

Municipal  
Solid Waste  
Recycling  
Task Force

## COMMERCIAL SECTOR RECYCLING REFERENCE SHEETS

Municipal Solid Waste Recycling can be divided into two main types: Residential and Commercial. Although Residential Recycling is not without its own challenges, in terms of overall disposal characterization, the commercial sector generates a large percentage of the nation's waste. To address this, the ASTSWMO Municipal Solid Waste (MSW) Recycling Task Force (Task Force) initially assigned itself the preparation of a Commercial Sector Recycling reference document for State, local and national recycling coordinators/managers, as well as solid waste and sustainability managers, to assist in the development of and/or enhancements to commercial recycling programs.

Commercial Recycling can be divided into sectors, each with its own barriers to recycling and waste stream composition. In an effort to summarize major recycling initiatives taking place across the country within these commercial sectors, the Task Force has put together a series of reference sheets giving concise reviews of the available literature. The information in this document was gathered during 2014. Statistics cited are from the individual research conducted by Task Force members. The web sites contained in this document are strictly for informational purposes and should not be construed as an ASTSWMO endorsement.

We recognize that the information provided under each sector is not exhaustive. These reference sheets will be reviewed and updated on a semi-annual basis as new information becomes available. Additional sectors may also be added to this document.

State recycling coordinators/managers can update their State information, and/or propose additional sectors for inclusion, by sending an e-mail to Kerry Callahan in the ASTSWMO office at [kerryc@astswmo.org](mailto:kerryc@astswmo.org).

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## AIRPORTS

### Introduction

According to the Natural Resources Defense Council (NRDC), the U.S. airline industry disposes of enough aluminum cans annually to build 58 Boeing 747 airplanes, along with thousands of tons of plastics, magazines, and newspapers. It is estimated that 75% of the waste stream generated at airports is consistently recyclable. These wastes represent opportunities for airlines and airports to save money, reduce global warming pollution, and improve operational efficiency. Airports are a unique environment where a captive audience generates increasing amounts of waste and where security issues call for innovative ways to capture the recyclables in the waste stream.



### Resources

#### ▪ State and Local

MassDOT Aeronautics conducted the [Massachusetts Statewide Airport System Plan](#) (MSASP) in order to provide an analysis of the Statewide airport system of 37 public use airports. The MSASP produced an extensive assessment of the current system's condition, as well as a guide for meeting its current and future needs. The plan helps determine how the Massachusetts airport system should be developed to respond to future challenges and to meet changes in demand in order to promote system sustainability. The development and employment of recycling programs at airports is one element in the MassDOT "GreenDOT" initiative for airport sustainability. MassDOT Aeronautics strongly supports the establishment of such programs at every Massachusetts airport. In addition to the entire plan, there is also an [Executive Summary](#) available.

#### ▪ U.S. Environmental Protection Agency (USEPA)

Airports provide many opportunities for recycling on the go. With increased terminal security, passengers spend more time in airports than ever before and with this extra time, they buy and consume more food and beverages. Passengers and airport personnel generate tons of materials and waste every day, much of which can be recycled. Though USEPA no longer updates its Recycle on the Go information, this [fact sheet](#) prepared by USEPA for operations managers, recycling coordinators, and other key decision-makers involved in planning and managing airport operations may still be useful as a reference or resource.

[Developing and Implementing an Airport Recycling Program](#) (April 2009) -- Airports throughout the United States are "greening" their operations. They are installing solar panels and energy efficient light fixtures, using low-emission vehicles in their fleets and changing their waste management programs. The USEPA designed this guide to help airport managers who want to create a more environmentally-friendly waste operation. This guide focuses on recycling as a positive first step for airports to take as they conquer their waste issues.

- **Federal Aviation Administration (FAA)**

[\*Recycling, Reuse and Waste Reduction at Airports: A Synthesis Document\*](#) -- The FAA has compiled this synthesis document, or “one-stop-shop,” for airport sponsors to use as a resource when contemplating an airport recycling, reduction, and waste reuse program to further their waste minimization initiatives. Specifically, this guidance is designed to provide recommendations on what things to consider and steps to establishing a recycling program at an airport to divert municipal solid waste (MSW) from the landfill. Although recycling of MSW is the focus of this document, other non-MSW waste streams are discussed which may require special considerations with respect to regulatory compliance. There is a special emphasis on construction and demolition waste since this is a big component by weight and volume of waste generated on an airport. The document also includes many relevant case studies.

- **Other Organizations**

The [Natural Resources Defense Council](#) (NRDC) has a 2006 report entitled “[Trash Landings](#)”, available online or in print. This report presents the findings from NRDC's yearlong study of the airline industry and outlines clear steps that airlines and airports -- and other large municipal operations -- can take to put effective recycling initiatives into place.

The [Sustainable Airport Manual](#) (SAM) is a comprehensive guidance manual created by the Chicago, IL, Department of Aviation to incorporate and track sustainability in administrative procedures, planning, design and construction, operations and maintenance, and concessions and tenants with minimal impact to project schedules or budgets. Additional information at this link notes that the SAM not only guides the implementation of sustainability initiatives at O'Hare and Midway International Airports, it is used by several other airports around the world.

### **Case Studies**

A number of the resources above include comprehensive cases studies. Additionally, the following items might provide useful models and replicable activities.

Airport Cooperative Research Program Report 80: [\*Guidebook for Incorporating Sustainability into Traditional Airport Projects\*](#) describes sustainability and its potential benefits, and identifies different applications of sustainable initiatives in traditional airport construction and everyday maintenance projects. The printed version of the report includes a CD-ROM that includes an airport sustainability assessment tool (ASAT) that complements the guidebook and may be used to assist in identifying sustainability initiatives that might be most applicable to an airport project. Through case studies, the tool also allows users to obtain more information about specific strategies and learn about sustainability initiatives that have been implemented in other airports. The [case studies](#) are also available for download in PDF format.

The [Federal Aviation Administration](#) has provided 25 airports across the United States with funding to develop comprehensive sustainability planning documents. These documents, called Sustainable Master Plans and Sustainable Management Plans, will include initiatives for

reducing environmental impacts, achieving economic benefits, and increasing integration with local communities.

