

Section 2 Executive Summary

The Solid Waste Services Master Plan projects future Department activities and services for the next 30 years. The Master Plan looks at the Department in its entirety, laying a framework of how departmental staff and citizens relate to one another. Implementation plans for each proposed project, service, or policy will be developed within the context of the Master Plan, each one in synergy with the other to ensure consistency between the service message and physical development of the service program.

The foundation for the Department's strategic and master planning efforts is the United Nations Urban Environmental Accords. The Accords are a set of 21 actions that the United Nations has asked City Governments to adopt and implement. In 2005, in honor of the United Nations World Environment Day, the City signed the Urban Environmental Accords. The Accords are a declaration by participating city governments to build ecologically sustainable, economically dynamic, and socially equitable futures for their citizens. The following three Accord Actions are incorporated into this Master Plan:

- Implement "user-friendly" recycling and composting programs to reduce per capita solid waste sent to landfill and incineration by 20 percent by 2012;
- Adopt a citywide program that reduces the use of a disposable, toxic, or nonrenewable product category by at least 50 percent by 2012; and
- Establish a policy to achieve zero waste going to landfills and incinerators by 2040.

2.1 Mission Change – From Sanitation to Resource Recovery

The Department's primary role is as a service provider to the citizens of Austin and other City Departments, but how this service is provided and the Department's ultimate mission is evolving. Historically, the role of the Department, once named the Austin Sanitation Department, was to pick up household waste, dispose of dead animals, and sweep streets under the mission of creating a cleaner city through sanitary measures. Over time, the Department's name was changed to reflect an enlarged mission based on the growing need to collect and landfill residential solid wastes in a sanitary landfill, thus the department name - Solid Waste Services. As residents became more environmentally conscious, recycling and yard trimming collections services were added, creating an integrated materials management system.

Throughout this history, the material collected was treated as wastes. Even recyclables and compostables collected were treated as diverted waste streams. Zero Waste is a paradigm shift from waste management to materials management, with a new approach toward treating the material collected as resources that have secondary lives, not as waste streams. Thus, Zero Waste is another turn in the Department's life, redirecting the mission toward *resource recovery*.

With the advent of Zero Waste, material collected at the curb is now viewed as a commodity; material that can be reclaimed as a resource for new product manufacturing. Essentially, we are on the cusp of

viewing disposables as raw materials for local industries. This new perspective treats the material as a resource that is recovered for a second life, rather than a waste stream destined for a landfill. With this paradigm shift, the Department name of Solid Waste Services no longer represents the Department's mission. As Solid Waste Services embraces the Zero Waste goals, **the corporate name of the Department will change to the "Austin Resource Recovery Department"** to better reflect the Department's new vision and mission.

2.2 Departmental Vision, Mission, Values, Objectives

The Department provides a broad range of services including curbside collection of trash, recycling, yard trimmings and bulk collection, as well as street sweeping, litter abatement, and household hazardous waste collection. To provide these services in a professional and efficient manner, the Department employs approximately 400 staff members and operates five different facilities throughout the city.

As the City aspires to be the Best Managed City in the country, the Department has embraced the following vision, mission statement, values, and objectives.

Vision

To be the national Zero Waste leader in the transformation from traditional integrated waste collection to sustainable resource recovery.

Mission

To achieve Zero Waste by providing excellent customer services that promote waste reduction, increase resource recovery, and support the City of Austin's sustainability efforts.

Values

- We deliver quality services through sustainable and innovative best practices.
- We are fiscally, socially, and environmentally responsible through collaborative efforts.
- We are ethical and transparent.
- We foster a safe and healthy work environment through employee/staff development, appreciation, recognition, and respect.

Objectives

- To meet community needs by providing excellent customer service and proactive education and outreach.
- To increase fiscal responsibility to our customers.
- To provide optimal resource recovery while reducing the Department's carbon footprint.
- To educate, empower and hold staff accountable to provide affordable quality services.

2.3 Core Services and Major Programs Supporting

“Mission – Zero Waste, Resource Recovery, Sustainability”

The Master Plan is a road map to guide the Department toward its vision of resource recovery. All future decisions about the design and development of the “Austin Resource Recovery” Department’s core services, as outlined below, will be made with respect to the Master Plan.

Core Services

Customer Services – to provide efficient and reliable service for all customers

Customer service is not an activity; it's an attitude and a culture.

Employee Services – to offer a high quality work environment for all employees

The quality of our work depends on the quality of our people.

Financial Responsibility – to insure the best value of services for the lowest cost

Fiscal integrity requires rate base equity, accountability, and balanced budgeting.

Quality Assurance – to implement quality at each functional service delivery point

We deliver quality services through sustainable and innovative best practices.

With the Master Plan as the guide, future programs and policies will be more coherent and mission-specific. Even though all departmental programs and policies will focus on achieving this mission, and all are included in this Master Plan, the following programs will likely have the greatest impact...both in terms of impact in the community and effecting the successful completion of the mission.

