# Building Multi-Family Recycling Programs in Georgia

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Georgia Recycling Coalition, Inc.

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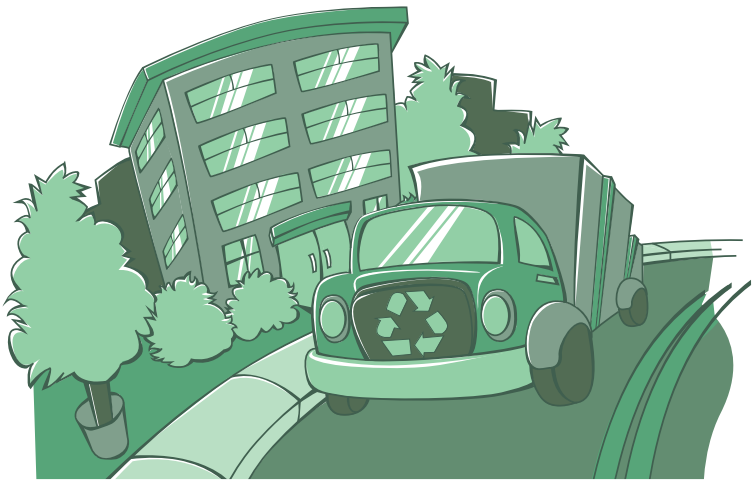
Department of Community Affairs

# Building Multi-Family Recycling Programs in Georgia



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Keep Atlanta Beautiful

July 2010

# Acknowledgement

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 multi-family residential buildings.

In-Kind development of this toolkit was provided by:

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Thanks to the Atlanta Recycles Steering Committee for their support and encouragement during production, and to the Turner Foundation for their financial and human resources supporting recycling in Georgia.

*Special Appreciation to*:

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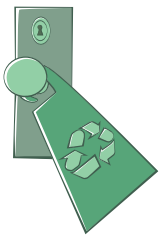
Inspiration and supporting resources were graciously provided by Eureka Recycling, a 501 c 3 nonprofit recycler serving Saint Paul and the Twin Cities
in Minnesota.

***Disclaimer:*** This toolkit was prepared as a guide for property owners, managers, residents and local recycling program managers to assist with setting up effective and sustainable recycling programs for multi-family residential and mixed use properties in Georgia. The toolkit provides collection options and outlines collection efficiencies for programs that can sustain during fluctuating market conditions that are cyclical and ever-changing based largely on consumer demand. Georgia has strong end markets for recycled materials – all of which have a need for the materials being recycled in your communities. The references within are made as examples and in no way should be considered endorsements by any of the preparers of those programs, methods or entities.

# Building Multi-Family Recycling Programs in Georgia

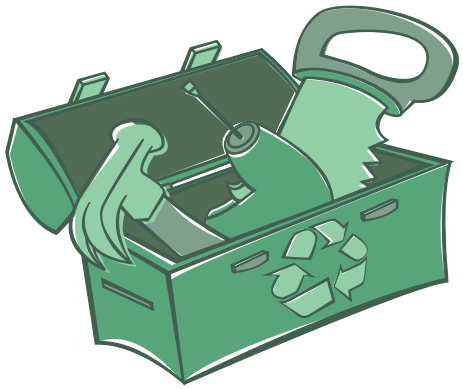
## Table of Contents







# Follow the Icon



The **Toolbox Icon**
represents tools that can be found in **Section 9. The Tool Box**, located on page 39. You will find icons in the margins throughout the toolkit wherever there is a tool to accompany the discussion in the text.

The tools are recommendations we made based on our experience and our research in creating the toolkit. The Tool Box is comprised of electronic files (web links, JPG, PDF) of samples, templates and resource documents. These recommendations are included to help you develop your program.

# 1. BACKGROUND & RESEARCH

## Purpose of this Manual

In Georgia, and the United States in general, trash generated within residential buildings is growing. In fact, in metropolitan areas, the number of multi-unit residential buildings is growing, especially in large urban areas. To keep up with the growing population in Georgia and the subsequent increase in generated waste, we have to look beyond single family homes to continue to decrease waste, increase recycling, and meet statewide per capita reduction goals.

Multifamily building recycling programs face challenges that are very different from curbside recycling programs. For example, multifamily residential buildings face high resident and management turnover, space restrictions, and diverse building size, structure and demographics. Using the same tools to implement these programs and judging their success on the same scale can result in frustration and limited success.

The goal of this toolkit is provide a map to guide local recycling program managers, property managers and owners, elected officials, haulers and vendors, and professional associations in the direction where their efforts will have the greatest impact. Our focus will be in providing guidance, technical assistance, and resources for use by property managers and local government recycling managers who have oversight in working to reduce waste within their jurisdictions.

# Multi-Family Recycling Toolkit

## Quick Start Guide

1. Review your current solid waste hauling/removal contract:

   Who is your hauler; what equipment, frequency of collection?

2. Consider doing a waste audit or assessment: determine what you can recycle?

   Sustainable Office Toolkit:
   http://www.gasustainability.org/documents/offices_home.html
   - Waste Sort Worksheet

   Waste Assessment Guide: http://www.dca.state.ga.us/development/EnvironmentalManagement/programs/downloads/RecyclingAssessmentFinal.pdf

3. Evaluate space for recycling container placement; i.e. a consolidation area

4. Determine if you can request quotes from recycling haulers or if a more formal bid process is required

5. Contact potential hauler vendors

6. Meet with potential hauler vendors on the property

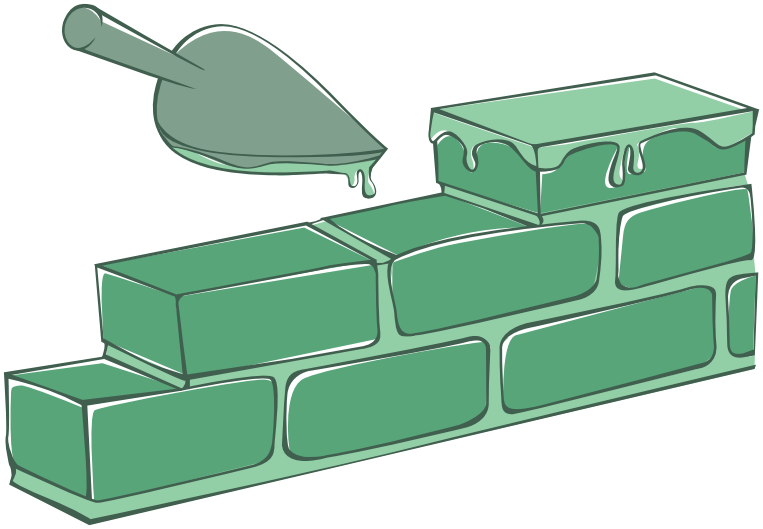
7. Contract with a hauler vendor; ensure your recycling needs are met

8. Educate your residents
   Websites, electronic or printed newsletters, flyers

9. Track information
   # of containers, est. tonnage provided by vendors, accepted materials list

10. Report to local jurisdiction if required

# 2. THE FOUNDATION



## Recycling in Georgia

### Historic Overview

In 1990, the Georgia General Assembly passed the Georgia Comprehensive Solid Waste Management Act, which set a path toward improved solid waste management in the state. Key provisions include: solid waste planning at the state and local levels and annual reporting by local governments; waste reduction measures that included per capita waste reduction goals, as well as a ban on yard trimmings in certain landfills and tire and auto battery bans; adequate local collection systems; disposal capacity for ten years, a land limitation negotiation process to resolve facility operation issues; and education and public involvement activities.

### Waste Characterization Study

The Georgia Department of Community Affairs commissioned a waste characterization study, completed in 2005, that provides a comprehensive view of the composition of the waste disposed in Georgia's municipal solid waste (MSW) landfills. Data was compiled statewide, as well as regionally for 13 of the 16 Regional Development Centers (RDC) in the state. The data can be used in determining the quantity of material available for recovery, measuring effectiveness of recycling programs, and in determining the need and size/capacity for solid waste and recycling facilities. [**Municipal solid waste (MSW)** is any solid waste derived from households, including garbage, trash, and sanitary waste in septic tanks and means solid waste from single- family and multifamily residences, hotels and motels, bunkhouses, campgrounds, picnic grounds, and day use recreation areas. The term includes yard trimmings and commercial solid waste, but does not include solid waste from mining, agricultural, or silvicultural operations or industrial processes or operations.]

### New-Per Capita Diversion Goals

Since FY 1994, the per capita waste disposal rate in MSW landfills in Georgia has climbed from 5.66 lbs/person/day to 7.39 lbs/person/day. When imported waste is excluded, the rate is 6.38/lbs/person/day. This represents an increase of just under a pound per person per day over the past ten years. After the results of the waste characterization study provided a baseline in 2004, the Georgia Department of Community Affairs facilitated a group of stakeholders to develop incremental per capita commodity based goals as follows:

| Per Capita MSW Disposal Rate/MSW Reduction Goal | | | | | |
|---|---|---|---|---|---|
| **Commodity** | **Actual 2004 Lbs/ person** | **Projected 2012 Lbs/person** | **Projected % 2012** | **Projected 2017 Lbs/person** | **Projected % 2017** |
| Glass | 0.153 | 0.140 | 8% | 0.140 | 8% |
| Paper | 1.181 | 1.000 | 15% | 0.850 | 28% |
| Metal | 0.228 | 0.198 | 13% | 0.186 | 18% |
| Plastic | 0.663 | 0.560 | 16% | 0.530 | 20% |
| **Total** | **2.23** | **1.99** | **11%** | **1.71** | **23%** |

### Markets Infrastructure

The recycling markets infrastructure in Georgia makes it one of the most prominent recycling states in the nation. End use markets for all traditional materials exist in the state, including plastic bottles, glass, metals, and all grades of paper, including corrugated. Markets also exist for electronics, cell phones, batteries and construction and demolition debris. The infrastructure for organics is on the upswing and developing. The private industry investment in processing facilities along with state grant funding to facilitate recycling hubs and away from home recycling equipment is assuring that materials can be recycled cost-effectively.

### Psychology of Garbage

Garbage is the stuff we don't need anymore, the junk we think is useless. It's the rejects we don't want to deal with, and the cast-offs from the way we live. It comes from our homes, businesses, government agencies, and institutions like schools and hospitals. Garbage is also known as "municipal solid waste." To change the way we deal with garbage, we need to change how we feel about garbage. Garbage often makes us react with discomfort, revulsion, aversion, and sometimes fascination. Our attitudes about garbage can change once we realize that some garbage is useful material rather than something to be thrown out. As our society changes, the things in garbage also change. Wars, fads, inventions, boom times, and bad times affect what and how much is thrown away. Take boom in the electronics industry in the past two decades as an example. No one ever wants to live near a landfill due to some real and some perceived negative impacts, thus the NIMBY, or "not in my backyard" movement has lead to ever increasing dissent with respect to opening new landfills. But remember, you generate it and it has to go somewhere!

**Remember the slogan *Reduce-Reuse-Recycle*?** As a society, we are becoming ever more aware that there's **No Such Thing as "Away"**: burying, burning, and recycling garbage doesn't really get rid of it, so reducing what we use is the first real solution to our garbage problem. Making choices and taking personal responsibility for our consumption habits and subsequent disposal methods provides us with a new thought process on how we can all create less garbage.