[Final Report – Solid and Hazardous Waste Reduction Opportunities and Recommendations](#) (September 2007) prepared for Broward County Aviation Department, Florida. This report identifies opportunities for reducing the quantities of waste generated at Ft. Lauderdale-Hollywood International Airport, thereby increasing the sustainability of the airport itself.

## **AGRICULTURAL PLASTICS RECYCLING**

### **Introduction**

There are a multitude of plastic derived products used for agriculture (AG) including: mulch film, drip irrigation tape, row covers, tunnel film, box liners, greenhouse film, peat moss bags, haylage bale stretch-wraps, “Super Sacks”, plastic twine, silage bags, bunker covers, buckets, barrels, drums, nursery pots and trays, and irrigation pipe. Though these products have helped farmers around the world, they also are adding to the ever-increasing problem of plastics disposal.



A decade ago it was estimated that nationwide 66% of AG plastics by weight were nursery containers; 5%, pesticide containers; and 30%, various types of films (mulch, fumigation, bale wrap) and irrigation tubing. Current anecdotal evidence indicates that plastic use in dairy farming has increased considerably since the early 1990s. Milk is the leading agricultural product nationwide; estimates are that 3% -- or 1,678 million pounds -- of plastics of the resin types used in agriculture are used in agricultural production.

### **Resources**

#### **▪ State and Local**

New Jersey Department of Agriculture (NJDA) Plastic Pesticide Container Recycling site contains information on [New Jersey’s mandatory Agricultural Recycling Program](#).

California Department of Resources Recycling and Recovery’s (CalRecycle) page contains information on sustainable agriculture demonstration projects, including erosion control projects, and links to agricultural organizations that support and promote sustainable practices. [Sustainable agriculture](#) involves practices that sustain natural resources and biodiversity, while still being economically viable.

Though it is dated (2006), CalRecycle led a cooperative initiative, beginning in 2005, to increase [plastic film recycling](#) in California. Local governments, companies, organizations, and

individuals involved in plastic film manufacture, sale, use, and recycling were invited to participate in this initiative by joining one of the [two workgroups](#), and/or by committing to begin or expand activities involving film recycling.

The [Franklin County New York](#) website on recycling dairy plastics gives some best management practices for AG plastics.

#### ▪ Other Organizations

Environmental Risk Analysis Program, Cornell University: [Recycling Agricultural Plastics Project \(RAPP\) Life-Cycle Stewardship of Agricultural Plastics](#).

The [Northeast Waste Management Officials Association](#) (NEWMOA), through a grant from the U.S. Department of Agriculture, Rural Utilities Service, conducted training and provided technical assistance to promote recycling of agricultural plastics in rural areas of Maine, New Hampshire, New York, and Vermont during 2008 and 2009.

EPA Region 2's Pollution Prevention Program has issued two grants to the State University of New York (SUNY) College of Agriculture and Life Sciences at Cornell University for an agricultural plastics recycling project. The projects promote life-cycle stewardship and extended producer responsibility (EPR) for AG plastic films to prevent the pollution generated when these products are disposed in open fires on-farm. For more information on these projects, visit the [Recycling Ag Plastics Project \(RAPP\)](#).

[US Ag Recycling](#) collects plastic containers in many States throughout the south and eastern coast line. It offers three collection options: public collection, collection centers, or private collection.

The Ag Container Recycling Council's [ACRC recycling](#) program brings both the public and private sectors together to promote environmental stewardship.

#### **Case Studies**

This 2005 presentation by the Cornell University Environmental Risk Analysis Program looks at reducing dioxin emissions by [recycling agriculture plastic](#).

Recycling Process for Poultry Litter: [Recycling reactors](#) based on this technology are easily adapted for permanent. Related technologies are being commercialized for recycling scrap plastics and electronic, aircraft, and automotive parts.

This model describes sustainable long-term [recycling of saline agricultural drainage water](#) (type in "agriculture" recycling under advanced search).

[Modeling Agricultural Recycling Systems for System Size and Economic Potential](#): The purpose of this research is to examine an agricultural recycling system.

## CONSTRUCTION AND DEMOLITION

### Introduction

On a national scale, total building-related construction and demolition (C&D) waste is estimated to be 135.5 million tons. This figure represents 30 percent of the *largest single source* in the waste stream.

### Resources

#### ▪ State and Local

This site contains [C&D debris recycling tools](#) put out by the Department of Resources Recycling and Recovery (CalRecycle), including [tools for architects, builders, local governments, and C&D processors](#), a sample ordinance, specifications, etc.

This website has tools from [King County](#), Washington, to learn how to obtain the highest diversion rates possible. One specific tool on this website is [Cost Effectiveness of Jobsite Diversion Recycling](#).

The Connecticut Department of Energy & Environmental Protection (CT DEEP) has a webpage on [C & D Materials Management](#).

#### ▪ U.S. Environmental Protection Agency (USEPA)

[Basic Information about C&D Materials](#)

[Regional and State](#) C&D materials programs.

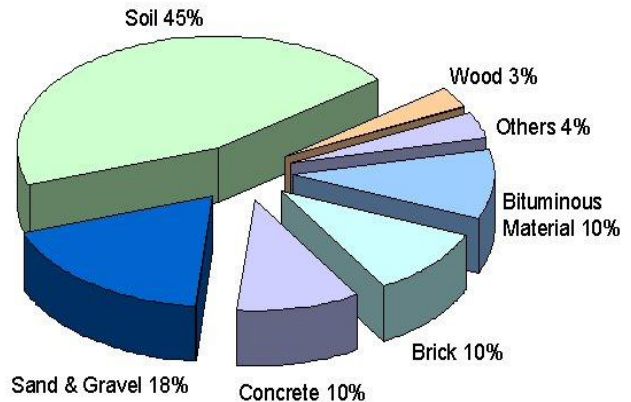
#### ▪ Other Organizations

[Construction & Demolition Recycling Association](#)

The Home Innovations Research Lab (formerly the National Association of Home Builders Research Center) has information on [construction waste management](#) in the homebuilding industry, including materials recycling and reuse.