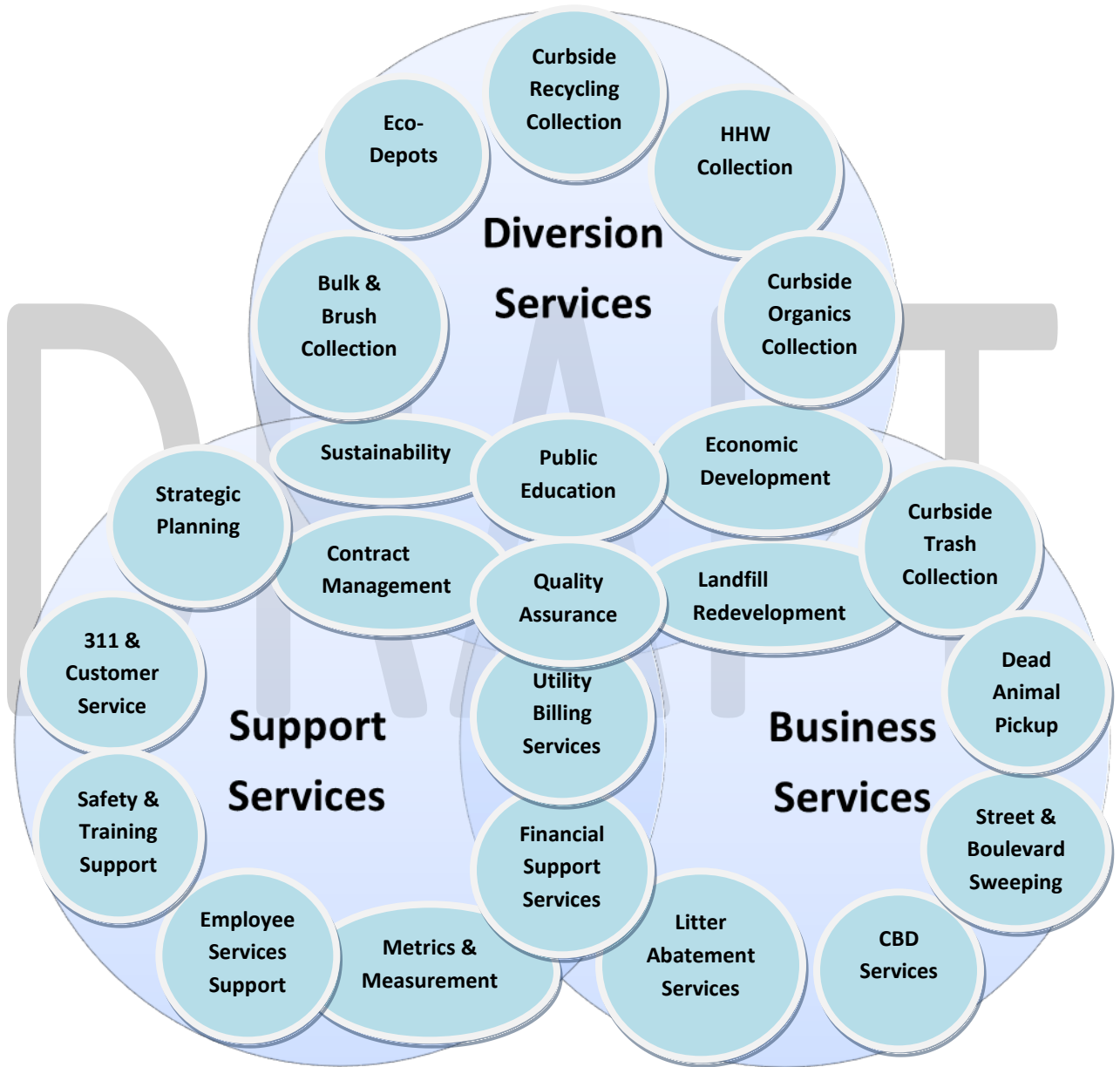
Major Programs

- Sustainability
- Zero Waste
 - Waste Reduction
 - Reuse
 - Recycling
 - Composting
 - Materials Management
- Household Hazardous Waste
- Disposal Management
- Other Core Services
 - Litter Control
 - Alley/Street Flushing
 - Street/Boulevard Sweeping
 - Dead Animal Collection
 - Brush Collection
 - Bulk Collection

The remainder of the Executive Summary will focus on these programs. A financial impact analysis and funding plan for each program is included at the end of the Executive Summary.

Major Services

The Department offers three major services: Diversion Services, Business Services, and Support Services. The following diagram displays the inter-relationships of the programs and services as outlined in the Master Plan:



2.4 Sustainability Goals

Community – wide focus

Sustainability efforts are intended to reduce our environmental footprint including impacts on climate change, energy, and land use, and environmental quality including air and water quality.

Departmental focus

Waste prevention, recycling and composting are activities that support sustainability and slowing climate change. The Austin Resource Recovery Department's Zero Waste efforts assist the City in its sustainability efforts by encouraging resource efficiency and managing materials for a second life, rather than managing waste. Implementing Zero Waste systems reduce green house gasses (GHGs) by:

- Reducing energy consumption associated with extracting, processing and transporting 'virgin' raw materials;
- Utilizing recycled content products reduces the release of greenhouse gases when compared to mining or harvesting of virgin materials;
- Reducing and eventually eliminating the need for landfills reduces methane released into the atmosphere;
- Reducing transportation impacts by establishing local end markets for the consumption of captured recyclables and compostable materials collected in the community.

Based on these sustainability concepts, Zero Waste is an integral part of the City's climate change initiatives. The Department commits to a strong partnership with the Office of Sustainability and its Climate Protection Program. The Department's Zero Waste and operational efficiency efforts will assist the City in its sustainability efforts through the following actions:

- Fuel usage reduction through vehicle routing efficiencies;
- Replacement of diesel fuel with compressed natural gas (CNG), hybrids, electrics, and other alternative fuels;
- Offset of Department Carbon Footprint through the establishment of a local carbon offset fund administered by the Austin Sustainability Office; and
- Fugitive methane emission reduction through reduction of landfilling waste and increase in composting volumes.

2.5 Zero Waste Goals

The Austin City Council endorsed Zero Waste as a significant goal for the City and in doing so acknowledged that disposing of waste is not inevitable. Zero Waste is a paradigm shift...recyclables are what we once kept out of the trash. With Zero Waste, trash is what we have left over after we reduce, reuse, recycle, and compost. As the City of Austin travels along the path toward Zero Waste, the Solid Waste Services Department is transforming from an agency focused on waste management collection to one focused on materials resource management.

This Master Plan is a road map to guide the Department toward its vision of resource recovery. All the future programs and policies will be coherent and mission-specific activities detailed in this plan will work together to support the City's vision to achieve Zero Waste by 2040.

The Austin City Council established three major benchmark goals for achieving Zero Waste:

- Reducing by 20% the per capita solid waste disposed to landfills by FY12,
- Diverting 75% of solid waste from landfills and incinerators by FY20, and
- Diverting 90% of solid waste from landfills and incinerators by FY40.

To achieve these goals, this Master Plan provides a roadmap toward Zero Waste. Because it is necessary to dedicate resources each year, interim benchmarks are necessary to gauge progress toward these ambitious goals. The Master Plan establishes the following diversion goals:

- 50 % by FY15,
- 75 % by FY20,
- 85 % by FY25,
- 90 % by FY30,
- 95+ %, working towards Zero Waste by FY40,
- Restorative Economy by FY50

The City's diversion goals are based on the citywide generation of discarded materials, including materials generated by residents, businesses, and visitors. The Department handles about 25 percent of discarded materials generated in the City. In FY2010, the Department diverted about 38 percent of these city-collected materials from the landfill.

The Zero Waste policies and programs identified in the Master Plan are slated for implementation in the short-term (FY2012 - FY2015) and in the mid-term (FY2016 – FY2020). Most of the Zero Waste infrastructure will be developed within those time horizons as well. The long term (FY2021 – FY2040) will involve sustaining and mainstreaming these zero waste programs as well as supporting product stewardship. In planning and implementing its Zero Waste policies and programs, the Department will monitor its successes and seek out new opportunities for innovation and advancement in Zero Waste policy development.

In addition to reducing the generation of discarded materials, the economic development potential of reusing valuable discarded materials locally is an important community value in Austin. The City can encourage local economic development by collaborating with businesses, institutions and the community to adopt policies and programs that incentivize, encourage, or require more environmental responsibility to stimulate a sustainable green market economy.

Concept plans, diagrams, and estimates of costs and schedules in this Master Plan will demonstrate how the 2009 Austin Zero Waste Strategic Plan, including the long-range goals, will be realized physically within the City.

2.6 Waste Reduction

Waste reduction refers to any change in the design, manufacture, purchase, or use of materials or products -- including packaging -- to reduce the amount or toxicity before the product(s) reach the end of their useful life and must then be recycled, composted or wasted through landfilling. An example of waste reduction is bringing a reusable bag to the grocery store as a replacement to single-use bags.

Waste reduction is near the top of the City of Austin's Highest and Best Use Hierarchy.¹ As listed in the City's Zero Waste Strategic Plan waste reduction practices include:

- Reduce consumption by purchasing and using less
- Reduce packaging
- Apply Environmentally Preferable Purchasing standards to purchasing
- Purchase products with less packaging
- Encourage durable, reusable packaging

The City has direct control over its own activities and can undertake specific waste reduction initiatives to serve as an example to other residential, commercial and institutional generators. To develop the best practices for waste reduction in City offices and facilities, the Department will undertake the following tasks:

- Conduct waste audits of all City department offices and facilities;
- Identify areas of City offices and facilities where discarded materials could be reduced;
- Coordinate with facilities management staff to implement ways to make recycling easier;
- Educate City employees to identify strategies for waste reduction;
- Provide a mechanism for personal responsibility and leadership within each department to focus on problem-solving and team-building;
- Convert the identified best practices into standard practices by incorporating the new strategies into city-wide Standard Operating Procedures; and
- Partner with the Sustainability Office to develop a cost-benefit analyses mechanism that incorporates the values of waste reduction, repair and reuse, and assist departments in prolonging the useful life of equipment and facilities.

Methods for reducing waste at home are similar to those practiced at work and include careful purchasing of new items; repairing and repurposing old items; and donating reusable items that still have a useful life. The Department will research and publicize best practices for waste reduction at home, including methods such as those promoted by the U.S. EPA², including:

¹ *Austin Zero Waste Strategic Plan*, December 4, 2008, Appendix H, page 47.

² Sources: U.S. EPA, Waste Prevention Pays Off, (EPA/530-K-92-004), (800) 424-9346, U.S. EPA, Business Guide for Reducing Solid Waste, (EPA/530-K-92-004), (800) 424-9346, U.S. EPA, Reusable News, quarterly newsletter, (800) 424-9346

- Purchasing items in bulk or economy sizes, in reusable containers or with the least amount of packaging;
- Purchasing products which are available in concentrated form or are high-quality long-lasting products; and
- Avoid using single use items such as disposable cups, plates and cutlery, napkins; expanded polystyrene, and plastic bags and instead reverting to reusable items such as reusable utensils, cloth towels, and canvas bags.