### Resource Management

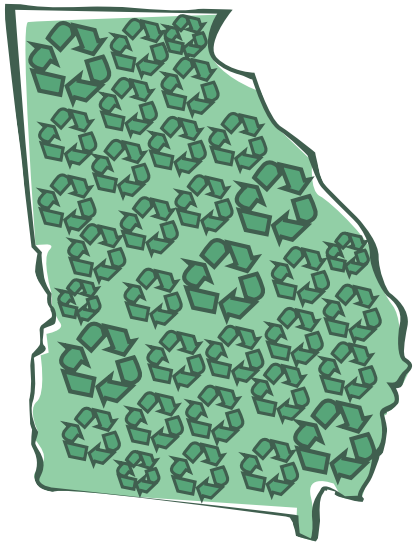
With ever growing concern and heightened awareness of the need to conserve water resources, reduce our dependence on energy resources, and reversing negative climate change effects, waste reduction and recycling have risen the to top of the solutions short list. Recycling has evolved into more than a waste management tool and into a way to conserve valuable resources-- including financial resources when programs are comprehensive in nature, have high participation, and are calculated on an equal playing field with disposal costs.

### Economic & Environmental Benefits

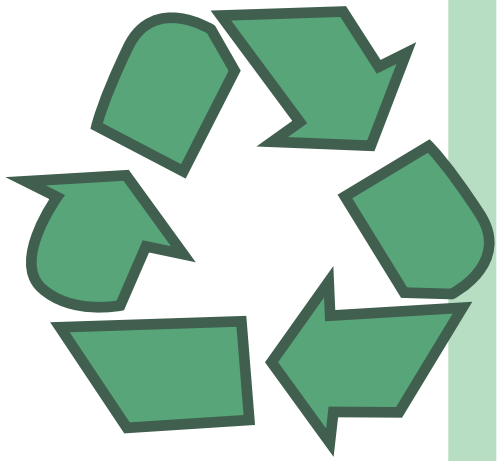
Recycling is good for the environment and good for Georgia's economy. Paper mills use 40% less energy to make paper from recycled paper than they do making paper from virgin timber. (Dept of Energy) A ton of paper made from recycled fibers conserves 7,000 gallons of water (DOE).

### *Recycling Means Business in Georgia*

- One-third of all PET plastic bottles recovered in North America is used by the state's carpet industry.
- The recycling plastic industry accounts for $1.5 billion in annual sales and employs 36,000 Georgians with an annual payroll of almost $875 million
- Georgia is the 2nd largest pulp and paper producing state in the nation, with 16 mills using recycled fiber in their production—9 of them rely exclusively on recycled fiber.
- Georgia's paper mills consumed more than 2.8 million tons of recovered paper in 2006, 8% of the U.S. total.
- The paper industry represents $10 billion of annual shipments of pulp, paper and paperboard in Georgia and employs 25,000 Georgians will an annual payroll of over $1 billion.
- Georgia is the home to the largest aluminum recycler in the world: Novelis; with its North American headquarters in Atlanta; aluminum cans are recycled in their Greensboro, GA facility.
- Two manufacturers in the state use recycled glass to make new glass products



## *Environment Benefits of Recycling*



**Recycle 4 Georgia**

We need to recycle: Paper, Glass, Metal, and Plastic

- Georgians annually throw away an estimate 2.5 million tons of common, every day recyclables, with an estimated market value of over $300 million
- Georgians throw away
    - 1.9 million tons of paper a year
        - 320,000 tons of newsprint,
        - 730,000 tons of Cardboard
        - 225,000 tons of Office Paper -- $71 million
    - 1.0 million tons of plastic
        - 90,000 tons of Plastic Beverage Containers -- $52 million
        - 500,000 tons of Film Plastic
    - 360,000 tons of metal
        - 48,000 tons of aluminum cans
    - 240,000 tons of glass
- If we recycled just 1.7 million tons of the aluminum, paper, glass, and plastic thrown away annually in Georgia, we would:
    - Conserve 4% of the total energy consumed annually within the state or the equivalent of the transportation energy consumed by over 1,000,000 Georgians each year; and
    - Conserve over 7 million barrels of oil
- Georgia has the 2nd largest end use market infrastructure in the nation for recovered materials- meaning what we recycle in Georgia can be used in our state or within very close proximity of our state borders for re-manufacturing of goods containing recycled content.

**Recycle 4 You!**

Individual action does make a difference. Did you know that recycling can save enough energy to offset the energy you consume to light a room, run a computer, and watch TV? It can even offset the water you use in your shower!

- Recycling 1 glass bottle will save enough energy to light a 100-watt light bulb for 4 hrs
- Recycling 1 aluminum can will run a computer for 3 hours
- Recycling 1 soft drink bottle will save enough energy to run a TV for 1 ½ hours; and
- Recycling 5 lbs of paper will conserve enough water to "offset" the water used in a typical shower.

**Case Study-Developing Recycling Collection Infrastructure via State Grants**

In October of 2007, the Georgia Department of Community Affairs (DCA) announced that Bulloch County, City of Griffin, City of Savannah and Valdosta-Lowndes County would receive a total of $2.2 million in state grants from the state's Solid Waste Trust Fund (SWTF) to implement four new, innovative regional recycling collection programs. DCA's Office of Environmental Management worked with the selected communities to establish and implement these newly announced recycling programs. The projects proposed by these jurisdictions serve nearly 24% of the state's population. When combined with existing programs, these new efforts are well-positioned to have a real and measurable, statewide impact.

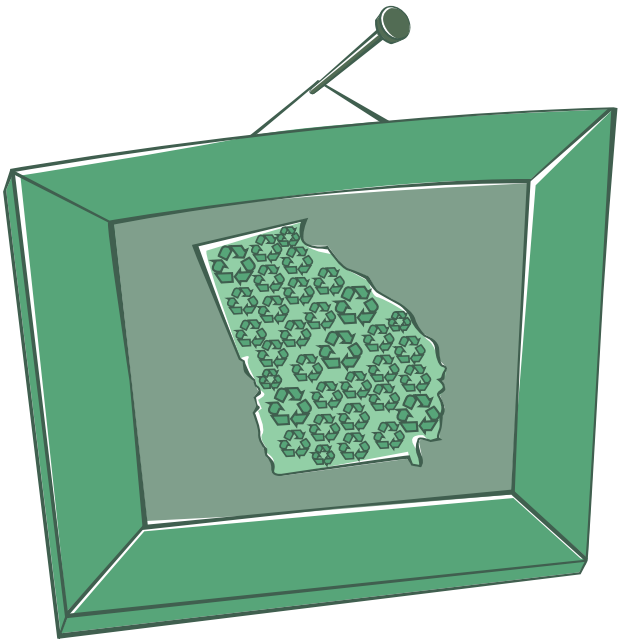
The recycling hubs have had a significant statewide impact in the expansion of single stream recycling collection beyond metro-Atlanta. One of the most recent trends in recycling collection is the co-collection of recyclables in one vehicle – "single stream collection." Single stream recycling collection drastically reduces the collection cost for recyclable materials and dramatically increases recycling participation rates. This collection process however, does require the materials be separated at a material processing facility (MRF). Over the past few years, single stream processing capacity, both public and private, has been built in the metro Atlanta area. These new, regional recycling hubs will support community efforts to invest in the required single stream recycling collection and transportation infrastructure to create cost-effective recycling collection opportunities statewide.

Recycling study data has estimated that Georgians annually throw away 2.6 million tons of recyclable materials which can be used by the state's terminal markets, central sites in the metro area that serve as an assembly for recycling commodities. As an added benefit, the new regional recycling hubs will support Georgia-based industry. By capturing these materials here in our state, Georgia industries using these recycled materials will not have to import these materials from around the country, and will support Georgia jobs and businesses. The hub communities estimated an average of 185% increase in recovered materials in their communities, which calculates to a projected $514,500 savings in avoided landfill tip fees at the current statewide average tip fee of $35 per ton. The increase in recovered materials will also benefit the hub communities and many of Georgia's strong recycling markets, with projected annual revenues of $370,000. The estimated return on investment of SWTF expenditures is less than three (3) years for this project.

The communities were also selected because of their geographic location, either served by or with access to the State's major transportation corridors. The private-public partnerships between these communities and private sector recycling markets provides a balanced approach to the recycling hub concept and may also eventually serve as collection points statewide to support carpet recycling ,electronics, and other less common recyclable materials.

Curbside Value Partnership (CVP) is a nationally-recognized organization with a primary focus on increasing participation in residential curbside recycling programs and measuring the growth of these recycling programs as a way to increase the sustainability of local recycling efforts. CVP approached DCA with an interest in partnering with the state to launch and test education and marketing programs in the recycling hub communities and to measure the volumes of recyclable materials collected in these communities. CVP plans to take this information and promote Georgia's results as a national case study model.

# 3. THE MARKET



## How Multifamily Fits Into the Picture

In March of 2008, Georgia was declared the second largest growing state in the nation, with over 150,000 people relocating to our state in 2007. In the large urban core areas, apartments, high rise multi-use, condos and lofts are increasing in number and size based on housing needs and little space left to develop affordable single family homes.

Example: The Atlanta Regional Commission's 2007 Population and Housing Report showed that practically all of the new multi-family construction since 2000 has been built in the 10 "core" counties (Cherokee, Clayton, Cobb, DeKalb, Douglas, Fayette, Fulton including City of Atlanta, Gwinnett, Henry, and Rockdale), accounting for 98.4% of the new multi-family units in the 20 county expanded area. For example, DeKalb County has built 40 multi family units for every 100 new residents since 2000, the highest rate in the region. Fulton is second with 30 new multi-family units for every 100 new residents, followed by Cobb (21), Clayton (18) and Cherokee (11). The City of Atlanta has built 52 multi-family units for each 100 new residents since 2000.

Based on population, Atlanta is the largest city in the state, followed by the top ten in descending order: Augusta, Columbus, Savannah, Athens Clarke Co., Sandy Springs, Macon, Roswell, Albany, Marietta, and Warner Robins.

In most communities, multifamily units are considered hybrid customers. Those buildings with fewer (two-six) units may be considered single family units receiving refuse and recycling services as though they were single family units. Those in buildings with more than the cutoff number of housing units are often considered to be commercial customers and their refuse is often collected according to the prevailing arrangements for commercial customers. What constitutes a multi-family property may vary among

different jurisdictions. For our purposes, multi-family means any residential or multi-use commercial properties that include more than 6 living units. This may be apartments, condominiums, lofts, mid and high rise buildings, and in some cases student housing.

Generation of recyclable materials varies for multifamily units that produce an average of 580 lbs per year, about 200 lbs less than single family households might produce annually. A contributing factor is there are often fewer occupants in multifamily (Average 2) households than in single family (Average 2.9). The capture rates of single family are almost double those of multi.

**Recycling Challenges faced by multifamily properties include:**

- Recycling is almost always less convenient than garbage disposal
- Insufficient bin capacity
- Residents' sense of disconnect from the recycling program
- Anonymity limits repercussions for not recycling properly or at all
- Transience issues (i.e. temporary nature of apartments, rentals)
- Multi-cultural and socio-economic factors that affect recycling behavior
- Multi-lingual issues that may hinder understanding of the program
- Opinion that maintenance fees cover waste management services
- Insufficient promotion and education of the program and its positive result
- Lack of space due to buildings not being designed originally for recycling

On the positive side, the diversion of recyclables from the disposal stream can result in lower waste handling and disposal fees and may allow properties to reduce those service costs to offset the cost of recycling collection. There are several factors that will determine that offset and balance; they are discussed further in the Space and Money section.

