Collected paint can contents are emptied into 55-gallon drums for disposal through the IEPA's "Partners for Waste Paint Solutions" program. Some of the paint collected can be recycled as paint, but much of the material is burned to create energy or heat in industrial settings.

The goal of the drop-off facility/program is to be as close to zero waste as possible. A baler is used to bale cardboard in which items are brought for collection. Plastic bags are also baled. Both materials are marketed to bring in revenues for the program. Steel paint cans are also sold. The only item that ends up as garbage is plastic paint cans and this is because dried paint renders the plastic unusable/unable to be recycled.

#### **Accepted Electronics**

- All Computer parts/printers
- Computers (including laptops)
- Computer cables
- Computer monitors
- Cable boxes
- Cameras
- Cell phones/telephones
- Clocks
- Copiers
- Digital converter boxes
- VHS/DVD/MP3 players
- FAX machines
- Keyboards/mice
- Kitchen appliances
- Metal tools/portable tools
- Microwaves
- Video game consoles
- PDAs
- Portable battery tools
- Radios
- Satellite receivers
- Scanners
- Servers
- Televisions – all types
- Typewriters
- Vacuum cleaners
- ZIP drives



The program started in 2005 and over the years has maintained an average of 20,000 pounds of materials collected each week for recycling.

### Tips for Success

- *Staffing at the collection sites is a primary key to success.* With staffing, residents are assisted and can be provided with information about the collection and other solid waste programs offered by the Council. Staffing ensures that materials are properly stored, stacked and recorded. The sites are secured to prevent scavenging. Site hosts provide a friendly, professional, and neat environment which helps to promote understanding of the collected materials as valued commodities rather than waste.
- Permanent drop-off sites allow local residents to put the ongoing collection locations and times on their schedules. The system is designed to be convenient and accommodating to benefit the residents of participating counties. Even if the host site is only open on a limited basis, it is important to have a permanent site with *regular hours* so people can rely on it and plan accordingly. Communication can really be a challenge; it is difficult to effectively get the word out for special collections in rural areas, so providing permanent sites works very well.

#### **Accepted Paint**

- Enamel and oil-based paints
- Interior and exterior latex, alkyd, enamel & oil-based paints
- Interior and exterior varnishes & urethanes
- Oil and latex primers and undercoats
- Porch, floor and deck paints



Smaller Gaylord with liner is for paint. Large electronics are properly stacked on the pallet; smaller electronics are collected in the unlined Gaylord box.

## Will County

The Will County Land Use Department's [Resource Recovery and Energy Division](#) (RR&E) enforces ordinances controlling burning, dump sites and landfills. In addition, RR&E provides recycling education, information on hosting green events and special collection events. RR&E assists municipalities and townships with curbside collection contracts and drop-off sites, helps schools expand their waste reduction and recycling efforts and works with businesses to improve recycling efforts and save operating costs by incorporating green practices.

The Will County [Green Guide](#) (available online and in print form) provides information on a wide array of “green” programs around the County, including a map of drop-off sites for traditional item recycling, electronic recycling, medication disposal and more. The Will County Green Guide is a one-stop resource for information on recycling anything from textiles to batteries. The County partners with local communities to provide drop-off collection facilities for traditional recyclables, electronics and other materials. Will County provides thirteen electronic drop-off sites; some within densely populated suburban communities and others in rural townships. Staffing at these drop-off sites varies depending on the community host. Enclosed storage methods for electronics includes 20-foot cargo containers, sheds, and public works garages.

Will County partners for [Recycling Drop-Offs](#):

- Channahon Township
- City of Lockport
- Godley Park District
- New Lenox Township
- Troy Township Highway Department
- Washington Township/Village of Beecher



**Emergency Preparedness Form**

**Facility Information**

Facility Name	
Facility Address	
Facility Phone Number	
Nearest Hospital	
Route:	
Fire/Rescue	(911)
EMS	(911)
Police	(911)
Local Emergency Manager	
Electric Company	
Gas Company	
Water Company	

***In Case of an Emergency***

**First Step:** Determine the type of emergency. Evacuate any employees or customers from the immediate area, as appropriate.

**Second Step:** Call 911

Tell the Dispatcher what type of emergency—fire incident, hazardous chemical spill, explosive chemical, accident/injury/other medical emergency—and that you need an emergency responder (fire department, ambulance, EMS.)