This is an [instructional video](#) on how to salvage materials for a deconstruction project, by StopWaste.Org, which is the Alameda County (CA) Waste Authority and Alameda County Source Reduction and Recycling Board operating as one public agency.

Articles on [Construction & Demolition Recycling](#) are available from The Free Library.



## Case Studies

The City of Chicago, IL, provides a construction and demolition [Best Management Practices](#) guide for C&D operations. This guide includes case studies and strategies for meeting the C&D recycling requirements.

## **DRY CLEANERS**

### **Introduction**

Most dry cleaners are small businesses and can utilize the information provided in this document for small businesses regarding normal solid waste reduction, reuse and recycling opportunities. There are, however, a number of specific items that dry cleaners use/provide to their customers that become waste and are normally used only once before disposal by their customers. More progressive, environmentally friendly and cost savvy dry cleaners have instituted these types of efforts and programs to be more environmentally sensitive.



### **Resources**

There are very few waste reduction, reuse, and recycling resources available specifically for dry cleaners to assist them in establishing a comprehensive solid waste reduction, reuse, and recycling program. As stated above, the small business recycling fact sheets can be used.

The following organizations provide some additional advice:

The [USEPA](#) maintains a comprehensive set of webpages to assist dry cleaners. It includes information regarding the dry-cleaning industry processes and pollution issues. In addition, USEPA administers the Design for the Environment Industrial & Institutional Laundry Partnership Program, which is committed to improving the environmental characteristics of laundry products and services.

The [Drycleaning & Laundry Institute](#) (DLI) has been a leading international trade association for garment care professionals since 1883 and represents over ten thousand retail dry cleaning facilities in the United States alone. DLI has recently launched its [DLI Cleaners Care Hanger Recycling Program](#). Participating dry cleaners pledge to reuse hangers whenever possible and recycle unusable hangers with local steel scrap yards. Participants will be asked to track the hangers by estimated count and the scrap by weight. Cleaners will report recycling numbers to the Institute for inclusion in the DLI Cleaners Care Hanger Recycling Program's grand total. <http://www.dlionline.org/>



While there is little solid waste reduction, reuse, and recycling information specific to dry cleaners, there is information available regarding some specific items and materials used by this sector that can be considered. See below:

### *Hangers*

Most dry cleaners provide either wire or plastic hangers along with plastic cover bags. If wire hangers are provided, some dry cleaners also provide paperboard covers over the wire to prevent wrinkling or staining.

It has been reported that the costs to purchase these supplies are rising along with all other commodities. While not a waste reduction strategy for the dry cleaner, one of the major cost reduction strategies that dry cleaners can institute is some form of hanger take-back program. One dry cleaner reported a 40% savings in new hanger costs. That can be a significant cost reduction for a small business. Customers can be encouraged to bring back only undamaged hangers; this would be a waste reduction strategy for customers.

According to the [National Cleaners Association](#) (NCA), if a wire hanger is returned to a dry cleaner in poor condition then that cleaner could send it to a scrap metal dealer or give it back to the supplier who may have other methods of recycling/disposal. The NCA also suggests that people concerned about this issue could make it a community project, organizing a wire hanger drive or identifying a place where residents/neighbors can gather them up and pass them along to a scrap metal dealer.

Even if dry cleaning businesses do not offer a take-back program, they can encourage customers to reuse them or give them to other organizations that will, such as Goodwill and the Salvation Army. Some dry cleaners have offered specialty type hangers that are made of recyclable or compostable paper but this is not very common.

### *Plastic Bag Covers*

Plastic bag covers are useful for preventing wrinkles and protecting pressed clothes from getting wet or stained before use. However, the amount of plastic that is eventually disposed of from this use is staggering. Hundreds of thousands of tons of this material end up as solid waste to be disposed of in landfills or incinerators.

A number of environmentally aware dry cleaners provide take-back services to collect these bags for recycling. Since the bags collected are so clean and uncontaminated, they are usually a marketable commodity instead of a waste in need of disposal. [Plasticbagrecycling.org](#) has developed a 4-step process to help businesses set up an efficient plastic film recovery program.

### *Home Delivery/Pickup*

Home delivery and pickup can be cost-effective and greener for the environment as well. If a company offers this service it will obviously save the customer time and energy in dropping off and picking up their garments. Additionally, by making use of efficiently planned routes and

using energy efficient vehicles, this can reduce the overall environmental foot print of the required transportation for the dry cleaner as well.

## **Resources**

### **▪ State and Local**

The Connecticut Department of Energy & Environmental Protection has a [Garment Care Fact Sheet](#).

San Francisco, California, has [Green Business Program standards](#) for the garment cleaning industry.

### **▪ Other Organizations**

The [Green Cleaners Council](#) website lists items that the Council considers in awarding cleaners an 'eco-leaf' for reducing, reusing, and recycling.

## **HOSPITALS AND THE HEALTHCARE INDUSTRY**

### **Introduction**

It has been reported that American hospitals generate approximately 6,600 tons of waste per day. As much as 85% of that is non-hazardous solid waste, such as paper, cardboard, food waste, metal, glass, and plastics. An integrated waste reduction and recycling strategy will help better manage a facility's waste stream. Therefore, there is a substantial economic incentive for implementing programs to reduce waste, including reduced disposal costs and, possibly, income generated from recycling.



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## **Resources**

### **▪ State and Local**

The California Department of Resources Recycling and Recovery's [CalRecycle](#) mission is to ensure that waste materials are managed, reduced, reused, recycled, and disposed of properly in order to protect the public health and the environment. CalRecycle maintains information and resources to help reduce the amount of waste generated at healthcare facilities, including steps for starting a recycling program, model policies, and case studies.

The Delaware Department of Natural Resources and Environmental Control has published a [Commercial Recycling Toolkit for Health Care](#) (note: close the sign-in page to open the link).