Additionally, many properties have realized that recycling of corrugated boxes resulting from moving, new purchases and overnight delivery services has significantly reduced their capacity issues in compactors as well as per ton disposal costs.

The movement toward recycling when aligned with good education and communication elements tends to create more awareness among residents leading them to a more enlightened approach to dealing with their waste. By developing habits like: donating reusable household items to organizations like Goodwill, Salvation Army, Habitat; taking electronics/cell phones to drop off locations; and returning end of life compact fluorescent bulbs to take back programs like that of Home Depot, they contribute to diverting even more disposal costs while contributing positively to the health and safety of the community and environment.

# 4. POLICY & PLANNING

## Government Policy

**State and Local Government Requirements**

The success of a multifamily recycling program in Georgia depends in great part on the regulatory structure that governs its functions. A program is designed in accordance with (and could be limited by) the regulatory structure in your community. This structure may include state, county, or city mandates, ordinances, franchises, or contracts. In a community you may be faced with faulty or insufficient regulations, which can make it difficult to run a recycling program as efficiently and successfully as possible. Ordinances can be vague or difficult-to-enforce ordinances. A community can also be challenged with an "open hauling" system, where individual building managers are responsible for contracting with a hauler that provides service in their area. What is critical in many of these cases is a profound change in the local regulations of recycling, although many communities lack the political support to address such change.

This section of the toolkit cannot help you overcome the inherent challenges in the regulatory structure in your community, but it does provide you important tools to strengthen parts of the structure and to create requirements such as policies or ordinances that can work more effectively within the existing structure.

Currently recycling, multi-family or otherwise, is not regulated or required in the State of Georgia. However, there are several cities in the State that have implemented multi-family recycling ordinances on a local level and a discussion of these cases is included in this section.

As mentioned in the 'Recycling in Georgia' Section of this guide, local governments must in comply with The Georgia Comprehensive Solid Waste Management Act which requires each local government to have or be a part of an up-to-date and approved 10-year Solid Waste Management Plan. The plan's Waste Reduction element, which includes an inventory of solid waste and recyclable collection program, must address the adequacy of existing programs for populations in the planning area. Needs and goals for multi-family recycling ordinances have become more prevalent in the plans of more densely populated cities and counties. A copy of any government solid waste management plan can be obtained by contacting your local public works or solid waste management department.

**Ordinances and Enforcement**

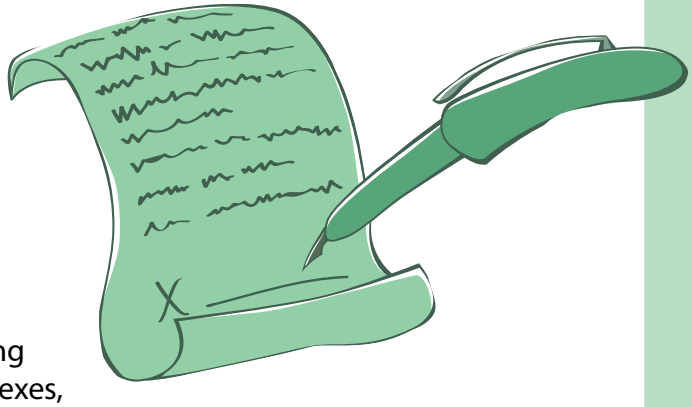
An ordinance is a law that is established by the local government and passed by a city council or county commission. A local government can ask for any type of special requirements in their ordinance. The most effective ordinances will mandate what materials must be recycled and is enforceable. When proposing or enacting ordinances it is important to keep in mind that existing buildings may have structural limitations or that haulers may be unable to access recycling carts on a property site. Focusing on strengthening ordinances can address the compliance issues of many buildings and/or haulers at once.

Ordinances can require building owners to acquire certain recycling services and/or require space for recycling carts and bins. Ordinances can also require haulers to provide levels of service and report information such as the types and tonnage of material collected. An ordinance that requires a comprehensive list of recyclable materials to be collected will increase the return on the tonnage of those materials. It is important to specify what needs to be collected; paper, plastic, glass, and aluminum etc. and the type of collection containers that are used to collect them. These service requirements can be reinforced by making them a stipulation of the issuance of a hauler's license to operate within a jurisdiction. Principal items to address are health issues, safety, quality of service, and accounting and requirements to report by estimated material type.

In 2008, The Georgia Department of Community Affairs began to use a web-based solid waste management and reporting system called Re-TRAC, developed by Emerge Knowledge Design Inc. to gather statewide recycling and waste diversion data (diverting waste from landfills). DCA uses the system as a tangible management tool to measure the impact of recycling education and program changes through quantifiable results. The on-line reporting system provides local governments with a comprehensive approach to gather and analyze data from individual communities, landfills, transfer stations, haulers, generators, processors, disposal facilities, multi-family dwellings and others that generate and handle waste and recyclables. The Re-TRAC system not only enables the State of Georgia to more efficiently and regularly gather up-to-date trend data on whether the State is achieving their waste diversion targets, but local governments can now identify key programs such as multi-family recycling that lead to high recovery and recycling rates.

It is not safe to assume that there is already an ordinance in your community that addresses a multifamily recycling program because it is not required by Georgia state law. Since the existence of any ordinance is public information, it can be easy to access in the governmental or municipal code or by asking the jurisdiction's attorney. The ordinance template included with the tools in the Appendix may help you design a new ordinance or improve an existing ordinance.

It is important to remember that even if you have the best ordinances and contracts in the world, strong management and enforcement is vital to making them effective. Recycling Coordinators may not have the authority to enforce codes. Someone must be the enforcer, and the enforcement mechanism needs to be established in the ordinance to provide an incentive or disincentive based on performance. The Outreach Section will detail the effects of education.



**Sample Ordinances in Georgia**

As part of the Solid Waste Management Code, the ***City of Atlanta*** has an ordinance that requires owners of multifamily complexes, defined as those consisting of six (6) or more living units, such as apartment complexes, condominiums, townhouses and public housing, to provide containers to residents for recyclables. The ordinance does not require the *use* of the container, only that the property owner make recycling available to tenants. The City struggled with an issue of on-site capacity requirement, especially in communities of several hundred units, and later decided that the on-site capacity might in fact be determined by the use of the container. If 1,000 gallons are enough for a 900 unit property, then having the 2,700 gallon capacity required on-site (by the ordinance) would not be necessary. The City will continue to weigh the issue which should only become a problem if the on-site capacity is not sufficient to handle the load of recyclable materials.

The containers must be adequate to hold recyclable materials including, at a minimum, the materials the city collects as part of its curbside recycling program, which includes glass, plastics, newspapers and aluminum cans. In addition, each multi-family housing owner or association, or management company on behalf of the association, is required to submit a quarterly report documenting the amount and type of recyclables collected, the frequency of their collection, and the size and average number of recycling containers located on their property. All new buildings must demonstrate sufficient space for recycling containers in order to obtain a building permit and existing complexes must retrofit unless granted a waiver from the Commissioner of Public Works.

Currently, there is no penalty per say for not complying with the ordinance; however the Commissioner will issue a written notice of violation and give the property 90 days to correct the violation. A report of violators will be given to the City Utilities Committee quarterly. The City Code Enforcement Officers will monitor those who are not complying and approach each situation on a case by case basis. The City's goal is to increase the volume

of materials that are collected for recycling, not to impose fine after fine on properties owners. The City of Atlanta understands the importance of saving money and resources for their city as well as for the State.

Included in the Utilities and Services chapter of the ***City of Roswell*** Codes***,*** is an ordinance that requires "multi-family complexes", buildings other than a duplex, designed for or occupied exclusively by two (2) or more families with separate housekeeping facilities for each family located within City limits, to institute a recycling program that collects, at minimum, newspapers, glass separated by color, aluminum cans and foil, bi-metal cans and number 1 and 2 plastics. All properties must notify the City with availability and location of collection devices. All properties must also complete quarterly reports. Failure to comply will result in fines and penalties issued by the City's Code Enforcement Department.

In 2007, The ***City of Decatur*** Commission approved an amendment to the City Solid Waste Ordinance to provide better accessibility for recycling for multi-family residents of the city. According to the Commission, the ordinance, which affects approximately 2,600 multi-family dwelling units within the city limits, "reduces the waste that ends up in landfills, provides another portion of our population with access to recycling services, and reduces the multi-family properties' costs for garbage disposal". The ordinance was written by the Waste Management Advisory Board in cooperation with the Public Works department.

With the new amendment all multi-family dwelling properties with more that four (4) units must provide recycling services to their residents that include at least four materials to recycle. Multi-family properties are not required to use the City of Decatur Solid Waste service and can contract with third party collection companies. The ordinance specifically states that recycling collection schedules, method, types of containers and pickup locations shall be mutually agreed upon by the property owner and private hauler. The collections containers must be labeled in appropriate languages with recycling terminology. According to the ordinance, every new resident shall be provided, within 30 days of occupancy, general recycling education and program guidelines.

Residents of Decatur apartments and condominiums, such as 335 Ponce de Leon, the Clairemont, and the Artisan, all participate in the city's recycling program. Quarterly reporting requirements are the responsibility of the property owner and must be mailed to the City's Public Works Department. The City conducts regular inspections of the containers and signage application to the program.

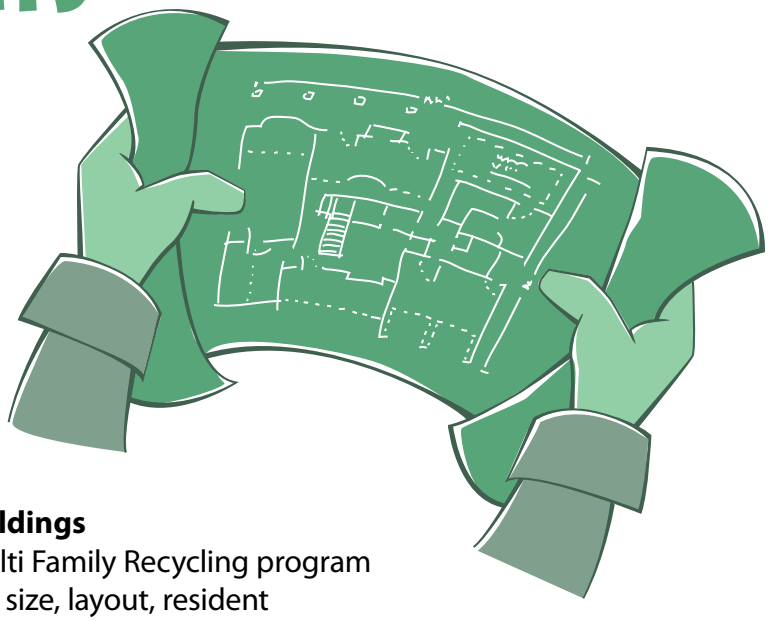
## Case Studies (implemented by a local government)

Currently, homeowners in ***Athens-Clarke County, Georgia*** *can* request recycling bins from their public or private hauler and recyclables are placed on the curb weekly for pick-up. For Athens-Clarke County residents who live in apartments and condominiums it may not be so easy to recycle. The Athens-Clarke County Solid Waste Department has created a two page step-by-step guide to assist apartment complex managers how to establish a recycling program and educate tenants on the how, what, where and why of recycling in their building.