The Department provides commercial technical assistance through its Waste Reduction Assistance Program, a free service that assists local businesses with their recycling and waste reduction efforts by motivating businesses to get involved, providing assistance and resources and recognizing businesses that are making a difference. The Department will greatly expand its outreach to commercial and institutional generators to coincide with implementation of the City's Universal Recycling and Composting Ordinance (URCO).

The Department will conduct outreach to every business in Austin over a five year period. The program will start with businesses of more than 100,000 square feet, as the first phase, and remaining businesses will be phased in within three years. The program will include:

- Technical assistance to commercial businesses in support of the URCO;
- Reward and recognition;
- Incentives, grants and pilot projects;
- Information on recycling and reuse outlets;
- Information about rates and services available through private sector service providers and non-profits; and
- Profiles and promotion of businesses transitioning to Zero Waste.

2.7 Reuse

Reuse means using a discarded item for the same or similar function while preserving the embodied energy of its original form. The City's Highest and Best Use Hierarchy, adopted as part of the Zero Waste Strategic Plan (Strategic Plan), lists reuse near the top of the hierarchy, directly after redesign and reduce and before recycling.³

Strategies the Department will explore and implement to support reuse include:

- Salvaging reusable items from the Department's bulk collection program prior to landfilling;
- Encouraging and facilitating the growth and development of repair and reuse businesses and non-profits, including:
 - Consignment stores, thrift shops and charitable drop-off centers
 - building materials reuse centers and tool lending libraries,
 - used equipment stores and salvage yards

³ *Austin Zero Waste Strategic Plan*, December 4, 2008, Appendix H, page 47.

- repair, refurbishing, and remanufacturing firms
- creative reuse centers and artists
- local and regional online material exchanges; and
- Providing additional opportunities for reuse through four new Eco-Depots
- Promoting the use of durable/reusable products.

Reuse is an important component in the City’s Zero Waste strategy. Austin residents are estimated to dispose of \$11 million in reusable items annually.⁴ The amount of reusables in the waste discard stream is largely dependent on mechanisms in place to capture and refurbish the discarded items.

Reuse businesses create jobs. For every 10,000 tons of reusable items processed, 75-250 jobs are created.⁵ Therefore, Austin residents could create an estimated 150 to 500 new green jobs by diverting all reusable items from landfills.⁶

Reuse Austin

This new program, entitled Reuse Austin, will enhance the Department’s bulk collection services with increased focus on diversion opportunities. The Department will make a stronger effort to reuse or recycle or reuse bulk items collected from its bulk collection program. The Department will team with reuse and resale partners that are structured to collect and sell gently used furniture, building materials, and other reusable items to increase diversion of items currently landfilled.

Teacher Resource / Creative Reuse Centers

These centers collect donated new and gently used materials that can be transformed into instructional aids, student projects and even works of art. The educational mission of these teacher reuse centers is to increase the awareness of reusing materials rather than purchasing new materials.

Eco-Depots

Eco-Depots are drop-off facilities for reusable items, recyclables and hard-to-recycle materials, such as carpet, electronics, and batteries, oils, paint and antibatteries, oil, paint and anti-freeze (BOPA) materials. Eco-Depots can be developed and operated through service agreements with non-profit organizations, with adjacent communities, and through potential partnerships such as Capital Metro’s Park and Ride Lots. They can also collect materials such as carpet which is not ordinarily accepted and marketed. The purpose of Eco-Depots is to provide enough facilities to ensure convenience for the public so that these materials are diverted from the disposal stream.

The Department will support and establish four eco-depots within Austin, as well as a Teacher Creative Reuse Center. Each Eco-Depot could handle up to ten tons per day depending on the particular storage space available and location. The Teacher Creative Reuse Center will be developed in collaboration with

⁴ *Austin Zero Waste Strategic Plan*, December 4, 2008, page 6.

⁵ *Waste to Wealth: Recycling Means Business*, 10 December 2008. Institute for Local Self-Reliance.
<http://www.ilsr.org/recycling/recyclingmeansbusiness.html>

⁶ *Austin Zero Waste Strategic Plan*, December 4, 2008, page 19.

the Austin Independent School District. Conceptually, the sites would be staffed by a non-profit organization through a contract with the Department. Additional staff resources will be dedicated to provide planning and management of the Eco-Depot sites and Teacher Reuse Center, and to construct and equip the sites.

2.8 Recycling

The National Recycling Coalition defines recycling as "the series of activities by which materials that are no longer useful to the generator are collected, sorted, processed, and converted into raw materials and used in the production of new products." This definition excludes the use of these materials as a fuel substitute or for energy production.

Recyclable materials are discarded materials such as paper, metal, plastic, and glass that can be reprocessed into new products or packaging. Recyclable materials are a large fraction of the discard stream, representing 43 percent of materials disposed in landfills.

The Department provides every other week collection of single stream recycling in 96-gallon wheeled carts for single-family households and some small scale multifamily and commercial customers. The Department currently collects paper, boxboard, cardboard, aluminum and metal cans, glass and rigid plastic containers #1 through #7⁷ in the single stream recycling carts.

Most collection services provided to larger scale multifamily and commercial customers are provided by non-profit and private sector service providers. Through implementation of the Zero Waste initiatives, 20 percent of recyclable materials will be directly diverted by the Department and 80 percent of recyclable materials will be diverted by non-profit and private sector service providers.

Because the Department directly collects only a portion of the recyclable materials generated citywide, the City will have the most impact on increasing diversion of recyclable materials through new policy drivers. Within the Universal Recycling and Composting Ordinance (URCO), the City will require diversion of recyclable materials by residential and commercial generators and at City offices and facilities. In the Event Recycling Ordinance, the City will require diversion of recyclable materials at all special events.

New Recycling Initiatives

Many of the Department's new Zero Waste initiatives directly affect the diversion of recyclable materials. The Department will initiate several new programs to divert recyclable materials, including:

- Continue to contract for single-stream processing at private sector material recovery facilities;
- Relocate the existing Resource Recovery Center to the Department's Todd Lane facilities and rebuild to incorporate additional recyclables collection opportunities (Section 9);

⁷ The numbers on plastic products refer to resin codes: #1- PET or PETE (polyethylene terephthalate); #2 - HDPE (high density polyethylene); #3 - V (Vinyl) or PVC; #4 - LDPE (low density polyethylene); #5 - PP (polypropylene); #6 - PS (polystyrene); #7 – Miscellaneous.

- Repurpose the City Material Recovery/Transfer Station for bulk item diversion (Section 13) ;
- Repurpose the closed City landfill to site an Eco-Industrial Park for the location of resource-consumption industries such as a glass processor, a tire shredder, a plastics manufacturer (Section 12);
- Develop four Eco-Depots throughout the City to handle hard-to-recycle materials, including batteries, motor oil, paint and anti-freeze (Section 7).
- Adding additional material types to the single-stream program;
- Transition to weekly collection for residential customers (2016-2017);
- Expanding recycling collection to all Solid Waste Services customers;
- Adding an on-call collection for bulk items to increase diversion of reusable and recyclable materials;
- Providing a choice in the size of the containers (64 and 96 gallons); and
- Providing outreach, commercial technical assistance, and community-based social marketing initiatives.

The Department will support the work of the non-profit and private sector service providers through:

- Outreach and commercial technical assistance;
- Community-based social marketing initiatives, including pilot programs, focus groups, surveys (to discover barriers), commitments and feedback from generators and incentives (to change behavior); and
- Large-scale campaigns to change public perception and behavior.

The Single-Stream Recycling agreements with two local recycling processors allow for additional recyclable materials as the recycling markets offer new recycling opportunities. In the future, the Department will add aseptic and gable-top containers, durable plastics (household items and engineering grade plastics), plastic wrap film, aluminum foil, and small scrap metal items to the recycling list.