[Maryland Hospitals for a Healthy Environment](#) (MDH2E) -- The purpose of the MDH2E Program is to educate Maryland health care facilities about the significant environmental impacts of the health care industry and the potential solutions. MDH2E provides the resources and technical support necessary for Maryland healthcare facilities to implement pollution prevention (P2) programs that can save money, reduce liability and increase compliance while meeting MDH2E's goals.

The Mississippi Department of Environmental Quality (MS DEQ) provides guidance on materials to recycle, collection or storage containers needed, and equipment needed to operate a [hospital recycling program](#), as well as how to process and market recyclable materials, how to educate participants in a recycling program, and where cost savings can be realized from establishing a hospital recycling program.

The Pennsylvania Department of Environmental Protection (PA DEP) also provides tips for recycling materials found in the hospital waste stream: [Recycling Works Tip Sheet: Hospitals and Health Care Institutions](#).

#### ▪ Other Organizations

[Practice Greenhealth](#) is a national membership and networking organization for institutions in the healthcare community that are committed to sustainable, eco-friendly practices. Members include hospitals, healthcare systems, businesses, and other stakeholders engaged in the greening of healthcare to improve the health of patients, staff, and the environment. The website includes areas specific to [Waste](#) and [Environmentally Preferable Purchasing](#).

The [Healthcare Plastics Recycling Council](#) (HPRC) is a private technical coalition of peers across the healthcare, recycling, and waste management industries seeking to inspire and enable sustainable, cost-effective recycling solutions for plastic products and materials used in the delivery of healthcare.

#### Case Studies

[Environmental Best Practices for Health Care Facilities](#): This USEPA fact sheet highlights case studies for three of the largest components of an average hospital's solid waste stream. The case studies provide detailed information on cost, savings, and implementation issues to help the facility evaluate waste reduction and recycling techniques.

## **K-12, COLLEGES AND UNIVERSITIES RECYCLING**

### **Introduction**

Students, educators and school administrators have a growing understanding and concern about how their actions affect the environment of the Earth and may want to incorporate and quantify sustainable actions in their learning environment.



From paper and electronics to food scraps and yard waste, our educational facilities generate tons of waste each year. This material is not only a waste in terms of natural resources, but also in terms of overall operational efficiency and expenditure. All types of schools can benefit from integrating recycling, composting, and waste reduction strategies into their facility's overall business process. These benefits include:

- reduced purchasing costs for new materials,
- reduced waste hauling and disposal costs,
- potential revenue from collected recyclables, and
- increased efficiency of operations.

A number of States require K-12 schools, colleges and universities to recycle and many more States and local governments provide excellent educational and directional resources. The following examples are provided to facilitate the implementation of waste reduction and other sustainability efforts. These resources include links to guidance documents, planning tools, case studies, models, templates, climate tools, and other best management practices.

## **K-12 SCHOOL RECYCLING**

### **Resources**

#### **▪ State and Local**

- The California Department of Resources Recycling and Recovery (CalRecycle) provides [information on programs that can be implemented](#) to reduce the solid waste generated in all areas of a school district (e.g., administration, maintenance and operations, purchasing, child nutrition/cafeteria, classrooms, etc.) that, when properly implemented, create hands-on learning experiences for students and result in districtwide waste reduction. CalRecycle's [Education and the Environment Initiative](#) (EEI) Curriculum is a landmark environment-based curriculum that teaches select California science and history/social science standards to mastery. The EEI Curriculum builds student knowledge through the grade levels, addressing issues from understanding resources, conservation and where our food, energy, and water come from to the complicated decision-making processes related to climate change, green chemistry, and use of public lands.

- The [Connecticut Department of Energy & Environmental Protection page](#) offers comprehensive guides to starting a school recycling program, expanding current school recycling operations, and going beyond the 3 R's at a school or across a school district to provide a safe and healthy environment for students. All schools in Connecticut are required by State law to recycle certain [mandated items](#).
- [Kansas Green Schools](#) is a partnership between KDHE (The Kansas Department of Health and Environment) and the [KACEE](#) (The Kansas Association for Conservation and Environmental Education). Schools can find local partners to work on green efforts, seek Green School recognition, apply for grants, and attend an annual conference.
- [Montana's Department of Environmental Protection](#) encourages schools from all over the State to participate in the annual [Great American Can Round Up School Recycling Challenge](#) sponsored by the Can Manufacturers Institute. Schools compete to recycle the most aluminum beverage cans per capita between America Recycles Day and Earth Day. This is one among many programs the State has set up to encourage recycling in the schools.
- [North Carolina law](#) supports the participation of schools in recycling programs and provides many useful related resources such as guidelines, success stories, waste assessment tools, and frequently asked questions.
- The [Sustainable Oregon Schools Initiative](#) provides a focal point for social, environmental, and economic sustainability efforts. In addition to guidance and training for new programs, [Oregon Green Schools](#) provides grant opportunities, curriculum recommendations, and tools to help schools conduct waste audits.

▪ **U.S. Environmental Protection Agency (USEPA)**

USEPA hosts a number of useful resources related to developing school environmental and waste reduction programs.

- USEPA's [Tools to Reduce Waste in Schools](#) publication is designed to help schools and school districts reduce the amount of waste they generate. It includes information on how to start a waste reduction program or expand an existing one and illustrates how programs can benefit the school, community, and the environment. In addition to identifying 10 steps for becoming waste-free, "*Tools*" provides many easy-to-implement waste reduction activities and a variety of resources.
- Schools and their offices typically generate significant volumes of recyclable paper, including white paper, mixed paper, corrugated cardboard, magazines and journals, and newspaper. The USEPA offers [paper recycling resources](#) tailored to formal (K-12) Schools and Colleges and Universities, [tips for a waste-less school year](#), and [paper recycling best management practices](#).
- Every school lunch creates an average of 67 pounds of trash per school year. Learn how to reduce the number of items in lunches that must be thrown out at the [USEPA's Waste-Free Lunch](#) web page. This site includes a number of valuable web resources for further

research and also offers a waste-free lunch poster designed to help students learn how to reduce, reuse, and recycle items in their school lunches.