The ***City of Fort Lauderdale*** in Broward County, Florida, requires all apartment and condominiums to contract for onsite recycling containers and services. The City contracts for curbside recycling service for single-family homes, but residential apartment complexes and condos with more than three units will contract privately for this service in compliance with the local ordinance. The ordinance requires recycling service for residents to be provided by owners and condo boards. A complex will typically require two (2) carts for every 20 residential units. The carts will require simple sorting into two streams of materials; mixed paper in one cart and mixed plastic beverage bottles, aluminum cans, steel cans or drinks cartons and juice boxes, in the second cart. If an apartment complex wishes to participate in the City Partnership Recycling Program, The City curbside recycling contractor allows local multifamily residences to piggy-back on the City contract, which offers extremely competitive rates. No matter who a complex contracts with, the City is willing to provide the recycling carts, labels and resident waste reduction education materials. A contract with the city or a licensed private collector, or copies of receipts from a facility duly licensed for the disposal of recyclables, is accepted as evidence the recyclables are being collected in accordance with the ordinance.

The City has a program called RecycleWorks! , a volunteer group of Homeowner Association members that earn grant dollars for their neighborhood associations by working directly with the City Recycling Program Coordinator to promote waste reduction and recycling at home, at school, at work and at play. According to Casey Eckels, the City's Program Recycling Coordinator, "There is no shortcut, no procedure that solves all issues. There has to be human contact and accountability from the city/ contractor to make it work for the community. You cannot leave it up to the hauler who is picking up the material".

# 5. THE BLUEPRINTS



## Profiling the Property

**Who Lives There? Sizes of buildings**
There is no single model for Multi Family Recycling program because of variation in building size, layout, resident characteristics, and trash disposal systems. Some programs collect both yard debris and other recyclables, others collect only recyclables. Some require residents to deliver materials to a central location. Others provide collection from doorways or at curbs. In general, successful programs provide residents with the convenience of curbside collection while fitting into existing waste management systems.

A profile of the "building population" is an essential first step in the planning process. For example, if the building is populated by a large number of elderly people, they may not want or be able to take their recyclables to a central location.


**What other uses are on the premises? Retail, etc.**
What are the considerations for mixed-use developments? These developments may have retail and/or office space on the ground floor and several stories of residences above, with frontage on a commercial street and parking behind (or, sometimes, in an underground garage). Businesses' needs for garbage and recycling space depend on the types of activities they are engaged in. Note that garbage compactors can hinder recycling by taking up space and preventing the monitoring of discarded materials.

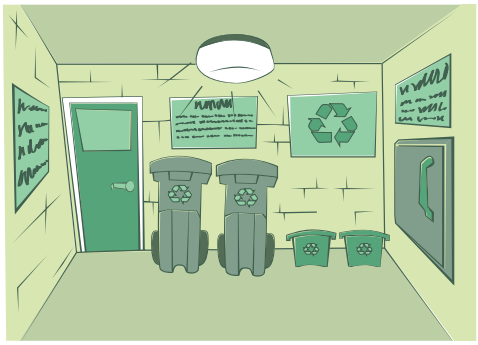
There may be opportunities for residents to make use of recycling amenities installed for businesses. For example, if the businesses use a cardboard baler and have a cage where cardboard is accumulated, residents may add their cardboard to the cage if they have access. Or, if food outlets use a special container for food waste recycling, it could be upsized to handle food waste from residents as well. Even the smallest cafes can generate significant quantities of food waste — coffee shops and juice bars in particular — so it

could be well worth planning for food residual collection to serve both the building's commercial and residential occupants.

**What is the physical structure of the building, including storage space?**
Where should space for collection be located? Should it be indoors or outdoors? Buildings with four or more stories typically have chute systems with ground-floor trash rooms. Complexes with townhome or duplex configurations may have space for discards at each unit (space for two carts is essential and space for three carts is ideal). For low-rise multi-unit buildings, there are several generic configurations, and each has unique needs for recycling and garbage service. In all cases, the general approach is to convert one or more potential parking spaces to a storage area for discards. This enables residents to recycle or dispose of their materials when they are going to their cars.

In residential complexes with parking beneath buildings, storing bins or carts beneath buildings can pose serious difficulties for the collection company. Some trucks need up to 20 feet of vertical clearance to empty a bin. Driveways that slope down to the parking garage can make bin handling very difficult. A situation that requires the truck driver to roll out bins or carts for more than a few feet takes time and increases the risk of injury or property damage. Many collection companies charge substantial extra fees in these situations. In short, when there is parking beneath the building, try to provide space that is adjacent to the parking area but outside the building envelope and at ground level.

In complexes with exterior parking lots, the typical practice is to provide walled enclosures that contain bins and carts. These are more attractive and help confine discards to a specific area. Many cities have specific, highly detailed enclosure ordinances that govern size, appearance, access, durability, and other factors. These requirements vary widely among jurisdictions; be sure to consult City or County planning staff. At present, some ordinances may not address recycling needs. However, building designers should include recycling space to enable owners to increase recycling rates and reduce operating costs (see City of Atlanta Ordinance) .



A well-designed exterior enclosure system will have:

- Sufficient space to move among bins and carts
- Lever-style door handle that can be operated with hands full
- Wall space for instructional signage
- Smooth floor that can be swept or mopped if necessary
- Wheel stops near walls to prevent damage to walls
- Adequate lighting to read signs and sort materials

**Do taller buildings need chutes?** Developments of three or more stories often use chutes to convey garbage from each floor down to a ground-floor trash room where it lands in a metal bin. Residents use chutes rather than taking out garbage via stairwells and elevators, which stay cleaner as a result. The bins in the trash room are either wheeled to a pick-up point by maintenance staff or are rolled to the collection truck by the driver.

The best way to maximize recycling in this situation is to provide a separate chute for recyclables. Position the trash and recycling chutes side by side for equal accessibility. The recycling chute or chutes should be clearly marked "Recycling Only." In jurisdictions with single-stream recycling, all recyclables may be mixed together and easily handled with a single chute. In jurisdictions that require two or more recycling streams, such as "all paper" and "containers," the potential number of chutes may become unwieldy. One solution could be to use a carousel-style system such as that developed by Wilkinson Hi-Rise, LLC.

**How are garbage and recyclables collected now?**
Waste assessments provide baseline information about what is in the waste stream at typical multi-family units, and they can help identify recyclables generated at buildings with established programs. The data is helpful when identifying materials to target for collection. Assessments can also help determine the best size for recycling containers and/or provide insight into needed program refinements.

A site assessment can identify the location of trash collection areas, the volume of trash containers, and their collection frequency. It can also highlight potential areas for recycling collection and storage and note any problems with the current system (such as overflowing trash containers or odor problems). Ideally, every building or complex should have a site assessment.

**Single stream compactors**
There is no common definition of "single stream" collection. Some programs collect a limited number of materials while others collect a surprisingly wide range. Some collect glass, some do not. Many are fully or semi-automated, while others still rely on manual labor. Most introduce large-volume wheeled carts, but others stick with a bin system. Most favor large processing facilities to sort all of the mixed recyclables back into their component parts.

What they all have in common is that they tell residents not to bother sorting their recyclables. Instead, residents are instructed to throw all recyclables into the same cart or bin for collectors to load into a single truck compartment and haul away to a processor. This processor is then expected to sort all the recyclables back into clean, high quality feedstock streams appropriate to each type of manufacturer so that the materials can be used to manufacture new products.

Single Stream has many advantages:

- Increased participation by residents
- Increased amount of recyclables collected
- Higher rates of diversion from landfills
- Reduced collection costs

## Case studies

**Novare Group** is a leading developer of cutting-edge, mixed-use high-rise communities in U.S. urban markets. Since its founding in 1992, Novare Group has completed more than 6,000 condominium homes and currently has more than 1,300 condominium homes under construction. The company has also developed or acquired more than 1.4 million square feet of office space and 400,000 square feet of retail space. In 2006 Novare launched TWELVE® Hotels & Residences, which pairs boutique hotels with attainably-priced condominium residences. In each of its endeavors, Novare Group focuses on creating great urban experiences.

In the metro Atlanta area, ten (10) Novare high rise buildings have implemented recycling for residents. For convenience of residents and to increase participation, each floor has a drop off location near the garage entry door in the parking deck; 96 gallon roll carts are used for the single stream collection of plastic & glass bottles, aluminum cans, steel cans, newspapers, magazines, and mixed paper (small cardboard, office paper, mail, brochures, catalogs). A three (3) yard collection box is located on the loading dock for flattened corrugated cardboard collection. The buildings range from 12-46 stories, have 203-406 units per building, with most mixed use and including either office or hotel space and retail footage.

Weekly, the contracted collection vendor rolls the carts to the freight elevator, then to a collection vehicle and unloads/returns them to the floors. Materials are delivered to a materials recovery facility where they are sorted, baled and otherwise prepared for transport to end markets. Efforts are ongoing to explore expansion into the retail, office and hotel areas where some materials are already being recovered on shared loading dock areas.

**Post Apartment Homes** focuses on providing luxury apartments an emphasis on resident service and a strong brand identification. Post is headquartered in Atlanta, GA, and operates in multiple markets across the country. Post creates a consistent experience of quality, value and satisfaction for its residents.

To that end, Post has been a leader in establishing programs that not only benefit the company and the environment, but increase their residents' living experiences. Recycling is one of those areas. Post began recycling at its Atlanta locations in 1995 and currently has recycling centers at each of its 57 communities nationwide.

The Atlanta properties have designated, clearly marked outdoor spaces devoted to recycling collection, complete with mesh covered fencing for a cleaner aesthetic consistent with the Post brand. Residents use their own in home containers to collect recyclables and deliver them to the recycling consolidation areas located on the properties.

Via their recycling collection vendor, the properties place 96-gallon roller carts in a centralized location for its residents. Typically, they provide 10 containers on each property, usually dedicating five of those to mixed paper and five for mixed plastic, glass, and aluminum. With 18 properties in metro Atlanta and 14 properties in Dallas, Texas, Post spends a total of $65,000 annually to maintain its recycling service. The Atlanta properties include four mid-rise buildings, 13 garden-style apartment complexes and one that includes both mid-rise and garden style; the overall number of units in metro Atlanta that are serviced by their vendor is approximately 7,500.

Each of the communities averages three tons of recyclables per month that is waste kept from going to a landfill. Fees, of course may vary by firm and approach, but Post pays the recycling vendor a flat-rate fee per property per month. Regardless of the size of the property, that service fee covers pickup and delivery of the recyclables, as well as labor and other associated fees. Post saves an estimated $100 per ton recycled, or about $120,000 a year on landfill costs.

**Tracking Systems**
If your program is designed so that it allows you to collect some data, then start now! A tracking system is one of the most valuable tools in multifamily recycling and is an important service that recycling coordinators can provide. The system can be as simple as a piece of paper or as technical as a database. No matter what form it is in, having an accurate history of materials collected, problems, contacts, and outreach applied is invaluable as you move forward. The more history and detail collected over time, the clearer the challenges will be identified that need to be addressed. Do not worry about building a perfect database. This is just like explorers who create maps – the maps get more and more detailed over time.