2.9 Materials Management

Materials management uses and reuses resources at their highest and most productive level throughout the materials' life cycle. A materials management systems approach considers the life-cycle impacts of disposal and carbon footprint reductions from source reduction, reuse, remanufacturing, recycling and composting. Environmentally preferable purchasing policies, upstream re-design, extended producer responsibility systems and clean manufacturing practices are additional methods of material management.

The materials management systems approach diverts materials currently being disposed in landfills through source reduction, reuse, remanufacturing, recycling and composting. All discards can be sorted into twelve basic categories of divertable material, representing 90% of the overall waste stream.

Materials management also provides the City with the economic development potential of reusing valuable discarded materials locally. The City can encourage local economic development by working with stakeholders to adopt policies and programs that incentivize, encourage, and even require more environmental responsibility or use of locally produced products made of recycled content to stimulate a sustainable green market economy.

Materials Management Policies

The Material Management components of the Master Plan include several opportunities for the development of new policies that support the City's Zero Waste goal, such as:

- **Universal Recycling and Composting Ordinance** – An ordinance designed to increase diversion through comprehensive recycling and organics collection from all sectors throughout the City.
- **Construction, Demolition, and Deconstruction Debris Ordinance** – An ordinance designed to require the recycling of construction debris through a city-required permitting process by:
 - Adopting policies to increase reuse, recycling and composting of products used in remodeling and new construction;
 - Requiring larger project building permit holders to provide diversion plans;
 - Transitioning to higher rates of diversion requirements; and
 - Registering construction and demolition debris facilities and haulers.
- **Extended Producer Responsibility (EPR) Initiatives** – EPR initiatives call for an active role in advocating for legislation requiring product manufacturers, retail establishments, wholesale distributors and other appropriate entities to take back certain products or packaging that currently are difficult to recycle or harmful to dispose.
- **Policies to reduce single-use and non-recyclable products and packaging** – Initiatives to reduce single-use and non-recyclable products and packaging such as consideration of a plastic bag ordinance and a take-out container ordinance.

These new policies will support and increase new opportunities in Material Management.

Materials Management Programs

The Material Management components of the Master Plan include several opportunities for the development and deployment of new programs that are expected to be undertaken in response to City policies, such as:

- **Reuse Austin** – An enhanced system of bulk collection services that diverts collected material through local reuse opportunities,
- **Clean Austin** – An enhanced bulk and brush collection service with increased focus on high need areas.
- **Storm Ready Austin** – Increased responsiveness to violent storm debris clean-up needs.

Materials Management Facility Development

The Material Management components of the Master Plan include several opportunities for the development of Zero Waste infrastructure through public-private partnerships and private sector initiatives that are expected to be undertaken in response to City policies, such as:

- **Eco-Depots** – Drop-off facilities located around the City for collection of reusable items, recyclables and hard-to-recycle materials.
- **Materials Recovery Facilities (MRF's) for recyclables** – MRFs constructed and operated by two private sector companies under contract with the Department, to support the Single Stream Recycling Collection Program and the Zero Waste initiatives of the Master Plan.
- **Resource Recovery Centers** – For the collection of hard-to-recycle materials such as appliances, tires, furniture, carpet and paint. The current Resource Recovery Center located at the FM 812 Landfill site will be redeveloped at the Todd Lane Transfer Facility. This new collection center is envisioned to handle BOPA materials (Batteries, Motor Oil, Latex Paint, Anti-freeze), brush, and numerous other recoverable materials. It will include a reuse yard for building materials and provide repair and refurbishment for reusable bulk items delivered by the Department or the public.
- **Composting facilities for organics** – Expanded organics processing capacity at the Hornsby Bend Biosolids Management Plant. In addition, pilots are proposed in response to the Universal Recycling and Composting Ordinance and through contracts with the City. The City may contract for additional composting services if deemed appropriate.
- **Construction and demolition debris process facilities** – For the recovery and recycling of debris from construction sites, in response to a future Construction and Demolition Debris Ordinance.
- **Eco-Industrial Park** – An eco-industrial park is an industrial system of production facilities which conserves natural and economic resources; reduces energy and water usage and provides opportunities for reuse or recycling of wasted materials. An Eco-Industrial Park is planned, designed, and built in such a way that it makes it easier for businesses to co-operate, and that results in a more financially sound, environmentally friendly project for each business entity. The Department's closed FM 812 Landfill, located at 10108 FM 812 in the City of Austin, is approximately 360 acres in size, and under 30-year post-closure care within the USEPA Subtitle D requirements for landfill site care and maintenance. The Department is considering the redevelopment of the set-aside buildable land as an Eco-Industrial Park.

Materials Management Collection Services

The Material Management components of the Master Plan include the deployment of expanded collection services, such as:

Bulk Collection Services

Both the Clean Austin program and the Reuse Austin programs will require infrastructure improvements. The Austin Resource Recovery Program, located at the FM812 landfill, is intended to be a public drop-off of large bulky items, including tires, large appliances, and furniture. Through public feedback, the location was identified as a major barrier. In addition, collection and processing of these items at the landfill offers operational challenges with the weather exposure and employee working conditions. In consideration of these needs, the Department will relocate the Resource Recovery Program to the Todd Lane Transfer Facility. The repurposed transfer facility will house the public drop-

off service as well as the bulk collection and reuse program. This facility will service the public and the bulk collections program.

In addition, the Department will place four Eco-Depots around the city to be utilized for residential drop-offs of large bulky items, as well as other reusables. This addition infrastructure will enhance and support the *Reuse Austin* program.

Brush Collection Services

The Department's brush collection services are focused primarily on the Hornsby Bend Composting Facility in the far eastern sector of the City. There is a need for more convenient drop-off sites around the City to increase the Department's operational efficiencies and reduce its carbon footprint. In addition, there is a need for public drop-offs of large brush, to reduce the need for city on-call services. The Department will research the use of various parks and natural settings as potential drop-offs of large brush and tree limbs, with the caution of that many areas have environmentally sensitive concerns. The Department will seek out four emergency collection sites for brush and woody compostables, in the four quadrants of the City.

2.10 Composting Organics

Organics are discarded materials that will decompose, such as yard trimmings, food scraps, compostable food-soiled paper, and untreated wood. Organic materials are the largest fraction of the discard stream, representing more than 40 percent of materials currently disposed in landfills.

The desired goal for achieving significant diversion of organic materials requires many collection and processing opportunities (a buckshot approach), as opposed to a single solution (a silver bullet approach). Essentially, utilizing new and old technologies with new economic development opportunities, the Department can maximize the highest and best use practices to reduce the community's carbon footprint for handling organics.

Because the Department directly controls only a portion of the organic materials generated citywide, the City will have the most impact on increasing diversion of organic materials through new policy drivers. In future phases of the Universal Recycling and Composting Ordinance (URCO), the City should require diversion of organic materials by residential and commercial generators and at City offices and facilities. In future phases of the Event Recycling Ordinance, the City should require diversion of organic materials at all special events. In addition, the City will register all organic service providers that haul within the City limits.

New Composting Initiatives

Many of the Zero Waste initiatives directly affect the diversion of organics materials. The Department will initiate several new programs to divert organic materials, including:

- Expanding its compost incentives program to encourage the development of backyard and on-site composting;

- Initiating compost trainings at community gardens and implement a junior composter and master composter training program (these programs can be implemented by Department staff or through non-profit and private sector contractors);
- Increasing diversion of organic materials by providing wheeled carts to all of its customers for the collection of yard trimmings and other compostable materials;
- Initiating a pilot program to collect yard trimmings, food scraps and compostable paper. Based on the results of this pilot, the Department will roll-out the new organics collection program citywide;
- Transitioning to on-call collection of brush and large volumes of yard trimmings that are generated seasonally; and
- Providing outreach, commercial technical assistance, and community-based social marketing initiatives.