- USEPA maintains a [directory of some education and action-planning resources](#) to help reduce greenhouse gas emissions.
- [USEPA's Healthy School Environments](#): This website provides a host of resources and information to help support healthy and productive school environments for our nation's children. Whether you are a State, school district, school, school official, teacher, parent, student, or supporter of healthy schools, this website can put you on the path to providing clean, green, and healthy school environments for students and staff.

#### ▪ Other Organizations

[Keep America Beautiful](#) (KAB), through its [Recycle-Bowl Competition](#), aims to invigorate student participation in a national K-12 recycling competition. National and State champions are awarded. The program objectives are to:

- Establish new recycling programs within schools
- Increase recycling rates in schools that currently recycle
- Provide teacher/student educational opportunities about recycling and waste reduction

Additionally, KAB offers a number of [recycling educational resources](#). A number of States have partnered with KAB to roll this program out at the Statewide level. An example of such a partnership is:

[California K-12 Schools Recycling Challenge](#) aims to not only generate enthusiasm for recycling, but to teach the K-12 students how recycling benefits their school, their community, and the environment, and what is at stake if we do not increase our recycling rate and divert additional waste from the landfills. Over a one month period, schools report recycling and trash data which are then ranked according to who collects the largest amount of recyclables per capita, the largest amount of total recyclables, or have the highest recycling rate.

The [Green Schools Initiative](#) is a non-profit organization that works to catalyze and support "green" actions by kids, teachers, parents, and policymakers to reduce the environmental footprint of schools by:

- Eliminating toxics
- Using resources sustainably
- Creating green schoolyards and buildings
- Serving healthy food and
- Teaching environmental literacy and stewardship

Also see [Healthy Schools Network, Inc.](#), the [Center for Green Schools](#), [NEEF](#) [*National Environmental Education Foundation*], [NAAEE](#) [*North American Association for Environmental Education*], The Project Learning Tree [Green Schools!](#), [EDN](#) [*Earth Day Network*], [GSNN](#) [*Green Schools National Network*], [NWF's Eco-Schools USA](#) [*National*

Wildlife Federation], [GEF \[Green Education Foundation\]](#), [Beyond Benign](#), and other groups connected to Environmental Education on a National Level.

### **Case Studies**

The U.S. Department of Education [Green Ribbon Award for Schools](#) honorees are exemplary in reducing environmental impact and costs; improving the health and wellness of students and staff; and providing effective environmental and sustainability education, which incorporates “STEM” (science, technology, engineering and mathematics), civic skills and green career pathways. Nominees must first be selected by the [State education department](#) as a State nominee, then they will be asked to complete the second step of the process by providing additional information for the nominee package that will be forwarded to the U.S. Department of Education. States may wish to develop or refine existing green school recognition programs and/or run an award program within their jurisdictions in order to provide nominees. Support and help with the application and a list of Green School Programs can be found on this website <http://greenribbon.org/wordpress/application/>. Each State may submit up to four nominees to the U.S. Department of Education. Upon review, the U.S. Department of Education will then award up to 50 Green Ribbons to schools based on the nominations from the States.

## **COLLEGES AND UNIVERSITIES**

### **Introduction**

Many requirements for Statewide recycling and other waste reduction efforts are specific to State agencies, which by definition can include colleges and universities. The following are examples of just a few.

### **Resources**

#### **• State and Local**

Colleges and universities are covered under California’s requirements for [State agencies to meet waste diversion goals](#). This includes requirements to buy post-consumer recycled content products when making purchases in eleven different categories. CalRecycle maintains related reporting system, data, best management resources and other related tools.

The South Carolina Solid Waste Policy and Management Act of 1991 calls for each county, State agency and publicly funded college and university [to report annually the amount of material it recycles](#).

In Connecticut, “Recycling...It’s the Law!” means that everyone must recycle including all [public and private colleges and universities](#). Because of their educational mission, large student populations, high community visibility, and active involvement in research, development, and new technology, Connecticut’s universities and colleges have the potential to become waste reduction and recycling models for other institutional waste generators in the State.



## • Other Organizations and Campaigns

The goal of the [GrassRoots Recycling Network Campus ZeroWaste](#) is to help students and other campus community members tap into the wealth of web-accessible information that is available on waste reduction and recycling. They provide an annotated listing of web resources for colleges and universities, opportunities to take action in waste reduction campaigns, and, finally, a review of resources for creating sustainable or "green" campuses.

[RecycleMania](#) is a friendly competition and benchmarking tool for college and university recycling programs to promote waste reduction activities in their campus communities. Program management for RecycleMania is provided by [Keep America Beautiful](#) (KAB). Program support is provided by the U.S. Environmental Protection Agency's [WasteWise program](#) and the [College & University Recycling Coalition](#) (CURC).

[GameDay Challenge](#) is sponsored by the U.S. Environmental Protection Agency (USEPA) and Keep America Beautiful. During the challenge, colleges and universities implement waste reduction programs during home football games. Schools track and report waste reductions and disposal data that is used to rank the schools. Colleges and Universities compete in five categories: Waste minimization, Diversion rate, Greenhouse gas reduction, Recycling, and Organics waste reduction.

## Case Studies

In 2013, schools participating in the [RecycleMania competition](#) collectively recovered 90.8 million pounds of recyclables and organic materials. Categories measured were: Recycling Rate; Overall recycling by weight; Lowest amount of total waste; and Per capita recovery for paper, cardboard, cans and bottles, and food waste. Colleges also participated in GameDay - basketball and categories targeting electronics and film plastics.



## **PUBLIC MASS TRANSIT**

### **Introduction**

Surface public mass transit includes buses, light rail, trains, trolleys, subways and boats. Each day, millions of travelers use some form of mass transit to get to work, school, shop, or for other reasons including recreation, contributing to a cleaner environment. Transit agencies are also in a key position to commit to instituting continuous improvements in the areas of water, energy and fuel consumption, greenhouse gas emission reductions, and increased recycling and decreased waste generation within their organization and throughout the communities they serve. Below are examples, guidelines, and related tools and resources to facilitate implementation of and recognition for sustainability programs.