**Information to Track**
The following list represents a set of basic facts about any multi-family building recycling program that can be tracked.

- Building name and address
- Number of buildings and units on site
- Sorting system and hauler
- Any demographic information
- Contact information and history with people at the building. This includes the number of attempts made to work with a manager.
- Outreach history at the building, including the information they have received about recycling

The next list represents more specific and much more helpful information that you should track if your program design allows. The best way to track this information is to make it required through a hauling contract. Otherwise it may be difficult to get:

- Quantity and/or quality of materials recycled; an estimate by material type is preferred
- Improvements in the quantity and quality of materials based on outreach efforts
- Other information about the building, such as the length of time a building has sustained a clear and convenient recycling setup
- History of problems including building issues such as contamination or carts blocked by a vehicle, and hauler issues such as a building that was not serviced when scheduled.

Once you have the basics, try to get even more details. The following list represents information that you can get by simply going to a building site or working with a person at the building.

- Details about the building layout and trash system (e.g. chutes, dumpsters)
- Number and location of cart sites
- Unit numbering for mailings

You can rely on local sources for more complete information. The local Fire Prevention Department, which maintains contacts for buildings in its area and public housing organizations are good places to get more information about the buildings in the recycle program. You may have access to public records through other departments in your municipality.

**Reporting and Building Contacts**
Another characteristic of multifamily recycling programs is that the people at buildings will change, and change often, and management can turn over almost as often as the residents. The challenge that follows is the need to continually re-establish contacts and relationships, which is time consuming.

However, if you have a contact history with a building it is easier to establish a new relationship with a new person. By explaining the history of the program at the building to a new manager, caretaker, or resident, you establish some authority and credibility with the new contact. Also, never underestimate a resident who has an interest in recycling. This type of contact can be a more effective tool than building management.

The fact is, you may not be able to maintain a contact at a given building. In that case, you need a system to track information about the building to maintain a relationship with the building even if you lose contact with an individual. Other information about the program – such as hauling service and successful cart location – also reduces your dependence on the internal contact at the building. Remember that those who manage the program after you will need your knowledge and history or they will have to start from scratch. Significant improvement in recycling participation and recovery rates at a building without a high level of management involvement is possible if you have information about the building so that you can target your outreach.

**Information for Decision Making**

Tracking data is a good way to make sure your resources are used wisely. The first thing to do is assess the data available to you. If the program design includes a contract or ordinance that requires reporting, you have a clear advantage. The information you gather will show the root problems at specific buildings and in your program as a whole. If the program design does not allow for the reliable collection of data, then you have no realistic way to gauge the success of your program or know what kind of attention your buildings need.

# 6. BRICK & MORTAR

## Implementation

### Service Options and Contracts

**Procuring a Service Provider**

Lists of haulers are usually available via state recycling organizations, local KAB programs and/or via state departments that have waste & recycling oversight. In Georgia that might be the Georgia Department of Community Affairs, the Sustainability Division of the Georgia Department of Natural Resources, or The Georgia Recycling Coalition.

**Bid or Proposal**

In the event that a local government provides collection for all multifamily properties within its jurisdiction, it is most likely that a Request for Proposals, in the form of a bid would be advertised. Some corporations, owners or property managers might opt for similar bids for servicing all or groups of properties that they own or manage. Most properties are likely handled with proposals direct from the service providers to the property managers and/or boards of owner's associations.

Regardless of the structure of the procurement, all respondents will need some basic information; this usually can be accommodated via a site visit. The information requested may include: number of dwelling units, number of buildings/stories, access routes, loading facilities, garbage and recycling areas or rooms, quantity and method of garbage receptacles currently used, and the disposal system (chutes, takes hoppers, dumpsters, compactors).

**Term of Contracts (length)**

Depending on the equipment invested on behalf of and provided to a property, haulers might require longer term contracts in order to amortize funding of equipment especially for longer term contracts. Consider including a clear level of customer service expectations and language that authorizes you to assess for damages or withhold payment for poor service (i.e. liquidated damages) For really large contracts a performance bond should be considered.

**Provision of Containers**

This is usually negotiable with the vendor and may effect the cost if the vendor provides the containers. Some building owners or homeowner's associations may opt to purchase and maintain ownership of smaller receptacles, like those for in-unit use. Make sure to include clear labeling provisions regardless of container ownership.

**Collection Requirements & Frequency**

Recyclables from a multifamily building of more than 6 units should be collected on a weekly basis. If there is insufficient storage space, frequency may need to be increased. Recycling bins should be stored inside, where possible, provided all building and fire codes are followed. This ensures better control over proper use and minimizes opportunity for public contamination. The recycling consolidation areas should have sufficient space to house the carts or other containers used and should be safe and easily accessible for use by residents. In most cases only one bin for recycling will be required, e.g. single stream collection.

**Public Education**

Vendors may be asked to include the cost of education for residents or they may be asked to provide resources so this may be handled by property managers, or board of directors in the case of condo properties. In any case, educating residents about the programs, location of consolidation areas on the property, and updates of progress or contamination/preparation issues is critical to long term success. This can be accomplished via websites, email groups, listserves or newsletters.

**Payment Terms & Revenue Share**

Both are negotiable based on contracts; properties may opt for a better collection fee versus any share of proceeds. Revenue share is usually only available when a standard minimum volume is guaranteed within a certain time frame and is subject to consistency issues based on volume fluctuations, market prices and even fuel costs. Single stream material reaps lower per ton fees, but is more convenient and easier for residents plus resolves many space limitation barriers.

**Record Keeping & Reporting**

Vendors should be asked to provide periodic updates of collection tonnage, contamination issues, suggestions, and any changes. Tracking information for properties that may need to report to corporate or local government entities was covered in the Profiling the Property section.

## Labor & Equipment

**Container Options**

**Individual unit containers**-for use inside apartments, condos, lofts, townhomes are for collecting materials by the resident to deliver to consolidation areas on the property. Considerations for type and size include number of materials accepted, space inside closets, pantries, or utility rooms inside the units.

**Mid point or consolidation/accumulation area containers-**An area or areas on the property where residents take materials for collection. Considerations are weather, accessibility, safety, fire codes, and the collection technology employed.
**Containers for hauler collection**-depending on the number of units, number of materials collected and the available space, several options exist and may be recommended by haulers:

96 gallon roll carts
2/4/6/or 8 yard dumpsters
3 yard dumpsters
24 or 36 cubic yard compactors (single stream)
Other specially designed or custom made containers may be suggested.

**Factors in choosing containers**

**Amount of material**

Generation was discussed earlier in the ***How Multi Family Fits In*** section. Metrics for determining the number of bins may vary by region or community and could be specified in ordinances if they exist in various jurisdictions. Examples:

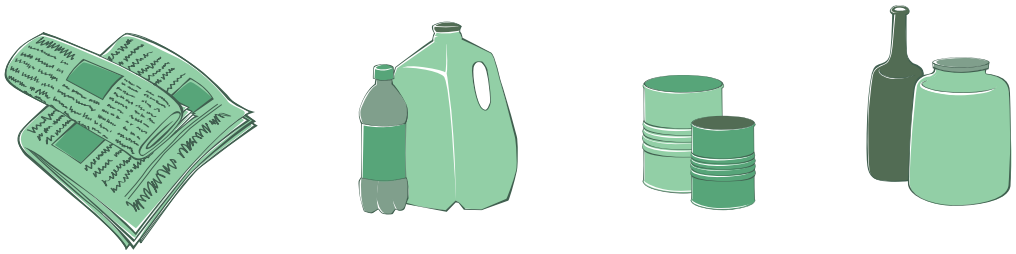
*The City of Toronto* uses the following benchmark: for every 100 units at a complex, a volume of 6 cubic yards (or 1212 US gallons) minimum of recyclables should be collected on a weekly basis. Note: using 95 gallon roll carts, that would be 13 carts for a 100 unit property. Their benchmark is based on minimum recovery requirements.

*The City of Atlanta* multifamily ordinance states that a minimum of 9 gallons per unit minimum is required. So, 100 units would need a minimum of 900 gallons or 10-95 gallon roll carts or the equivalent.

Larger properties and high rise buildings might opt for single stream compactors in order to maximize space and capacity. With disposal offsets, more space may be afforded for recycling and less for "disposal".

**Number of materials collected and specifications**

Haulers who collect recyclables have agreements with materials recovery facilities (MRF) or direct with end-users to dispense with materials collected. As the specifications may vary with each of those end-users or processors, so might the collection method.



Most properties collect minimum of **glass** (all colors), **aluminum cans, steel** (food) **cans**, **plastic bottles** (some may limit to PET water, juice and soft drink plus milk jugs; others may take all plastic bottles); **paper** (including news, magazines, catalogs, 3rd class mail, office paper) and many include **cardboard** (cereal, cracker boxes) and **corrugated** boxes.

**Specifications for Materials:**

Generally, a hauler will provide directions about preparation of materials by participants. Many of the "rules" of the past are no longer an issue; **keeping the material free of liquids and food residue** is usually the most prominent and important requirement. Other specs will likely **include removing plastic wrap and liners** from cardboard and **flattening all cardboard or corrugated boxes** to allow for space. Other "non-acceptable" items should be included in educational materials and signage.

**Sorting Requirements**

The specifications mentioned above, plus the type of equipment the hauler uses will drive the sorting method. Options might include:

**Single Stream**-All materials mixed for sorting later at a MRF (materials recovery facility)
**Dual Stream**-Bottles and cans together; all paper together
**Single Stream plus Glass**-glass separated from other mixed materials
**Source Separated** (all materials in separate bins) Note: usually no longer used in residential applications
Corrugated boxes may be flattened and collected in separate bins or dumpsters, but may go into same bins in some single stream applications

**Convenience**

A characteristic of multifamily programs is that every building or property needs a different setup; most hauler vendors provide evaluation and assessment services to potential customers. Placement that is convenient to residents will increase participation and therefore volume. Good signage and labeling are critical to maintaining a clean recovered stream.

**Space Constraints**

Single stream collection has generally resolved many space issues. Since mixed materials may be placed in containers—whether carts, dumpsters, or compactors, the number of containers can usually be worked into the available space, while still considering safety, fire codes, aesthetics, weather and accessibility. Remember recycling does not increase the volume of materials handled , it just shifts it from a trash container to a recycling container.

**Appearance**

Common areas like lobbies, pools and recreation areas, and postal rooms may require more visually aesthetic bins. Bins for these areas are very available.

**Cost**

Again, costs may vary widely for services and containers based on individual needs, and is negotiable with haulers/service providers in most cases where there is not a bid process.

## Space Considerations:

High Rise and/or Multi Use Facilities- Generally speaking, unless they were built with specially designed recycling chutes, the collection process involves more labor intensive approaches or more dependence on resident participation. One approach is container placement in chute rooms on each floor which must be serviced by the maintenance of janitorial staff or handled by the hauler; frequency of removal to consolidation areas is determined by volume to avoid overflowing containers. A second option asks residents to take keep recyclable materials in smaller in-unit bins, bags or totes and deliver them as needed to a consolidation area located within a common area in or outside of the building.