The Department will support the work of the non-profit and private sector service providers through:

- Outreach and commercial technical assistance;
- Community-based social marketing initiatives, including pilot programs, focus groups, surveys to discover barriers, contaminants to address, and incentives to change behavior; and
- Large-scale campaigns to change public perception and behavior.

Resources for Organics Collection

Current yard trimmings collection routes include:

- 10 collection routes each day, 5 days per week, weekly collection
- 10 rear-loader trucks with 25 cubic yard capacity each and 2 operators per truck
- 30,000 tons of yard trimmings are collected annually

Conversion to organics collection (mixed yard trimmings and food scraps) will require:

- 20 collection routes each day, 5 days per week, weekly collection
- 20 side-loader trucks with 28 cubic yard capacity each and 1 operator per truck
- 50,000 tons of yard trimmings and food organics will be collected in the first year

Existing staff resources will be used to implement organics collection pilot. New side-loader collection vehicles will replace retiring rear-loaders. New 64 and 96 gallon wheeled green carts will be distributed to all residential customers. The Department will transition its rear-loader trucks to the Clean Austin Program for brush and bulk item collection and replace them with side-loader trucks suitable for servicing wheeled carts.

After the pilot program has been implemented, the City will conduct a routing efficiency analysis to determine the appropriate number of routes that will be needed to roll-out organics collection citywide. The City will also determine whether any efficiency could be realized from reducing some of the trash collection routes and converting resources to organics collection.

Hornsby Bend Operations

Yard trimmings and brush are currently collected by City crews from various departments and delivered for co-composting with biosolids at Hornsby Bend, operated by the Austin Water Utility Department. Approximately 30,000 tons per year (tpy) of yard trimmings and brush are currently delivered for co-composting at Hornsby Bend. The Department's composting Zero Waste initiative will supply all collection customers with yard trimmings carts and adding food scraps and compostable papers to the current yard trimmings collection program. This could increase the City's program capacity need for collection and processing of organics.

Another Department Zero Waste initiative is to aerobically compost the added food scrap materials through a 2-year pilot program for testing at either Hornsby Bend, if available, or at the FM812 Landfill facility. In addition to Hornsby Bend, two other private sector composting facilities have been permitted to compost food scraps. According to the facility operators, both facilities have sufficient capacity to meet Austin's short-term needs and have the capability of expanding their operations for the long-term. Two additional composting facilities are being developed by non-profit and private sector entities. The City will first use existing capacity at Hornsby Bend if they are successful in their pilot composting of these materials and then other permitted composting facilities in the area to meet capacity needs.

It is critical for the Department to work with AWU's Hornsby Bend staff in the following areas:

- Pilot processing of yard trimmings and food scraps;
- Obtain a permit to accept food scraps and compostable paper;
- Potential full-scale processing of yard trimmings and food scraps; and
- Provide public drop-off for brush.

If food scraps processing is not feasible at Hornsby Bend, the Department will assist in:

- Transition use of commercial brush and clean lumber as a bulking agent rather than residential yard trimmings;
- Use of tree trimmings and other carbon sources from Austin Energy contractors and other City departments; and
- Develop a transition plan for Hornsby Bend to utilize a different bulking agent.

2.11 Household Hazardous Waste Collection

Household hazardous wastes (HHW) represents about 1 percent of materials disposed in landfills, yet are a significant risk to landfill containment and possible environmental contamination. HHW includes leftover household products that contain corrosive, toxic, ignitable, or reactive ingredients such as paints, cleaners, oils, batteries, and pesticides that contain potentially hazardous ingredients and require special care when discarded. Nearly all programs for collecting and processing HHW will be provided by the Department. Some materials, including some pharmaceuticals, batteries, paint, and compact fluorescent lights are collected by retailers for diversion or proper disposal.

The existing HHW Facility, located in south Austin, collected approximately 1,043,000 pounds of HHW in FY2010. The Department also provides door-to-door collection for seniors and disabled residents and supports take-back programs offered by local businesses at 30 locations citywide. The take-back programs focus on batteries and fluorescent lamps. Additions to HHW collection will include:

- Expanding retail take-back partnerships;
 - Asking retailers that sell paint, fluorescent lamps, batteries, motor oil and other materials to voluntarily take-back materials;
 - Providing collection for the voluntary program in order to identify the cost of services and transition to producer responsibility; and
 - Identifying take-back retailer partners on the Department's website.
- Providing rechargeable battery collection sites;
 - Partnering with the Rechargeable Battery Recycling Corporation
- Piloting a door-to-door household hazardous waste collection;
- Adding two new staff to increase access to the HHW Facility;
- Expansion of HHW operations into a small portion of the existing Materials Recovery/Transfer Facility; and
- Advocating for Conditionally Exempt Small Quantity Generators (CESQG) to be included in the HHW program.

Several new Zero Waste initiatives will impact the current HHW facility. A small portion (approximately 250 square feet) of the existing Materials Recovery/Transfer Facility (MRF/TF) will be used for additional storage and paint mixing with no extra expenses. Since residents identified the hours of operations as a barrier to participation, the HHW Facility will expand its operating hours to include every Saturday, beginning October 1, 2011. The program will also hire two new staff members to properly staff the facility and provide customer service. The amount of HHW collected and disposed is expected to increase by about 12.5% due to the expansion of service days.

North HHW Collection Center

The Department is exploring the siting of a North HHW Collection Center to increase service convenience to the residents (both from Austin and from neighboring communities) residing north of the river, and to decrease costs for transport, decrease greenhouse gases and add needed capacity for employees and equipment. The Department will develop, finance and operate its own north HHW Facility. The north HHW Facility could be co-located with a north service center if the Department proceeds with plans to split a portion of its operations between a south and a north service centers for routing efficiencies and decreased greenhouse gas impacts.

New Policies

The City has a major opportunity to reduce the volume and toxicity of discarded materials through Extended Producer Responsibility (EPR). EPR initiatives call for the City to take an active role in advocating for legislation requiring product manufacturers, retail establishments, wholesale distributors and other appropriate entities to take back certain products or packaging that currently are difficult to

recycle or harmful to dispose. The Department is actively engaged with the Texas Product Stewardship Council (TxPSC) and will provide additional staff resources to that organization to increase its effectiveness. EPR initiatives are most effective at the state level, but the City could also initiate local legislation, if statewide efforts do not succeed.

2.12 Disposal Management

Acknowledging that our overall goal is to strive for zero waste that is burned or buried, Austin will have disposal management needs for the foreseeable future. Although disposal will aggressively decrease as new diversion programs are deployed, there is still a need to plan for the community's needs for disposal of non-reused, non-recycled and non-composted material.

Disposal Capacity Needs

The Department, preparing for the closure of the FM812 Landfill, foresaw the need to contract for the long-term disposal needs of city residents. The Department committed to a thirty-year disposal contract with Texas Disposal Systems, with a contractual term from May 2000 through May 2030. As the Department deploys new diversion programs to meet the Zero Waste goals of the City, a declining amount of waste is expected to be land filled annually. The following chart displays the disposal needs at given goal assessment dates.

City of Austin Controlled tons (including city-hauled and contract hauled)	FY09 (Base)	FY15	FY20	FY25	FY30
City-Hauled Diversion Rate	30.8%	50.0%	75.0%	85.0%	90.0%
Projected City-Hauled Waste Generation	360,500	400,000	440,000	485,000	530,000
Total City-Hauled Diversion - Reuse, Recycling, Composting, HHW	110,975	200,000	330,000	412,250	477,000
Projected City-Hauled Waste Disposal	249,525	200,000	110,000	72,750	53,000

As noted in the tonnage projections, the City's need for disposal will decline significantly, from 250,000 tons in FY09 to only 53,000 tons in FY30. The cost savings from the reduction of trash collection and disposal will offset the increased expense to support new diversion programs.

City FM 812 Landfill Management

The Department's closed FM 812 Landfill is located at 10108 FM 812 in the City of Austin, is approximately 360 acres in size, and is under 30-year post-closure care within the USEPA Subtitle D requirements for landfill site care and maintenance.