## **Resources**

### ▪ **U.S. Environmental Protection Agency (USEPA)**

While USEPA no longer updates the information provided on [this USEPA website](#), the information may still be useful as a reference or resource for recycling at transportation hubs, including how to set up a recycling program, success stories, and tools and resources.

### ▪ **U.S. Department of Transportation, Federal Transit Administration (FTA)**

[This section](#) of the Federal Transit Administration's website provides information on transit's role in environmental sustainability, FTA sustainability efforts, resources and tools, and a clearinghouse of transit agency practices.

### ▪ **American Public Transportation Association (APTA)**

[Transit Sustainability Guidelines: Framework for Approaching Sustainability and Overview of Best Practices](#) (note: close the sign-in page to open the link) -- These guidelines cover a wide spectrum of sustainability in regard to transit. Suggested sustainability practices by the transit industry aim at having broad impact, including reducing passenger transportation-caused ambient hazards such as noise, pollution, and vibration.

[Sustainability Commitment](#) (note: close the sign-in page to open the link) -- APTA members can also obtain recognition for their sustainability practices by signing on to the higher levels of the commitment. The core principles of the commitment are:

1. Making sustainability a part of the organization's strategic objectives;
2. Identifying a sustainability champion within the organization coupled with the proper human and/or financial resources and mandates;
3. Establishing an outreach program (awareness-raising and education) on sustainability for all staff of the organization; and
4. Undertaking a sustainability inventory of the organization.

## **Case Studies**

The Metropolitan Transportation Authority (MTA) in New York, New York has a [sustainability webpage](#).

USEPA also offers the following two case studies on its [website](#), for which updated information is provided below:

- The [Chicago \(Illinois\) Transit Authority](#) (CTA) notes that it is an environmentally conscious provider of public transit. CTA is committed to enhancing the quality of life of its customers, neighbors and employees through reduced regional emissions, improved energy efficiency, increased recycling and other best practices in resource conservation. CTA strives to reduce agency-internal and region-wide transportation impacts in the following five areas:

- Sustainable Transportation;
  - Clean Vehicles;
  - Multimodal Connections;
  - Efficient Facilities; and
  - Resource Recycling.
- Materials management and recycling are an integral part of environmental management at the [Massachusetts Bay Transportation Authority](#) (MBTA). The MBTA has numerous programs in place that assure the proper disposal of land ban items and hazardous waste. The MBTA also works with local communities to help reduce their waste through community recycling events.

## MULTIFAMILY HOUSING



### Introduction

The following information is intended to promote the implementation of new, and to improve the effectiveness of existing, multifamily recycling nationwide.

The best place to start and make a difference with respect to recycling is right in our own homes. There are numerous ways in which we can achieve this depending on where we live and the local recycling options available to us. One of the most common residential recycling programs is curbside recycling, a municipal program operated to pick up a specific set of recyclable materials, usually weekly. Typically, most residential recycling collection programs are designed for single family residences. With the growth in multifamily housing on the rise nationally, there is increasing demand for multifamily recycling programs.

Because multifamily residences have distinct program needs that are not necessarily met with traditional residential or commercial recycling programs, the following information is provided to facilitate the implementation of new programs as well as to enhance the effectiveness of existing multifamily recycling programs.

### Resources

#### ▪ State and Local

As of July 1, 2012, recycling is required in California for multifamily complexes with five or more units. CalRecycle offers a number of related resources to support multifamily recycling, including:

A [Commercial Climate Calculator](#) designed for virtually any California business or multifamily complex to assess the financial, climate change, and waste reduction/environmental benefits of reducing and recycling their discarded materials.

[Commercial recycling outreach and educational resources](#) developed with the Institute for Local Government, including sample ordinances, template flyers, and recycling guides for rental property owners, managers and tenants.

[General information](#) has been assembled to assist local jurisdictions in their efforts to develop successful multifamily diversion programs such as studies, guides, reports, etc.

With funding from the agency formerly known as the Minnesota Office of Environmental Assistance, Eureka Recycling created the [“Exploring Multifamily Recycling”](#) toolkit highlighting best multifamily practices in the country. This toolkit provides tools for recycling program coordinators to assess their multifamily programs and improve them using the best practices in multifamily recycling.

[Building Multi-Family Recycling Programs in Georgia](#) -- Building a recycling program can be like constructing a building. It takes planning, space, resources, funding, marketing, and tools. Above all, it takes knowledge. This toolkit was developed to assist in providing the basic knowledge for implementing recycling programs for all shapes and sizes of multifamily residential buildings.

[Wisconsin’s Waste Reduction and Recycling law](#) and local ordinances require the owners of all multifamily buildings and facilities to: provide separate containers for the materials banned from landfills and incinerators; notify residents in writing about the recycling program at the time of renting or purchasing and at least semi-annually thereafter; arrange for the collection and transportation of recyclables to a recycling or processing facility; educate residents about the three R’s (Reduce, Reuse and Recycle) and other waste reduction strategies; and obey local recycling ordinance requirements.

The Baltimore County, Maryland, Department of Public Works has information regarding [multifamily recycling for residents](#).

The Montgomery County, Maryland, Division of Solid Waste Services has a [“Recycling Made Easy in Your Apartment or Condominium Brochure”](#) that includes detailed descriptions of items that are for recycling and those that are not.

#### ▪ **U.S. Environmental Protection Agency (USEPA)**

USEPA has a number of useful publications that address the general topic of multifamily recycling, including:

- [Complex Recycling Issues: Strategies for Record-Setting Waste Reduction in Multifamily Dwellings](#): This fact sheet packet is oriented toward recycling coordinators, building managers and owners, and highlights record setting multi-family dwelling waste reduction programs.
- [Multifamily Recycling: A Golden Opportunity for Solid Waste Reduction](#): This fact sheet explains the diversion rates, costs, and common elements of high performing multifamily recycling programs across the United States, based on the experience of communities.

This information is drawn from the results of a national study that compared single-family and multifamily recycling services.

- [Multifamily Recycling: A National Study](#): This report is the result of the first national study of multifamily recycling programs.

USEPA offers an overview of addressing the economic incentive [Pay as You Throw](#) when implementing multifamily residential recycling.