Parking Areas-With limited parking, especially in urban metropolitan situations, the space for containers placed in these areas may dictate the type, style, size and number of containers to be used and may require the frequency of pick-up be adjusted accordingly.

Access Issues-Truck access for haulers must be taken into consideration. Often height issues, loading dock space and height, angles and turn around space, high traffic areas and other impediments are challenging to the collection process. Professional hauling vendors can assess and make recommendations based on these challenges.

Driven by Ordinance -may be determined by local ordinances for either a minimum space built in or for the number/type of collection bins necessary on a per unit basis and/or may have specific screening and storage requirements. (See sample ordinance for Atlanta in Tool Box).

# 7. THE FUNDING

## Cost Considerations:

Financially viable recycling programs are generally dependent upon three factors to assure their cost neutrality with respect to overall disposal costs:

1) Use of full cost accounting which establishes budget and actual cost of operations and processes including overhead and support service costs

2) Inclusion of a comprehensive list of materials collected; the value of commodities fluctuates, so a good mix assists in balancing market pricing for various materials. Comprehensive collection results in better results & better return or balance of associated costs

3) A high level of participation resulting in higher tonnage diverted and therefore lower disposal costs. This may be accomplished by ongoing resident education and for condo or loft situations provides an economic incentive for participation.

It is necessary to keep in mind the cost avoidance that may be realized by reducing the frequency of collecting solid waste, avoided disposal (tonnage) fees, and smaller, less expensive collection containers (resulting in lower cost of rental/lease in some cases).

Beyond the math are other factors including energy savings through recycling, greenhouse gas reductions, water conservation, support for the local and state economy (i.e. jobs in recycling industry), and support for public expectations (i.e. participation in the green movement).

The COST of **Implementing Services** is variable, but three main determining factors include: Service Contractors, In-Unit Bins, and Education.

**1 - Service Contractors** will charge a fee for their collection service; this will be based on frequency needed, provision of collection equipment and the level of service desired.

**Frequency of Collection**

How often the hauler/collector has to visit your property will factor into the cost. This will be determined by space, equipment used, volume collected based on participation, and the number/kinds of materials accepted in your program. Seasonal generation and move-ins may also affect volumes.

**Provision of Collection Equipment**

Cost is often determined by the container size and quantity, and can vary greatly based on the application for collection on the property (roll carts, compactors, etc). In many instances a flat fee per unit per month might be quoted; this will vary based on the number of units (plus frequency & level of service) and could have a maximum cap.

**Level of Service Desired**

***Where does the hauler/collector have to go to pick up the materials? How much labor & time is expended on collection at your property? How close to the collection vehicle are the bins?***

Some buildings request a higher level "concierge" type service that involves going door-to-door or floor-to-floor on collection days; the more time and labor, the higher the cost expectation.

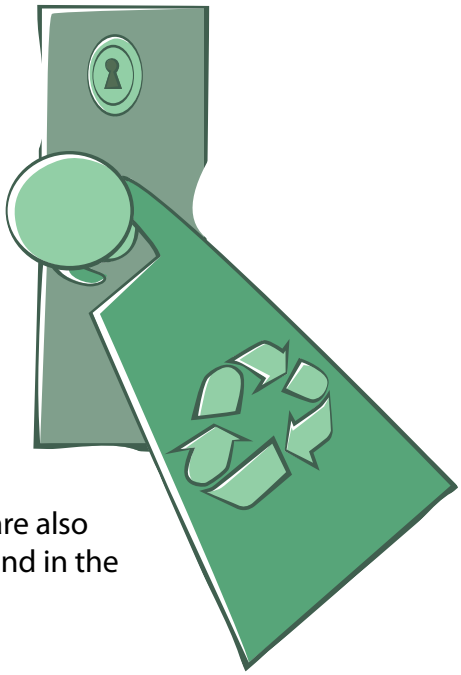
If, for example, janitorial services are utilized to deliver rolling carts to a loading dock or other consolidation area on the collection day, cost expectations could be lower.

**2 - In-Unit Bins** are usually the responsibility of the property or the residents/owners. Several innovative, low cost options now exist, including small under counter or pantry bins, totes, or bags. Many are made from recycled content reinforcing the message of *why recycle*.

**3 - Education** may be accomplished as part of the vendor contract or directly by the property management company or homeowner's association. In addition to the "how-to" and where questions, it helps to reinforce the *why recycle* message with environmental and economic messages, as well as with periodic updates of tonnages recycled vs. disposed and correction suggestions to avoid contamination. Section 8 provides additional details.

Potential revenue sharing can be negotiated but is unlikely due to fluctuations in market prices; cost avoidance on disposal downsizing (based on tons recycled versus disposed) is the best case scenario usually. Cost neutrality for all waste/recyclables removal is the goal.

# 8. THE MARKETING



This section of the toolkit provides owners and property managers with detailed information regarding the development of an effective recycling outreach program. Addressing the needs of special populations and dealing with non-traditional materials are also discussed. Graphics and educational material resources can be found in the Appendix.

**Education and Outreach**

Before outreach can begin with the residents, the building staff must be fully trained on the responsibilities and requirements of the recycling program. Staff changes should trigger training on the recycling program as part of the overall new staff training program. The active role of building managers and staff is critical to ensure that the program is running as intended, outreach campaigns are implemented, and educational materials and faded bin labels are updated and replaced.

Outreach to residents is fundamental to any successful recycling program. However, outreach alone will not create a successful program. Without a clear and easy to use recycling set up, adequate information collected about the building and the resident's characteristics, and a good hauling contract in place, outreach is not likely to generate substantial increases in participation. Under these circumstances, it may be easy to blame the residents for the failed participation effort, but in reality the failure likely occurred because some of the basic programmatic pieces were missing. When a good recycling program is in place, however, a strong and consistently applied outreach message should result in improved recycling rates and decreased contamination. Both elements - consistent and targeted outreach and a strong program foundation - are needed for a sustainable recycling program.

**So what is included in a basic outreach message?**

- The types of items that can be recycled – pictures are especially useful in a multilingual community. Also provide residents with details on how to determine the type of plastic they have and what types of plastic are collected for recycling.
- How items need to be sorted (flattened cardboard, stacked newspapers, blue bags or bins, separated or commingled, rinse out bottles and cans, including caps on bottles or not, etc).
- If residents need to take items to a designated location, provide that location, along with information on who to contact if they notice contamination with regular garbage or if the containers are full.
- Periodic Results: keep residents informed on how their building is performing and use the results to help make recycling the "norm" for the building.

- Corrections: don't let contamination undermine your program, be sure to address it through the outreach campaign.
- Why recycling makes a difference, the economic and environmental impacts.

New residents should be given a clearly marked recycling package or kit. Follow up a few weeks after move in will help ensure that the recycling information did not get lost in the shuffle of unpacking. Also, consider including the requirements of the recycling program in their lease; if your community requires multifamily recycling, be sure that residents understand that recycling is not an optional activity for the building.

**Community Based Social Marketing**

Recycling messages are only effective if they are designed for the target community. Therefore, assessing the demographic information that you've collected about each property is the first step for designing an effective outreach message. This information can be collected at the time that the lease is signed. Information like familiarity with recycling, language barriers, etc., can be used to develop an effective marketing program.

Community Based Social Marketing research tells us that people don't necessarily change their behavior because they know more or have additional information. In fact, this approach can sometime backfire. If residents hear that not many other residents recycle, the "norm" gets established that it is socially acceptable to not recycle. Therefore, messages like "Only 15% of the building recycles, we need you to do your share" may have the opposite effect as intended. Instead, messages should be developed that change residents motivations. There are many different ways to change motivations, including: invoking social norms, persuasion, etc.

For example, an often-cited study from Hooper and Nielsen (Environment and Behavior, 1991), "Recycling as altruistic behavior: Normative and behavioral strategies to expand participation in community recycling programs" found that "block leader" programs are effective at encouraging recycling behavior and increasing recycling. Block leaders had a greater impact than both promotional and information distribution strategies. A similarly constructed "floor leader" or volunteer resident concept in a multifamily unit could be effective in a multifamily environment. Without a resident coordinator or champion, there is little peer to peer encouragement to recycle in a multifamily building. Creating an atmosphere where peers within the building support and promote recycling is important, because unlike single family housing where recycle bags or bins are visibly set out on the curb, recycling in a multifamily unit is typically anonymous, eliminating peer pressure to recycle. Issuing individual recycling bins in new buildings and picking them up unit by unit can help address this issue, too.

When living in multifamily housing, you are part of a broader community identity than if you live in a single family house. Therefore, it is especially important that multifamily recycling messages be inclusive, such as "Our

Building Recycles" and "Please don't Trash our Recycling Carts." Inclusive messaging also helps to build a culture, or social norm, around recycling.

On the other hand, messaging that puts a demand on the person receiving the message is unlikely to elicit the desired behavior. However, a statement that appeals to social norms through its inclusiveness is likely to generate compliance. In one study, when patrons of a public swimming pool purchased an item at the concession stand, they received a pamphlet containing one of three messages: "Don't Litter" (the demand message), "Help Keep your Pool Clean" (the normative appeal), or a third pamphlet that contained a message unrelated to littering. The results showed that the flyer containing the demand message generated the highest frequency of littering of the three pamphlets. It was littered 50% of the time compared to the normative appeal flyer, which was littered 30% of the time.

Finally, keep messaging clear and to the point. If you have strong recycling foundation in place but your messages do not achieve your intended results, you need to take a close look at the messages: make sure they are developed with the target audience in mind, and that they are clear, direct and simple! A recent analysis of recycling behavior in Georgia found that the people that do not recycle are between 18 – 34 years old and are more likely to rent then own. They feel like they do not have enough information on recycling and that it is inconvenient. The study found that messaging should contain facts about recycling costs and benefits, including financial, local, and environmental benefits. You might find some inspiration on developing your message from the State of Georgia's new state-wide recycling campaign: You Gotta Be Kidding! (for more information visit www.yougottabekidding.org and www.gacampaigncentral.org) The campaign targets the demographic in Georgia least likely to recycle, 25-34 year olds, by taking all of the misperceptions and excuses about recycling and exaggerating them to show their absurdity. By doing so the campaign tells all of the non-recyclers "you gotta be kidding!". The frequently asked questions section of the website may be especially helpful in addressing some of the information gaps regarding recycling and developing your message.

**Timing and Frequency Matters**

Resident and management turnover is expected in multifamily residences, creating a unique challenge for keeping both engaged and informed. This underscores the need to deliver the message frequently, approximately every 4 to 6 months. The message may also need to change if there is a demographic shift at the property. A current and appropriately timed outreach message helps keep it fresh in the resident's mind. Reminders about frequently under-recycled materials, like junk mail, magazines and items not found in the kitchen, can help remind residents about the program and increase stagnant recycling rates.

## Other Messaging Approaches

### *Commitment Cards*

We previously mentioned the anonymous nature of multifamily recycling. Another approach for addressing this issue is with a commitment card. This is a community based social marketing approach (changing motivations to recycle through social norms). When residents sign a commitment card pledging to recycle, they feel a greater sense of ownership and obligation. To further reinforce the sense of obligation to carry out their commitment, and increase the number of people signing the card, consider linking the signed cards to an incentive. For instance, enter all signed cards into a drawing for a gift. Return rates for commitment cards that are distributed door to door and include an incentive are about 25%.