The closure of the FM812 landfill presents a potential for site reuse opportunities. As the site is owned by the City, it is in the best interest of the citizens to create a beneficial reuse of the landfill and its resources, while responsibly managing the closed waste cells in collaboration with USEPA and TCEQ.

Methane Gas Capture - Landfill gas is the natural by-product of the decomposition of solid waste in landfills and is comprised primarily of carbon dioxide and methane, which is then

combusted to generate electricity. By preventing emissions of methane, which is a powerful greenhouse gas, landfill gas energy projects help communities protect the environment and build a sustainable future. The Department is planning to install a landfill-gas-to energy facility to beneficially use the methane generated for production of electricity or vehicle fuels. Utilization of landfill generated methane may prove to be beneficial including heating of eco-industrial park related structures, conversion of methane gas into electricity via gas turbine or other emerging technology mechanisms.

Eco-Industrial Park - The Department is considering the redevelopment of the set-aside buildable land as an Eco-Industrial Park. As described above, an eco-industrial park is an industrial system of production facilities which conserves natural and economic resources; reduces energy and water usage and provides opportunities for reuse or recycling of wasted materials.

Solar Farm - One beneficial use of the FM 812 landfill property would be construction of a solar farm on the capped landfill surface. The site would be used to generate renewable solar energy through a solar photovoltaic system that converts solar energy to electricity. An estimated 20 mega-watts can be generated from this 160 acre proposed solar farm, equivalent to powering more than 5,500 homes each year of operation.

Alternative Disposal Options

New generations of high-temperature thermal combustion processing technologies are being marketed to local jurisdictions as Zero Waste alternatives to landfill disposal. Proponents of these technologies claim that they are capable of replacing fossil fuels with alternative, "sustainable" fuels made from waste. These waste-based energy technologies are also being promoted as "Emerging Technologies". Based on Austin Energy's efforts to invest in sustainable energy generation options and the Department's efforts to achieve Zero Waste, both departments agreed to develop a method that would evaluate proposed technologies using the Highest and Best Use Hierarchy, impact to climate change, and cost.

While the proposed technologies are newer forms of managing materials planned for disposal, they are also currently at the bottom of the Highest and Best Use Hierarchy because they create a market for waste rather than attempt to reduce and recycle waste up front. The overall goal of the City is to strive for zero waste that is burned or buried. These technologies may institutionalize waste, by making waste a "commodity" feedstock for the energy production industry. By contrast, waste reduction, traditional recycling and composting are producing known, current, quantifiable net energy savings and reductions in greenhouse gases, at significantly lower cost and with greater local job creation.

While some of these waste-to-energy combustion technologies may appeal to the goals and values of some communities, they also distract communities from instituting Zero Waste systems that are highest on the Highest and Best Use Hierarchy. The Department is committed to focus the journey towards Zero Waste on technologies that prioritize recycling and composting over combustion and landfilling. This

commitment requires careful evaluation of new technologies to ensure that the technology can be ranked higher on the Highest and Best Use Hierarchy in order to obtain financial and feedstock support from the City of Austin or the Department.

2.13 Other Core Business Services

The Department has “other core services” offered to the residents of Austin: Litter Control, Alley/Street Flushing, Street/Boulevard Sweeping, Dead Animal Collection, Brush Collection, and Bulk Collection. As the City of Austin continues to grow in population, technological advancements, and in various markets, there is an increased need for the Department to analyze and improve these core services to meet the needs of the community and the City’s Zero Waste goals. This analysis will allow the Department to:

- Enhance and improve existing customer service levels;
- Create new diversion activities to support Zero Waste goals and initiatives;
- Implement program changes to accommodate projected city population growth; and
- Incorporate program efficiencies to improve fiscal responsibility.

These core services and programs provide a cleaner community for Austin residents and an improved quality of life. Most of these services are provided to the community at large 7 days per week, 364 days per year.

Litter Control

Litter control services provided by the Department’s Litter Abatement Division include litter pick up, litter container management, and illegal dump clean ups. These services ensure cleaner streets, limits discarded materials from entering storm water systems, and present a cleaner image of the City to millions of visitors.

The Litter Collection program is inherently reactive to improperly disposed materials. The Department will explore new litter abatement measures with other City Departments and stakeholder organizations to develop proactive and preemptive means to prevent litter. Some of the policies to be explored include stronger enforcement of anti-litter ordinances, a public education program that focuses on behavior changes of visitors and residents, and a special event ordinance that strengthens requirements of event organizers to plan for, prevent, and manage litter in and around the event area.

The Department will continue to expand its placement of recycling containers adjacent to litter containers at all City departmental facilities and along targeted high volume public rights of ways. This will provide increased opportunities for the general public and visitors to the City to recycle while shopping, visiting parks, public buildings, and other City facilities.

As a pilot in 2011, the Department purchased and installed 20 solar powered trash compactors with recycling kiosks. If the pilot is deemed successful, the Department will invest in additional units for other high pedestrian service areas, including the downtown area and the entrance and exits to walking trails and bikeway trailheads. The Department will coordinate with other City departments to prioritize areas

currently serviced by the Department and/or serve as high volume routes such as frequently used event routes. The Department will also develop criteria to determine whether or not to expand litter control services into areas that are not regularly served by the Department.

Alley and Street Flushing

Alley/Street flushing washes contaminants from downtown alleys and roadways which limits the amount of discarded materials entering storm water systems, reduces exposure to human excreta which can be a medium for disease transmission, helps with odor and pest issues, and provides a cleaner atmosphere for those utilizing the CBD. Annual expenditures to provide this service are approximately \$30,000. The program is funded through the use of Anti-Litter Fees charged to Austin Utility customers.

Since many downtown alleys are used for deliveries and business services, the alley flushing is performed in the early morning hours before the start of the business day. Yet, every day, parts of the service area are blocked by parked vehicles preventing the crews from effectively cleaning all alley surfaces. The Department will develop and present to City Council a new city ordinance that prohibits parking between 3:00am and 5:00am for cleaning services downtown. After adoption of the ordinance, the City will install signs posting the parking restrictions and will coordinate with the Austin Police Department to help enforce the ordinance.

Alley cleaning is performed four mornings per week, yet downtown businesses have identified a strong need for seven day service. The Department will meet with stakeholders to evaluate options to provide seven day service. The discussion will include cost-recovery measures to ensure the program is adequately funded and staffed.

Street and Boulevard Sweeping

The Street Cleaning unit provides frequent street and boulevard sweeping throughout the entire City. The street sweeping system is designed to clean the gutters and limit contaminants from polluting Austin's creeks and drainage ways. Street sweeping allows for removal of discarded materials, litter, and dirt from streets and roadways for health, safety, aesthetic, and water quality reasons.

As most city streets are utilized for residential parking, the street sweeping services often encounter parked cars that block their efforts to clean the storm drainage areas near the street curb. The Department will develop and implement a public notice program to inform the residents when to clear the roadways for street sweeping. The Department will also explore better ways to route street sweepers, in an effort to reduce mileage on the road and reduce its carbon footprint.

Additionally, in response to increases in bicycle traffic, the Department is currently researching data to evaluate the feasibility of implementing a Bike Lane Sweeping Route. Currently, bike lanes are swept by the regular residential routes. However, the Department has been receiving frequent requests to sweep bike lanes between their regular schedules. The Department will coordinate with the Public Works Department's Neighborhood Connectivity Program to evaluate options for a monthly Bike Lane Sweeping Route

Dead Animal Collection

Dead animal collection is essential for the health, safety and welfare of the community by removing any offensive dead and decaying animal. Dead animal collection is provided on public rights-of-way throughout Austin and from the City's Animal Shelter. Dead animals are collected in a hermetically sealed vehicle and are taken to an area landfill for disposal.