Ask the Dispatcher what you should do immediately—Evacuate? Provide emergency medical care?

**Third Step:** Consider the emergency—if safe to do so, conduct the following, as appropriate:

**FIRE EMERGENCY**

- If the fire is small and is not spreading, use a fire extinguisher to put out fire (See IRA’s MRF Recycling Operations Manual)
- Disconnect utilities and equipment unless doing so jeopardizes safety

## CHEMICAL SPILL

The following are the locations of:

Spill Containment and Cleanup Supplies: \_\_\_\_\_

Personal Protective Equipment (PPE): \_\_\_\_\_

MSDS Material Safety Data Sheets (if appropriate): \_\_\_\_\_

*When a Chemical Spill has occurred:*

- Locate and use personal protective equipment
- Contain the spill with available equipment (e.g., pads, booms, absorbent powder, etc.) and safely block off spill area to prevent chemical from reaching any drain way or water (see IRA's MRF Recycling Operations Manual)
- Notify the designated emergency contact and municipal or agency official
- Secure the area and alert other site personnel/customers
- Attend to injured personnel and call in the medical emergency, if required
- If the spill is small and if safe to do so, begin spill clean-up (see IRA's MRF Recycling Operations Manual)
- Call a professional spill cleanup company or local Fire Department (if services are available) to perform a large chemical spill cleanup (e.g., mercury.)

Name of Spill Cleanup Company: \_\_\_\_\_

Phone Number: \_\_\_\_\_

*For Larger Hazardous Spills—Contact—*

- **Illinois Emergency Management Agency** – (217) 782-7860 or (800) 782-7860 (in Illinois)  
[Emergency Release Notification Fact Sheet](#)
- The National Response Center – (800) 424-8802
- Illinois Environmental Protection Agency (if the emergency involves release of potentially hazardous materials into the environment) - (217) 782-3637

## MEDICAL EMERGENCY

Do not move victim unless absolutely necessary

Apply CPR and First Aid as appropriate:

- Stop any bleeding with firm pressure on the wound/s (note: avoid contact with blood or other bodily fluids)
- Clear victim's air passages using the Heimlich maneuver in case of choking
- If rendering assistance to personnel exposed to hazardous materials, consult the Material Safety Data Sheet (MSDS) and wear appropriate personal protective equipment. Attempt first aid only if trained and qualified.

## SEVERE WEATHER AND NATURAL DISASTERS

Tornado:

When a warning is issued by sirens or other means, seek inside shelter. Consider the following:

- Small interior rooms on the lowest floor and without windows
- Hallways on the lowest floor away from doors and windows
- Rooms constructed with reinforced concrete, brick or block, with no windows

- Stay away from outside walls and windows
- Use arms to protect head and neck (duck and cover)
- Remain sheltered until the tornado threat is announced to be over

#### Earthquake:

- Stay calm and await instructions from the Emergency Coordinator or designated official
- Keep away from overhead fixtures, windows, filing cabinets and electrical power
- Evacuate as instructed by the Emergency Coordinator and/or designated official
- Keep away from tall-stacked or baled materials

#### Flood:

- Be ready to evacuate as directed by the Emergency Coordinator and/or designated official
- Unplug automated equipment prior to evacuation

#### Hurricane:

- Hurricanes generally provide more warning than other natural and weather disasters; consider closing the facility. Stay calm and await instructions from the Emergency Coordinator and/or designated official

#### Blizzard:

- Seek shelter; consider closing the recycling center

### **EXTENDED POWER LOSS**

In the event of extended power loss to the facility, all unnecessary electrical equipment and appliances should be turned off and/or unplugged. This ensures that a power restoration surge will not cause damage to electronics or sensitive equipment and ensures that equipment does not suddenly start operating and present unsafe conditions.

### **File an Incident Report**

*Record such information as:* type of emergency, description of cause (illegal dumping of hazardous material, fire of unknown origin, equipment malfunction, etc.), remedial steps taken and persons involved.