### **Case Studies/Success Stories**

In addition to the case studies and success stories included in the above references, the following information also demonstrates the value of such programs:

[Multi-Family Property Saves Money by Offering Recycling in Hamilton County, Ohio](#) -- Overwhelming program participation allowed Stetson Square to double the recycling capacity in just a few months. Stetson Square was able to decrease the service to their 30-yard trash dumpster by one pickup per month, saving the management company \$400 per month. Stetson Square now recycles 19 tons of material a year.

This [webinar, offered by the Institute for Local Government](#), explores different ways to work with apartment owners and managers to increase recycling by apartment tenants. The panelists highlight successful strategies to reach apartment residents and provide examples of resources to assist cities and counties. The webinar also provides a brief update on California's proposed commercial recycling regulations, including provisions related to apartments.

## **OFFICES OR FINANCIAL INSTITUTIONS**

### **Introduction**

Per USEPA, the average office worker generates approximately 2 pounds of paper and paperboard waste products every day. From mistakes printed on the laser printer, bad photocopies, old memos and reports, to old periodicals, the majority of all office waste is paper. With that much paper discarded on a consistent basis, office buildings are ideal for recycling programs because large quantities of paper can be gathered efficiently.

### **Resources**

#### **▪ State and Local**

This [CalRecycle](#) website presents an outline of how waste-conscious businesses manage their offices.



This page from [Fairfax County, Virginia](#) summarizes the steps to implementing a recycling program for an office.

[Willistown Township](#), Pennsylvania, put out this fact sheet which combines instructions for starting a recycling program in office or financial institutions, and includes looking at other areas besides paper, such as food service.

The Massachusetts Department of Environmental Protection created this [fact sheet](#) to provide an overview of issues to consider when establishing a recycling program for the workplace.

#### ▪ U.S. Environmental Protection Agency (USEPA)

This page from USEPA details how to [start or expand a recycling program](#) in general terms for all commercial entities.

#### **Case Studies**

This USEPA [WasteWise case study](#) looks at Bank of America and the steps they took to close the recycling loop when carpeting a new office building. Bank of America also worked on a “Make it Second Nature” campaign to educate their employees about the need to purchase products with recycled content.

An [Office Waste Reduction, Reuse, Recycling, Composting & Buy Recycled Resource Book](#) -- In accordance with the Solid Waste Management Act of 1988, New York offices must recycle right along with other municipal agencies, residents and businesses. It is important that offices make certain that their program meets the requirements of the law. Many municipalities have gone far beyond what is required and recycle many additional items for which they are able to find markets. As more and more industries start to use recyclables as a raw material to manufacture new products, it may be possible (and financially beneficial) to recycle many items that may be currently thrown away. This resource book offers some suggestions as to how one might improve an existing office recycling program.

## **RECYCLING AT PUBLIC VENUES AND SPACES**

### **Introduction**

Recycling is not just for home, work and school anymore. More and more opportunities to recycle are available at parks, airports, transportation hubs, stadiums, convention centers, shopping malls and other venues as well as special events.

Recycling, of course, has many well-known benefits including conserving natural resources, reducing pollution, saving energy, and promoting environmental stewardship. For public venues, recycling has additional benefits.



Recycling reduces litter and helps keep public spaces cleaner as well as potentially saves money by reducing waste management costs. The recyclables collected also may generate revenue, further reducing costs. Finally, recycling programs at public places also reinforce recycling behavior elsewhere.

Below is a wide range of information available on how to set up programs in public places – from simple tips on how to set up a recycling program at a small-town event to best management practices for large venues.

## **Resources**

### **▪ State and Local**

Wisconsin requires, by State and local laws and ordinances, the recycling of certain material at special events whether at public or private locations or facilities. Aluminum cans, plastic bottles, glass bottles and jars, newspaper, cardboard, and office paper must be collected for recycling. Other material also may be required to be recycled depending on the community. [The Wisconsin Department of Natural Resources](#) offers comprehensive information, recommendations and links to more information on [special events recycling](#).

Event recycling also is required in Washington. The State passed legislation in 2007 that requires a recycling program at every official gathering (e.g., concerts, fairs, sporting events, festivals, tournaments) and sports facility where recycling services are available to businesses. To learn more about the law and how to set up a successful recycling program, visit the [Washington State Department of Ecology](#).

The CalRecycle web site provides information on [reducing waste at venues and events](#).

The [South Carolina Green Hospitality Program](#) offers best management practices, tips and recommendations for hotels, motels, restaurants, bars, and other hospitality venues.

The [City of New York](#), New York, also has extensive information, recommendations and tips on how to set up recycling programs in public spaces.

“[Recycling at Events: A Guide to Reducing Waste at any Event](#)” provides organizers ways to plan for recycling programs and other green practices to make events environmentally friendly. The publication was developed by three partners including the city of Portland, Oregon.

### **▪ U.S. Environmental Protection Agency (USEPA)**

The [USEPA](#) no longer updates its Recycle on the Go information, but the information may still be useful as a reference or resource regarding successful efforts at airports, stadiums, parks, transportation hubs, special events, shopping centers, and convention centers.

The USEPA offers excellent, easy-to-follow information in "[A Green Guide for Waste Management and Recycling During Special Events at National Capital Region Parks](#)".

## **Case Studies/Success Stories**

[USEPA's Retail Industry Portal](#) provides a comprehensive overview of resources to help prevent or resolve environmental issues at retail establishments. Two types of resources are available – compliance and sustainability. One of the key latter resources is

[“America’s Marketplace Recycles: A Guide to Waste Reduction at Shopping Centers”](#): Though USEPA no longer updates this information, this guide – created to serve as a resource for local and State recycling coordinators – contains numerous case studies from shopping centers and retailers and may still be useful as a reference or resource.

## **RETAIL**



### **Introduction**

Shopping centers and malls provide an ideal venue to recycle and share the recycling message to American consumers. There are numerous materials to recycle including cardboard, wood pallets, plastic, paper, food scraps, glass, metal and plastic beverage containers, and yard trimmings.