### *Measuring and Promoting Progress*

The City of Atlanta will use a measurement tool called Re-TRAC to monitor the compliance and success of the multifamily recycling ordinance. The State of Georgia is also a Re-TRAC subscriber. The Re-TRAC system is explained in detail in the Government Policy section of this toolkit.

Collecting information on recycling rates in the buildings, and translating those statistics into environmental or economic benefits for Georgia's economy can help motivate people to keep recycling or increase their diversion rate. For instance, did you know that recycling can save enough energy to offset the energy you consume to light a room, watch TV, or enough water to offset your shower? Many people don't know that such a simple action can make a difference.

Some corporate properties have established sustainability policies and environmental goals that recycling at the properties may help to accomplish. With the calculators provided in the appendix, you can convert the amount of material recycled into the amount of raw materials, energy/greenhouse gases, and water saved. Even without a formal corporate sustainability policy, properties can set sustainability challenges for their residents, turning everyday recycling into a broader environmental commitment.

### *Surveys*

Take proactive steps to reach out to the community. Send a simple annual survey to find out what outreach materials residents need. Maybe the residents are confused about what can be recycled or where. Maybe they don't understand how recycling relates to complex state or local policy or their lease. As an added bonus, you can find recycling champions through those that care enough to return the survey.

## Addressing Special Populations

The design and implementation of an effective and long lasting recycling program requires that you design a program that is appropriate for your resident population. Different populations have different structural or psychological barriers to recycling. For instance, buildings with many nonnative English speakers, elderly, or disabled populations, may require different signage or set ups than other populations. These barriers are not insurmountable, but they do require being sensitive to the needs of the residents. Ongoing education, while important to any recycling program, is especially important with these residents.

### *Seniors and Persons with Disabilities*

Seniors and people with disabilities can have mobility challenges that limit their ability to haul recycling materials from their apartment to the receptacle. There are several approaches that may help remove this barrier. Door-to-door collection could be offered, although this would raise the program

expense. It would also require coordination with management, access to the building floors, special containers, and a specially tailored outreach message. Another approach is to match people with mobility challenges with those that do not face the same physical limitations. The "recycling buddy" could assist with moving the materials to the correct location. This approach would have the added benefit of potentially increasing the amount of materials collected and reducing contamination. Having an effective outreach campaign and creating a program that does not involve a lot of extra physical effort is the key to success. While designing the program and outreach message, keep in mind that the same total amount of material is being moved; it's just being moved to two different end points. If effective means of moving and hauling residual garbage exist, then effective means for recycling collection and hauling also feasible.

***Nonnative English Speakers and Multicultural Populations***

Language barriers may prevent would-be recyclers from understanding outreach materials and fully participating in the recycling program. Contamination may also become an issue if signage is only in English. Multicultural groups need the same basic information as native English speakers to effectively recycle: clear guidance on what is recyclable, sorting rules, and program logistics. Pictures and translated outreach documents are a great way to overcome potential language obstacles. Pictures are particularly effective because they eliminate translational errors. Beyond the basic information, avoid spending time and resources creating materials that you *think* the community needs. Instead, enlist the assistance of groups that already work within the community, or interested bilingual residents, to better understand how familiar the target community is with recycling. This will allow you to create educational materials accordingly and address real versus perceived needs.

**Enforcing Requirements**

If your community has an enforceable multifamily recycling ordinance, you should request a copy of the ordinance and understand what the requirements mean for your property. Call your local government office to obtain a copy and any supporting materials. See the Government Policy section of this manual for additional information.

Even if your community does not require multifamily recycling, you can still set property policy that strongly encourages, or requires, recycling by your residents. Policy could be orientated around littering on building grounds, include pet waste cleanup, or require that recycling areas are kept neat and not used for general garbage disposal. This approach requires active building management support; otherwise the policies will be seen as meaningless by residents and staff. Although setting property policy requires additional time and effort by management, it is one way that a property can distinguish itself in a competitive rental market. Tenants may view a property that values resource management as one that contributes to the surrounding community, shares a common value, and may be more responsive to tenant needs.

**Dealing with Non-Traditional Materials**

Multi-family buildings generate materials that are not always collected by standard recycling program. These materials can include:

- Yard trimmings
- Carpet
- Used oil and oil filters
- Plastic film – grocery bags
- Computer disks, monitors, cell phones and other electronics
- Batteries (rechargeable and alkaline)
- Toner cartridges
- Fluorescent lamps
- Tires
- Appliances
- Bicycles
- Furniture and Mattresses
- Paint
- Organic food residuals

There are several ways that you can deal with these non-traditional materials. An extensive list can be found in the appendix, which you can provide to your tenants to help locate recycling opportunities for many of these goods.

Residents of Georgia can find local recycling and sustainability information at Ecoville Georgia, www.georgiarecycles.org . Another site with a zip code search feature, www.earth911.com provides information on local recycling collection centers. The site is especially helpful for finding household hazardous waste and electronics recycling events. Additionally, you could partner with a local organization and sponsor periodic collection events in the apartment parking lot. Reuse opportunities can be found via community swaps or garage sales, through websites like Craigslist and Freecycle, and at donation centers, like Goodwill, the Salvation Army, and Habitat for Humanity's Restore.

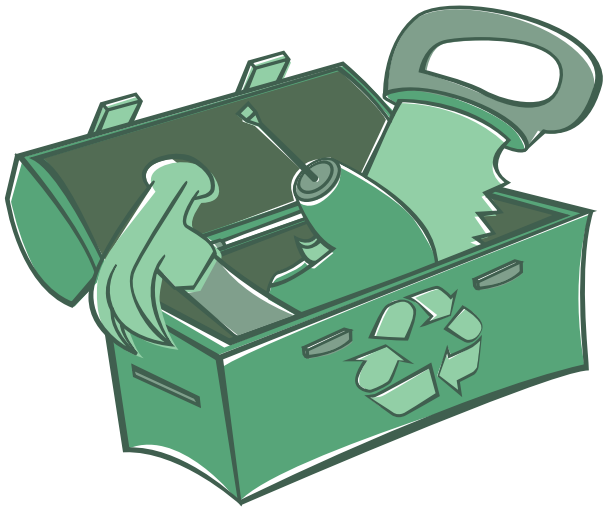
In Georgia, food residuals make up the largest fraction of disposed waste. As an alternative to going in the trash, your residents may be interested in creating a community compost bin. If the building is multi-use, this could also be integrated with a restaurant or café in the building. The compost generated can be used on the complex grounds, offsetting costs for mulch and reducing the need to water the landscaping.

Another important consideration is reducing the amount of "junk mail" and catalogs that are generated and delivered to your residents. According to the U.S. Environmental Protection Agency, in 2005, 5.8 million tons of catalogs and other direct mailings ended up in the U.S. municipal solid waste stream. That's enough to fill over 450,000 garbage trucks, but less than 36% of this ad mail was recycled. The toolbox contains a few options to help you control the mail that you do, and do not, wish to receive. Your tenants may also wish to discontinue receiving certain catalogs. They can remove their name from catalog mailing lists with a free service, like Catalog Choice.

Plastic grocery bags are ubiquitous, and should not be collected in a single stream recycling program. This doesn't mean that they have to be in the landfilled or end up being litter. Residents can typically return them to their local grocery store for collection. Plastic bags find new life in many products; the composite lumber industry is the largest consumer of recycled film plastic.

Compact fluorescent lamps (CFLs) contain a small about of mercury; therefore, it is always preferable to recycle CFLs versus disposing of them in the solid waste stream. Stores like Home Depot and IKEA accept CFLs for recycling.

# 9. THE TOOL BOX



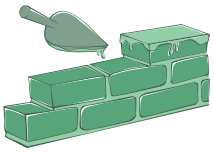
## 1. Background & Research and Quick Start Guide:

**Audit Resources**
Sustainable Office Toolkit: http://www.gasustainability.org/documents/offices_home.html

Waste Sort Worksheet (PDF)

Georgia Department of Community Affairs, Conducting a Recycling Assessment Document: (PDF)
http://www.dca.ga.gov/development/EnvironmentalManagement/programs/downloads/RecyclingAssessmentFinal.pdf

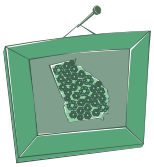
## 2. The Foundation – Recycling in Georgia:



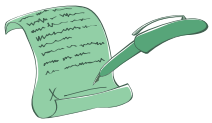
**Waste Characterization**
The Georgia Department of Community Affairs conducted a waste characterization study for the state, which provides detailed information on the composition of the waste stream: (PDF)
http://www.dca.state.ga.us/development/EnvironmentalManagement/publications/GeorgiaMSWCharacterizationStudy.pdf

**Curbside Value Partnership**
Recycling Coordinator's Toolbox
www.recyclecurbside.org/content/u/toolkit

## 3. The Market



**How Multifamily Fits into the Picture**
Atlanta Regional Commission's 2007 Population and Housing Report (PDF)
Atlanta Regional Commission's 2009 Population and Housing Report (PDF)

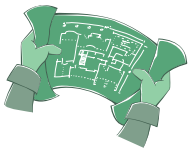


## 4. Policy/Planning: Government Policy Resources:

**Sample Ordinance**
Ordinance Template (PDF)

**Local Government Examples**
Atlanta, GA Multifamily Recycling Ordinance (PDF)
Roswell, GA Multifamily Recycling Ordinance (PDF)
Decatur, GA Multifamily Recycling Ordinance (PDF)
Athens, GA Multifamily Recycling Brochure (PDF)
Fort Lauderdale, FL Multifamily Recycling Ordinance (PDF)
Fort Lauderdale, FL Multifamily Recycling Brochure (PDF)
Fort Lauderdale, FL Multifamily Recycling Photo (JPG)

**Re-TRAC**
www.re-trac.com, a complete on-line data management solution for recycling, household hazardous waste, and solid waste managers.