## **Resources and References**

### **General Recycling Resources**

IRA Best Operational Practices Manual for Materials Recovery Facilities and Recycling Drop-Off Facilities

[http://illinoisrecycles.org/mobius\\_cms/conf\\_site-content/uploads/IRA\\_BOPM\\_2010.pdf](http://illinoisrecycles.org/mobius_cms/conf_site-content/uploads/IRA_BOPM_2010.pdf)

USEPA Municipal Government Toolkit

<http://www.epa.gov/region04/rcra/mgtoolkit/index.html>

USEPA Starting a Recycling Program

<http://www.epa.gov/region04/rcra/mgtoolkit/starting.html>

USEPA Improving Your Recycling Program

<http://www.epa.gov/region04/rcra/mgtoolkit/improving.html>

New Hampshire Best Management Practices for New Hampshire Solid Waste Facilities

<http://des.nh.gov/organization/commissioner/pip/publications/wmd/documents/wmd-13-01.pdf>

Windham County Transfer Station Operator Training Manual

[http://www.windhamsolidwaste.org/index.php?option=com\\_content&view=article&id=223:transfer-station-operator-training-manual&catid=88:training-manual&Itemid=155](http://www.windhamsolidwaste.org/index.php?option=com_content&view=article&id=223:transfer-station-operator-training-manual&catid=88:training-manual&Itemid=155)

USEPA Waste Transfer Stations: A Manual for Decision-Making

<http://www.epa.gov/wastes/nonhaz/municipal/pubs/r02002.pdf>

Waterboro, Maine Town of Waterboro Transfer Station & Recycling Facility Operations Manual

[http://www.waterboro-me.net/policies/Transfer\\_Station\\_Manual.pdf](http://www.waterboro-me.net/policies/Transfer_Station_Manual.pdf)

Westminster, Colorado Drop-Off Recycling Center Analysis – Skumatz Environmental Research Associates

[http://www.ci.westminster.co.us/Portals/0/Repository/Documents/Environment/Recycling/City\\_Recycling\\_Drop\\_off\\_Location\\_Analysis\\_Only.pdf](http://www.ci.westminster.co.us/Portals/0/Repository/Documents/Environment/Recycling/City_Recycling_Drop_off_Location_Analysis_Only.pdf)

Pennsylvania Evaluating Drop-off Recycling Options

<http://www.portal.state.pa.us/portal/server.pt?open=18&objID=505139&mode=2>

Mississippi Drop-Off Recycling Programs—Helpful Ideas for Improving Participation

[http://deq.state.ms.us/MDEQ.nsf/pdf/Recycling\\_DropoffRecyclingTips/\\$File/DropoffProgramTips.pdf?OpenElement](http://deq.state.ms.us/MDEQ.nsf/pdf/Recycling_DropoffRecyclingTips/$File/DropoffProgramTips.pdf?OpenElement)

Florida Providing Incentives For Recycling Drop-Off Participation In Rural Counties

[http://www.dep.state.fl.us/waste/quick\\_topics/publications/shw/recycling/InnovativeGrants/IGYear8/fullprop/JacksonCounty-IG07-04-FinalReport.pdf](http://www.dep.state.fl.us/waste/quick_topics/publications/shw/recycling/InnovativeGrants/IGYear8/fullprop/JacksonCounty-IG07-04-FinalReport.pdf)

Plastics Industry Perfecting the Plastics Drop-Off

<http://www.plasticsindustry.org/AboutPlastics/content.cfm?ItemNumber=824&navItemNumber=1125>

Sample Fliers for Collection – Plastics

<http://ssc-inc.com/forms/PlasticPotsDropOffFlyer.pdf>

<http://ssc-inc.com/forms/PlasticFilmDropOffFlyer.pdf>

<http://www.franklincountywastedistrict.org/Plasticsflierforweb2012.pdf>

Comparative Cost Analysis of Curbside Collection with and without Drop-off Augmentation

<http://www.portal.state.pa.us/portal/server.pt?open=18&objID=505213&mode=2>

Sample Lease Agreement for “Hosted” Recycling Centers

<http://www.dswa.com/pdfs/rdlease.pdf>

Electronics Recycling Coordination Clearinghouse (ERCC) Collection Site Best Practices

<http://www.ecycleclearinghouse.org/documents/Collector%20Best%20Practices%20Final.pdf>