Sometimes in the effort to remove a dead animal, staff discovers the animal alive and in need of emergency care. Staff will take measures to seek proper care for the injured animal. However, this activity removes the staff from their assigned list of duties. This service is inconsistent with the other services provided by the Department. The Department is interested in opening a dialogue with other entities to explore transferring or removing the collection program out of the Department.

Brush Collection

The Brush Collection program provides customers with a convenient and cost effective way to dispose and recycle large limbs and trees, supports environmental initiatives for green waste and prevents illegal dumping. The Brush Collection program offers twice a year curbside brush collection for the City of Austin residential customers as well as annexed areas for large brush, tree limbs, and trees. Brush that is collected is taken to the Hornsby Bend Composting Facility to be used as a primary feedstock in Dillo Dirt.

Changes and additions to the large brush collection program in the next few years will include two major initiatives:

- *Clean Austin* - an enhanced brush and bulk collection program for high need areas. High need areas are characterized by frequent resident turnover, high demand for bulk and/or brush collection services, and lack of organized neighborhood representatives. To date, the Department has identified 27 areas that meet these criteria. The Clean Austin program will enhance existing brush collection cycles where needed and offer a revised On-Call Service, previously named Out-of-Cycle collection.
- *Storm Debris Management* - Partnering with Austin Emergency Response Team to quickly respond to violent storms through Storm Debris tree and brush collection services. The National Weather Service has declared the Travis County and Austin Emergency Operations Communications Center as a Storm Ready community, prepared to respond quickly to hurricane or tornado events striking the area, and the resulting damaging winds and flooding. The Storm Debris Management team will be prepared to act on an emergency activation notice, capable of responding to and assisting residents to the removal of tree and brush debris from public right-of-ways, as well as other storm related debris. The Department will explore potential contractual relationships with private companies to provide brush shredding services in the event the collected material exceeds the capacity of City dedicated resources.

Bulk Collection

The Bulk Collection program offers twice a year collection for Department customers and annexed areas. This is a convenient and cost effective way for participating residents to dispose of items too large for trash and recycling collection. Bulk Collection provides an opportunity to remove items likely to attract or harbor mosquitoes, rodents, vermin, or disease-carrying pests and supports environmental initiatives for recycling/diversion and illegal dumping.

Changes and additions to the bulk item collection program in the next few years will include two major initiatives:

- Clean Austin - an enhanced bulk and brush collection program for high need areas (see description above). The Department will work closely with the Austin Apartment Association and the Austin Realtors Association in coordinating implementation of this new program.
- Reuse Austin - Partnering with non-profits for repair and reuse of discard items. The Department will make a stronger effort to recycle or reuse bulk items collected. The City will team with reuse and resale that are structured to collect and sell gently used furniture, building materials, and other reusable items to increase diversion of items currently landfilled.

Both the Clean Austin program and the Reuse Austin programs will require infrastructure improvements. The Austin Resource Recovery Program, located at the FM812 landfill, is intended to be a public drop-off of large bulky items, including tires, large appliances, and furniture. The Department will relocate the Resource Recovery Program to the Todd Lane Materials Recovery Facility/Transfer Station (MRF/TS). The repurposed MRF/TS will house the public drop-off service as well as the bulk collection and reuse program.

Operational Needs

The Department's operations will continue to require basic internal services that support its fleet of vehicles. To purchase and maintain vehicles, the Department contracts with Fleet Services for repair services and fuel. The Department also utilizes Fleet Services for a rotating purchase plan of vehicles, as older vehicles are retired due to age, wear and poor condition. Future diversion programs will require a different mix of vehicles, yet there will be a continued need for Fleet Services support.

In addition, the Department continues to seek a reduced carbon footprint. Efforts to green our fleet have offered the Department 19 new Compressed Natural Gas (CNG) vehicles in 2011, through a state grant to assist in fuel emission reductions. Future vehicles purchased for the Department will involve CNG and bio-diesel fuels. In addition, the Department will explore hybrids and all electric vehicles where applicable to its operations. As the CNG fleet increases, the Department anticipates the need for a North fueling station, to augment the current fueling station in Southeast Austin. These areas of expansion into greener fuels are addressed in the facility development recommended in this Master Plan.

An additional effort to reduce the Department's carbon footprint includes increased route efficiencies. Staff are investing in routing and GIS upgrades, to better analyze route structures and develop more

efficient travel patterns for the drivers. Facility development is planned to support a split in north-south routes to reduce mileage and thereby reduce the Department's carbon footprint. Future programs intended to support diversion activities will also be analyzed for route travel efficiencies.

Another operational support activity includes cart purchases and cart repairs. The Department anticipates additional cart needs through planned annexations and new housing subdivisions, as well as through cart replacement needs. A cart storage and repair facility is currently located at the FM812 landfill. Due to planned redevelopment of the landfill, cart repair and storage will be moved to the Todd Lane Transfer Facility.

2.14 Economic Development Opportunities

A key driver in the development of the Solid Waste Services Master Plan (Master Plan) is the opportunity to create new green jobs and site new green businesses in Austin through Recycling Economic Development. The City has the ability to attract new businesses to Austin, including reuse and recycling non-profit organizations and private sector entrepreneurs, re-processors, secondary manufacturers and other businesses that have the ability to use recovered materials in their manufacturing processes.

Providing green jobs and local economic development is a key opportunity identified in the Master Plan. The Solid Waste Services Department (Department) will provide funding for a new staff member in the EGRSO who will be responsible for retaining and attracting reuse and recycling industries to Austin. Through this new position, EGRSO will create the Recycling Economic Development program, which will be responsible for undertaking the following initiatives:

- **Locating Resource Recovery Small Businesses-** assisting small businesses capable of using discarded materials in their manufacturing process to locate in Austin.
- **Supporting By-Product Synergies** – assisting industrial businesses and manufacturers in making waste-pairings where the discarded by-products from one company can be the feedstock for another company.
- **Implementing a Business Waste Reduction Assistance Program** - to encourage the local business community in waste reduction efforts in support of the Austin Zero Waste goals.
- **Support the Development of a Green Business Leaders Advisory Council** – to seek advice from the business community on practical implementation of waste reduction and diversion programs in the business community. The Office of Sustainability will take the lead with this advisory body, in partnership with the Department and the EGRSO.
- **Supporting Incentives to Attract Recycling Re-processors** - assist in attracting new secondary materials processors to Austin to provide markets for recovered materials generated in the Central Texas region.
- **Eco-Business Park & Eco-Industrial Park** – assist in the development of Eco-Business Parks and

Eco-Industrial Parks capable of processing recovered materials generated in Austin. Encourage the development of eco-industrial parks in Austin that would co-locate major re-manufacturing activities next to processors of recycled materials. The City may support these efforts through an inventory of materials generated throughout the region, and the recruitment of businesses and industries to use these locally generated resources.

- **Brownfield Redevelopment Program** – assist in the redevelopment of land that has been environmentally remediated through the Brownfield Redevelopment Program.

2.15 Public-Private Partnerships

Public-private partnerships are services funded and operated through partnerships between government and one or more private sector companies. There are several opportunities for public-private partnerships that the Department can engage in to encourage operational efficiencies and support diversion activities.

The Department collects approximately 25 percent of municipal solid waste (MSW) generated within the City through its operations and contracts. Approximately 68 percent of materials generated in the City are collected by private sector service providers and private recyclers operating in the City. The remaining 7 percent of materials generated in the City are self-hauled to landfills and recycling centers.

Most of the reuse, recycling, composting and landfill infrastructure in the region is owned and operated by private sector service providers and other government agencies. Therefore, the City relies on partnerships with private sector service providers to provide the collection system and processing infrastructure to meet the needs of commercial generators.

There are several opportunities for the City to develop Zero Waste infrastructure through public-private partnerships. Private sector initiatives are also expected to be undertaken in response to City policies.