### **Resources**

#### **▪ State**

The Delaware Department of Natural Resources and Environmental Control developed a [Commercial Recycling Toolkit for Malls and Shopping Centers](#) (note: close the sign-in page to open the link).

The Pennsylvania Department of Environmental Protection produced [this short tip sheet](#) for starting a recycling program for retailers.

#### **▪ U.S. Environmental Protection Agency (USEPA)**

USEPA's the [Retail Industry Portal](#) provides access to the many programs and resources available to help prevent and resolve environmental issues at retail establishments. As described on the website, two types of resources are available:

- **Compliance Resources:** to assist in meeting current regulatory obligations. The website notes that in addition to Federal regulations, State regulations may also apply, and that not complying with regulatory obligations can result in enforcement actions.
- **Sustainability Resources:** to assist with voluntarily going beyond regulatory obligations to protect the environment.

### [America's Marketplace Recycles: A Guide to Waste Reduction at Shopping Centers:](#)

As noted above, this USEPA guide, though no longer updated by USEPA, was created to help shopping centers and retailers increase reuse and recycling and reduce waste disposal, often saving money in the process. It can also serve as a resource for local and State recycling coordinators who work with the commercial sector. The guide contains numerous case examples from shopping centers and retailers who are leaders in waste prevention and recycling.

#### ▪ **Other Organizations**

International Council of Shopping Centers (ICSC) -- The [Property Efficiency Scorecard](#) is an ICSC-sponsored effort to develop a working tool for benchmarking the sustainability performance of shopping centers. This tool provides a platform for shopping center owners to measure and improve the efficiency of their properties by focusing on controllable cost centers, such as energy, water and waste.

#### **Case Studies**

USEPA's [WasteWise has highlighted retailers](#) that have successfully implemented recycling and waste reduction programs.

[Plastic Film Recycling: How A Mall Is Turning Waste Into Revenue](#), from Green Hope Productions. This 8-minute video illustrates the opportunity for businesses to capture valuable scrap plastic film in their waste streams and recycle that material into new useful products.

[Sustainable Pittsburgh](#) used its expertise and insight to help a major suburban retail shopping mall build consensus and emerge as a national leader in establishing a sustainability mindset and action plan that involved merchants, the mall developer, and the local community – achieving measurable improvements in energy management, recycling, overall sustainability practices, and cost savings.

## **SMALL BUSINESS RECYCLING**

### **Introduction**

Recycling is good for the environment – and the economy. While the environmental benefits of recycling are well known, that recycling plays an integral role in the nation's economy is less known. By turning waste into valuable raw materials, recycling creates jobs, builds more competitive manufacturing industries, and stimulates the development of green technology.

Recycling is not only good business, but also good for small businesses. Businesses and industry create as much as 35-45 percent of the nation's waste stream according to the U.S. Environmental





Protection Agency (USEPA). Recycling can save businesses money in avoided disposal costs. Recycling also may generate revenue through the sale of recyclables. Finally, recycling conserves natural resources and saves energy. Businesses can also do their part and buy recycled-content products. There are more than 4,500 recycled-content products available, and this number continues to grow. No matter what type or size of business – manufacturing, health care, retail, wholesale, food service, professional services or construction – it can benefit from recycling.

## **Resources**

### **▪ State and Local**

The Connecticut Department of Energy & Environmental Protection (CT DEEP) offers comprehensive waste reduction and recycling information targeting businesses, including beneficial reuse of solid waste, buying recycled, market information, ReUse Centers and Material Exchanges. Of particular value may be this publication: “[Setting up a Recycling Program at Your Small Business](#)”. The CT DEEP also offers excellent [tips on buying recycled](#).

Michigan's Department of Environmental Quality offers basic information on [buying recycled products](#) and has links to additional websites on this issue.

The South Carolina Department of Health and Environmental Control (SC DHEC) provides a variety of tips and best management practices (BMPs) for businesses through its [S.C. Smart Business Recycling Program](#). The simple, easy-to-follow BMPs include setting up a recycling program as well as recycling of cardboard, pallets, office paper, fluorescent bulbs, and beverage containers.

The City of New York, New York, provides basic information and tips on [buying recycled at work](#).

[King County](#), Washington, offers several programs that can help reduce waste and promote recycling at a business.

### **▪ U.S. Environmental Protection Agency (USEPA)**

[USEPA's WasteWise Program](#) is designed to help its member partners (including businesses and industry) preserve resources and prevent waste. Benefits of the free program include:

- a toll-free help line for technical assistance;
- outreach and educational material;
- an annual climate profile describing greenhouse gas reductions;
- networking opportunities, recognition in WasteWise publications, case studies, and meetings; and
- an opportunity to receive national recognition for outstanding achievement.

USEPA has a [Business Guide for Reducing Waste](#) that provides an overview for developing and implementing a waste reduction program. It includes a series of worksheets designed to help a

company conduct a waste assessment and devise a program tailored for the company's specific goals.

### **Case Studies/Success Stories**

The [S.C. Smart Business Recycling Program](#), discussed previously, lists business recycling success stories.

## **ODD RECYCLABLES**

Every business has some odd materials sitting around that they do not know what to do with -- things like six-pack ring holders, old worn out tennis balls, an old, torn American flag... things that are not collected by their recycling hauler and things that are not collected by the local government for recycling. It will take some patience to hunt down a recycler for these odd recyclables, but there are options:

The New York State Department of Environmental Conservation (NYSDEC) Bureau of Waste Reduction & Recycling has developed a listing of odd materials and what can be done with them, ranging from recycling such items to sending American flags to the American Legion for proper disposal. Many of these items can be handled for free while others may require a mailing or management fee. Check out the [list of Odd Recyclables](#).

The [Hamilton County Recycling and Solid Waste District, Cincinnati, Ohio](#) has developed an extensive listing of Outlets for Odd items.

Earth911 has run a [series of articles](#) on odd recyclables ranging from sports items such as golf balls, surfboards, and ski equipment to blue jeans.

[ChaRM](#), in Boulder, Colorado, opened in 2001 and was the first facility of its kind in the nation. It collects unusual materials like electronics, bicycles, and plastic bags for recycling and reuse.