Operations & Maintenance Manual (TOWN) Transfer & Recycling Facility – Template

<http://www.avcog.org/DocumentView.aspx?DID=90>

**Recycling and Trade Associations**

Illinois Recycling Association

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

Chicago Recycling Coalition

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

Aluminum Association

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

American Forest & Paper Association (AF&PA)

<http://www.paperrecycles.org>

Association of Postconsumer Plastic Recyclers

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

Carton Council

<http://www.recyclecartons.com/>

Glass Packaging Institute

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

Illinois Counties Solid Waste Management Association

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

Institute of Scrap Recycling Industries

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



National Association for PET Container Resources

<http://www.napcor.com/>

National Recycling Coalition (NRC)

<http://www.nrc-recycle.org/>

National Solid Waste Management Association (now National Waste and Recycling Association)

<https://wasterecycling.org/about-us/history-mission>

National Waste and Recycling Association (former National Solid Waste Management Association)

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

Northeast Recycling Council

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

PlasticFilmRecycling.org

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

Reuse Alliance

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

Steel Recycling Institute

<http://www.recycle-steel.org/>

## **Safety Resources**

Preventing Deaths and Injuries While Compacting or Baling Refuse Material

<http://www.cdc.gov/niosh/docs/2003-124/>

[1-800-CDC-INFO](http://www.cdc.gov/niosh/docs/2003-124/)

American National Standards Institute – Waste Equipment Standards

<http://www.environmentalistseveryday.org/docs/store-order-forms/ANSI-Z245-Complete-Catalog.pdf>

Institute of Scrap Recycling Industries – Safety Information

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

## **Illinois-Specific Resources**

Summary of Illinois' Solid Waste Legislation

[https://www2.illinois.gov/gov/green/Documents/Summary%20of%20Illinois%20Recycling%20Legislation%20\(4-18-2013\).pdf](https://www2.illinois.gov/gov/green/Documents/Summary%20of%20Illinois%20Recycling%20Legislation%20(4-18-2013).pdf)

Illinois Department of Commerce and Economic Opportunity (DCEO)

[http://www.ildceo.net/dceo/Bureaus/Energy\\_Recycling/Recycling/](http://www.ildceo.net/dceo/Bureaus/Energy_Recycling/Recycling/)

Recycling Expansion and Modernization (REM) Program

[http://www.ildceo.net/dceo/Bureaus/Energy\\_Recycling/Recycling/Grants/REM\\_Program.htm](http://www.ildceo.net/dceo/Bureaus/Energy_Recycling/Recycling/Grants/REM_Program.htm)

Illinois Recycling Grants Program

[http://www.illinois.gov/dceo/whyillinois/KeyIndustries/Energy/Recycling/Pages/REM\\_Program.aspx](http://www.illinois.gov/dceo/whyillinois/KeyIndustries/Energy/Recycling/Pages/REM_Program.aspx)

Illinois EPA's Recycling Information

<http://www.epa.state.il.us/land/citizen-involvement/recycling/index.html>

Illinois EPA's Household Hazardous Waste Collection Information

<http://www.epa.state.il.us/land/hazardous-waste/household-haz-waste/index.html>

Illinois EPA's Partners for Waste Paint Solutions

<http://www.epa.state.il.us/land/citizen-involvement/paint.html>

Illinois EPA's Waste Tire Collection Information

<http://www.epa.state.il.us/land/tires/waste-tire-collections.html>

**Recycling Drop-off Center Operation Examples in Illinois**

Carbondale

Educational information for urban drop-off centers

[www.carbondalerecycles.com](http://www.carbondalerecycles.com)

Christian County

Educational information for rural drop-off recycling programs

<http://www.christiancountyil.com/waste.htm>

Keep Northern Illinois Beautiful

Volunteer drop-off example

<http://www.knib.org/programs/recycling-center/>

Ogle County

Good listing of recycling drop-off site information, pictures, and electronics collection

<http://oglecounty.org/departments/solid-waste-management/>

Solid Waste Agency of Lake County

Electronics, fluorescents, and household hazardous waste

<http://www.swalco.org/Pages/default.aspx>

Tri-County Resource and Waste Management Council

Electronics and paint collection example; regional partnership building

<http://www.tricountyresource.org/education/paper.html>

Will County

Education and extensive recycling drop-off program examples

<http://www.willcountygreen.com/>