## 5. The Blueprints:

**Waste Audit Resources**
Georgia's Sustainable Office Toolkit Waste Reduction Module provides a simple resource to perform a waste audit:
http://p2ad.org/toolkit/modules_1_2.html

Georgia Department of Community Affairs, Conducting a Recycling Assessment Document: (PDF)
http://www.dca.ga.gov/development/EnvironmentalManagement/programs/downloads/RecyclingAssessmentFinal.pdf

**Equipment Resources (no endorsement is implied)**
Wilkinson Hi-Rise, www.wilkinsonhirise.com
Advance Chutes and Recycling, www.advancechutes.com

## 6. Brick and Mortar:

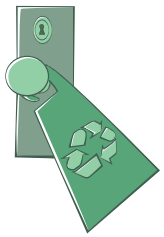
**Haulers**
Recycling Haulers Servicing Metro Atlanta (PDF)

**Writing a Strong Contract**
EPA has information on starting a recycling program, including developing and writing a strong contract: www.epa.gov/region4/waste/rcra/mgtoolkit/starting.html

**Sample Hauler Contract**
From Eureka Recycling: (PDF) www.eurekarecycling.org/tools/Anchor_Legal_Tools/2.Single_Hauler_Contract.pdf

**Bin and Container Vendors *(no endorsement is implied)***
http://myecoville.com/us/ga/resources/recycle-bin-vendors

## 8. The Marketing:



You Gotta be Kidding Campaign, www.yougottabekidding.org, may provide some inspiration and resources for your marketing campaign

To learn more about community based social marketing techniques and resources, visit www.CBSM.com

Label Resources are provided to help develop your posters, brochures, and flyers. With permission, the following labels were provided by Eureka Recycling: www.eurekarecycling.org/Tools.cfm

**Recycling Material Photos**

Photos of various types of recycling commodities (paper, plastic, metal, glass) (PDF)

**Recycling Setup Signage Examples**

Examples of signs that can be used to promote recycling program and educate tenants (PDF)

**Spanish Materials (folder)**
Spanish Glossary (PDF)
Spanish Flyer (PDF)
Photographs of Spanish items -
- Jarritos glass bottle (JPG)
- La Voz News (JPG)
- Jalapeno Can (JPG)

**NON-TRADITIONAL RECYCLING GUIDANCE DOCUMENTS AND RESOURCES**

**Compact Fluorescent Lights Fact Sheet: How to Cleanup A Broken Bulb**
Georgia Department of Community Affairs: (PDF)
www.dca.ga.gov/development/EnvironmentalManagement/programs/downloads/CFL_FactSheet.pdf

EPA Information on CFL Cleanup: www.epa.gov/mercury/spills/

**Compact Fluorescent Lights: Recycling**
Home Depot: (PDF) http://www6.homedepot.com/ecooptions/index.html
IKEA: www.ikea.com/ms/en_CA/about_ikea/our_responsibility/national_community_involvment/index.html

**General Household Hazardous Waste Management**
Georgia Department of Community Affairs: (PDF) www.dca.state.ga.us/development/EnvironmentalManagement/programs/downloads/GeneralHHWdisposal.pdf

**Electronics Recycling**
EPA - Where Can I Donate or Recycle Old Computer and Other Electronic Products?: www.epa.gov/waste/conserve/materials/ecycling/donate.htm
Earth911 - Info on Electronics Recycling: www.earth911.com/recycling/electronics/

**Organics/Food Residuals and Composting Information**
EPA Composting Information: www.epa.gov/compost/
Georgia Department of Community Affairs: Composting at Home in GA Brochure (PDF)
Cornell Cooperative Extension: How to construct and maintain a compost bin (PDF)

**Plastic Bags Recycling**
www.plasticbagrecycling.org

**Reducing Junk Mail and Unwanted Catalogs**
Direct Marketing Assocation's Online Mail Management Tool: www.dmachoice.org/
Get a Junk Mail Kit at: www.stopjunkmail.org
A free service that lets you reduce unwanted catalogs: www.catalogchoice.org

**Ecoville**
Georgia Recycling Coalition's Ecoville (www.georgiarecycles.org) provides online local recycling and sustainability information.

**Earth 911**
www.Earth911.com is the nation's premier recycling resource. Searchable by zip code and material, it provides local information on recycling opportunities.

**Free Cycle**
www.freecycle.org is made up of 4,604 groups with 5,814,000 members across the globe. It's a grassroots and entirely nonprofit movement of people who are giving (and getting) stuff for free in their own towns. It's all about reuse and keeping good stuff out of landfills.

**ADDITIONAL HELPFUL LINKS AND RESOURCES**

**Georgia Department of Community Affairs' Recycling Resources:**
www.dca.ga.gov/development/EnvironmentalManagement/programs/recycling.asp
www.recycle4georgia.org

**Georgia Department of Natural Resources Sustainability Division's Sustainable Office Toolkit:**
http://www.gasustainability.org/documents/offices_home.html

**Georgia Recycling Coalition:** www.georgiarecycles.org

**USEPA, Region 4's Recycling Resources, including the Municipal Government (Recycling) Toolkit: http://www.epa.gov/region4/recycle/index.htm**

**Keep Atlanta Beautiful:** www.keepatlantabeautiful.org

**WasteWise:** A free and voluntary program that provides technical assistance and recognition to members that commit to waste reduction goals. Property management companies implementing recycling programs are eligible to join WasteWise and receive recognition from USEPA, which may be a selling point for your properties www.epa.gov/wastewise

**Leadership in Energy and Environmental Design (LEED):** Provides excellent resources for building managers that want to take their building's environmental performance to the next level. LEED covers both new construction and existing buildings that want to achieve "green" status www.usgbc.org

**America Forest & Paper Association (AF&PA):** Guides to establish sustainable recycling programs in offices, schools and communities: http://www.paperrecycles.org/

**Benefits Calculators**
The Northeastern Research Council has a free tool for all states: www.nerc.org/documents/environmental_benefits_calculator.html

The United States Environmental Protection Agency's Individual Waste Reduction Model (iWARM) helps you understand the energy saved by recycling small quantities of common household products, rather than landfilling them: www.epa.gov/waste/conserve/tools/iwarm/index.htm

General information on the link between solid waste and green house gas emissions can be found at:
http://www.epa.gov/climatechange/wycd/waste/generalinfo.html
http://www.epa.gov/region4/waste/rcra/mgtoolkit/Climate_Change.html

To better understand the economic benefits of recycling, check out the "Economics of Recycling in the Southeast" Fact Sheet: (PDF) www.epa.gov/region4/waste/rcra/mgtoolkit/documents/Economics_Fact_Sheet.pdf

To learn about the connection between Recycling and Healthy Communities: (PDF) http://www.epa.gov/region4/waste/rcra/mgtoolkit/documents/Community_Fact_Sheet.pdf

**Background Documents**

This report details the barriers and opportunities to multifamily recycling. The report was prepared by Aceti Associates for the Massachusetts Department of Environmental Protection.
http://www.mass.gov/dep/recycle/reduce/mfambopp.doc

Multifamily Recycling: A Golden Opportunity for Solid Waste Recycling (1999): (PDF)
www.epa.gov/waste/conserve/rrr/pubs/multi.pdf

# 10. Photos

Photos of various types of multifamily apartments, recycling bins, and carts (PDF)

Junk mail recycle bin .jpg


Junk mail recycle bin 2.jpg

junk mail recycling bin top view.jpg


multi family apts 1.jpg


multi family apts 2.jpg


multi family apts scape.jpg


multi family condo 1.jpg


multi family condo 2.jpg


multi family highrise 1.jpg


multi family highrise 2.jpg


multi family highrise 3.jpg


multi family highrise 4.jpg


multi family highrise 5.jpg


Multi family mail recycling.jpg


Multi family recycle area.jpg


multi family recycle tote closed.jpg


multi family recycling center totes...


multi family recycling center.jpg


Plastics only.jpg


recycle tote - mail center .jpg

# 11. The Glossary

**Biofuel -** any fuel that derives from biomass — recently living organisms or their metabolic byproducts, such as manure from cows and spent grease. It is a renewable energy source, unlike other natural resources such as petroleum, coal and nuclear fuels.

**Carbon Footprint -** a form of carbon calculation that measures the amount of carbon dioxide equivalent that a country, a business, an industry or an individual produces or is responsible for in their activities. The footprint calculates the direct and indirect level of CO2 emissions.

**Carbon Credit –** a certified carbon dioxide emission displacement credit, equal to one ton of CO2 removed from the environment

**Collection Methods (Recycling) -**

> **Source Separated-**materials are segregated by separate commodities; method often utilized at large scale drop off centers
>
> **Dual Stream-**collection of bottles and cans in one bin or bag, and all mixed paper in a separate bin or bag-used in curbside, drop off and commercial applications
>
> **Single Stream-**collection of all recyclable materials in one bin; once collected, they are transported to state of the art or manual sorting facilities (see MRF's) where they are separated, baled or otherwise consolidated and shipped to end market users; most common and most convenient for participants--used in curbside, drop off and commercial applications

**Consolidation Area-**locations at commercial and multi-family properties where materials are brought from individuals to larger bins for vendor/ hauler collection

**Composting** - the controlled biological decomposition of organic materials, such as leaves, grass, woody materials, and food residuals, into a product that can be used as a beneficial soil amendment for water conservation, erosion control, and reducing the need for chemical fertilizers

**Common Recyclables** – all clean and non-contaminated paper, corrugated, cardboard, plastics (usually #1&2), aluminum cans, steel (food) cans and glass bottles

**Compostable Products** - A material which undergoes physical, chemical, thermal and/or biological degradation in a municipal solid waste composting facility such that it enters into the finished compost (humus) and ultimately mineralizes (biodegrades to carbon dioxide, water and biomass) in the environment at a rate like that of known compostable materials in municipal solid waste such as paper and yard waste.

**Dumpster Diving** -the practice of sorting through commercial or residential trash to find discarded items in order to determine the composition of the waste and recycling stream. (Used in waste assessments and audits)

**End User -** consumer of recyclables for the purpose of re-manufacturing the raw materials into a new product; this entity "closes the loop" of collection/processing/re-manufacturing.

**Greenhouse Gases** - gases in the atmosphere that absorb and emit radiation within the thermal infrared range. Common greenhouse gases in the Earth's atmosphere include water vapor, carbon dioxide, methane, nitrous oxide, ozone, and chlorofluorocarbons.

**Hauler -** collection company that provides either complete refuse removal service and/or specialized recycling and organics collection for delivery to a processor/processing facility.

**Liquidated Damages -** repayment of financial damages when a contractor does not adhere to the contract agreement

**Municipal Solid Waste** (**MSW) -** any solid waste derived from households, including garbage, trash, and sanitary waste in septic tanks and means solid waste from single- family and multifamily residences, hotels and motels, bunkhouses, campgrounds, picnic grounds, and day use recreation areas. The term includes yard trimmings and commercial solid waste, but does not include solid waste from mining, agricultural, or silvicultural operations or industrial processes or operations.

**Material Recovery Facility (MRF)** - an industrial building where several types of recyclables are sorted by commodity, divided into bulk units and loaded for transport, sold, stored, and/or shipped to market. End users/markets of the bulk recyclables, in turn, make new products.

**Ordinance -** a law established and enforced by a government entity

**Organic matter** (or **organic material**) **-** matter from a once-living organism; is capable of decay, or the product of decay

**Performance Bond -** a surety bond issued by an insurance company to guarantee satisfactory completion or performance of a project by a contractor.

**Processors -** intermediate operators that handle recyclable materials from collectors and generators for the purpose of preparing materials for recycling; act as an intermediary between collectors and end users of recyclables (MRF, scrap metal yards, paper dealers, glass plants, etc).

**Recycling** - the processing of collecting used materials with a value and manufacturing them into new products in order to prevent waste of potentially useful materials

**Source Reduction** - any change in the design, manufacture, purchase, or use of materials or products (including packaging) to reduce their volume before they become municipal solid waste.

**Sustainable** - capable of being maintained at a steady level without exhausting natural resources or causing ecological damage.

**Sustainability -** meeting the needs of the present without compromising the ability of future generations to meet their own needs

**Transfer Station -** a facility where solid waste materials, including yard trimmings, demolition

materials, and household refuse, are transferred from collection vehicles to larger tractor trailer trucks for more efficient transport to landfills, recycling centers, or other recovery facilities

**Waste Audit -** a statistical analysis of the waste stream in terms of quantity, composition, source and management.

**Waste Minimization** - the process and policy of reducing the amount of waste produced.

## Notes

# Building Multi-Family Recycling Programs in Georgia

Atlanta Recycles
EPA Region 4
Georgia Department of Community Affairs
Georgia Recycling Coalition
Keep Atlanta Beautiful