- **Materials Recovery Facilities for recyclables** – Developed by the private sector in response to the Universal Recycling and Composting Ordinance and through contracts with the City for City-collected materials. The Department recently signed long-term agreements with two recycling processors to support the single-stream recycling collection program.
- **Composting facilities for organics** – Developed by the private sector in response to the Universal Recycling and Composting Ordinance and through contracts with the City for City-collected materials. The City has recently increased organics processing capacity at the Hornsby Bend Biosolids Management Plant.
- **Construction, demolition, and deconstruction (CD&D) debris process facilities** – Developed by the private sector in response to the Construction and Demolition Debris Ordinance.
- **Eco-Depots and private Resource Recovery Centers** – Managed by private sector or non-profit organizations independently or through agreements with the City for hard-to-recycle materials such as carpet and paint.
- **Eco-Industrial Parks** – Developed by the private sector independently or with support from the City's Economic Growth and Redevelopment Services Department.

2.16 Policies

Zero Waste policies, including ordinances, incentives, bans, take-backs, purchasing specifications, and advocacy, allow the City to increase diversion and decrease waste. Zero Waste policies are extremely important because they influence all the materials that are generated in the City, including waste and material streams not directly handled by the Solid Waste Services Department (Department). By setting an example through consistent policy setting, the City can achieve Zero Waste citywide and lead the region and the state in diversion activity. This section describes the policies that will be implemented to achieve the City's goals, based on input received through the public outreach process.

Universal Ordinances

Universal ordinances that apply to all waste generators including residents, visitors, institutions and businesses can be effective strategies for achieving Zero Waste. By establishing a Zero Waste framework and policy direction, private sector investment in collection systems and Zero Waste infrastructure can be made with relatively little direct cost to the City. Entrepreneurs and innovators can compete to provide services to generators based on performance and cost. The Department can support these efforts through technical assistance, outreach and education, and reinforcement of desired behaviors. The following initiatives are planned for implementation over the planning period of this Master Plan:

- Universal Recycling and Composting Ordinance
- Single-use Products and Packaging Ordinance
- Take-Back Ordinance
- Extended Producer Responsibility Initiatives
- Hauler Registration Ordinance
- Refundable Deposit (Bottle Bill)

Universal Recycling and Composting Ordinance

The goal of this initiative is to phase in universal recycling and composting requirements to all waste generators, both residential and commercial, within the City of Austin by FY2016.

The City Council adopted Phase 1 of the Universal Recycling Ordinance (URO) on November 4, 2010, which requires all multifamily buildings, office buildings, and institutional properties in the City to recycle. Phase 1 of the ordinance will be phased in over four years, beginning in October 2012. The Department is currently (FY2011) engaging stakeholders to develop the rules that will guide program implementation.

In URO Phase 2, the City will add a citywide policy for diverting compostable organics from landfills. Food scraps and compostable paper account for about 30 percent of citywide disposal. URO Phase 2 will evolve into the Universal Recycling and Composting Ordinance (URCO) and will be fully implemented by FY2016.

Phase 3 of the URCO will include single family residents in the requirement to recycle and compost and will be fully implemented by FY2016.

Single-use Products and Packaging Ordinances

The goal of this initiative is to reduce single-use and non-recyclable products and packaging. To reduce discards that currently have limited recycling markets or uses, the City will consider product and material bans or other requirements or incentives.

Plastic bags and expanded polystyrene are two materials that are increasingly targets of product bans around the country. These materials are not biodegradable and have life spans of hundreds of years. These materials negatively impact the collection system and, when littered, negatively impact the environment. The City will consider developing ordinances with the goal of reducing or eliminating consumption and generation of the following products:

- Single-use bags;
- Non-recyclable, non-compostable take-out containers; and
- Single-use beverage containers.

Take-Back Ordinance

The goal of this initiative is to require brand owners to take back non-recyclable, non-compostable products by considering a take-back ordinance FY2015.

Producer responsibility is a key strategy for achieving Zero Waste. Take-back requirements shift the costs of garbage from taxpayers to brand owners and producers. They also create a powerful economic incentive to redesign products and substantially reduce the use of toxic materials. Local take-back ordinances have focused on hard-to-handle materials such as pharmaceuticals and household hazardous waste. The City will pursue local initiatives if the state is unable to enact EPR framework legislation or product-specific legislation. The City will also collaborate with its regional partners to target non-recyclable, non-compostable materials or hard-to-handle materials across the region. The City will consider the following problem materials for producer take-back:

- Materials that cannot be reused, recycled or composted and single-use items; and
- Other materials (e.g., pharmaceuticals, sharps, batteries, fluorescent bulbs).

Statewide Refundable Container Deposit Legislation (Texas Bottle Bill)

The goal of this initiative is to provide support to statewide refundable deposit legislation by 2015 with full statewide implementation by 2016. The purpose of a statewide Refundable Container Deposit Bill is to establish a deposit/refund program to decrease the volume of aluminum, glass and plastic beverage containers in our waterways, along our roadways and public lands. A deposit/refund system supported by the Department and City of Austin should combine financial incentives and convenient redemption centers. Along with curbside collection, a bottle bill should ensure the maximum number of beverage containers for recycling. A Texas Bottle Bill should also establish a funding base to create jobs locally and throughout the state in the recycling industry and bring processors and manufactures into our state. A

bottle bill supported by the Department and the City should also reduce Texans' carbon footprint by increasing the supply of high quality materials for recycling to help replace the practice of using virgin material to produce new products.

Extended Producer Responsibility Initiatives

The goal of this initiative is to provide support to statewide Extended Producer Responsibility initiatives and to consider local initiatives, including a local EPR policy in 2015 and a local producer responsibility ordinance in 2017.

Extended producer responsibility (EPR) initiatives call for the City to take an active role in advocating for legislation requiring product manufacturers, retail establishments, wholesale distributors and other appropriate entities to take back certain products or packaging that currently are difficult to recycle or harmful to dispose. The City is actively engaged with the Texas Product Stewardship Council (TxPSC) and will provide more staff resources to that agency to increase its effectiveness. EPR initiatives are most effective at the state level, but the City could also initiate local legislation, if statewide efforts do not succeed. The role of the City will be to:

- Adopt an EPR Policy;
- Provide support to the TxPSC to obtain 501c3 (education) and/or 501c4 (lobbying) status;
- Support the development of EPR framework legislation - one law to be established as policy by the state legislature that gives the authority to state agencies to address multiple products over time;
- Consider local producer responsibility ordinance; and
- Participate in national and international dialogues.

2.17 Communications Plan

The overarching goal of the communications plan is to raise awareness among Austinites about the City's Zero Waste goal and to motivate them to change their behavior to achieve that goal. Specific, measurable objectives will be developed based on market research. By assessing the community's readiness to join the journey to Zero Waste, the Department's communications activities will provide strategies to guide Austinites through the stages of behavior change (pre-contemplation, contemplation, preparation, action and maintenance).

The Department shall develop a comprehensive communications plan that corresponds with the long-term Master Plan. The purpose of the plan will be to define measurable objectives and a strategic implementation approach to guide communicators and others in designing, preparing and executing strategic communications. This plan will be research-based to ensure effective targeting of audiences and development of key messages, as well as to measure a program's success over time.

As the Department continues its Zero Waste journey, the communications approach will be one that enables a forum for community engagement and education developing a catalyst for action. These efforts will be geared toward providing opportunities for residents and businesses in all parts of the City to participate. To move forward on this journey, the City shall broaden the involvement to hear from

everyone, from all walks of life. The Department will foster a place for mixing ideas where people can collaborate to develop solutions that meet the needs of the whole community.

The Department commits itself to a robust community engagement program across all initiatives. That program will conform with standards adopted by the International Association for Public Participation, which call for public participation that enables all who are affected by departmental decisions to be involved in the decision, to influence it, and to participate in fair, safe, accessible, and meaningful ways.

Public education and outreach can take a variety of forms including written materials, visual materials and events. SWS shall enhance the existing public education program to ensure a comprehensive, robust program. In developing these programs, staff will evaluate the investment of time and labor, the financial cost and the effectiveness of each strategy. These programs will become a regular part of the Austin community and will evolve to meet the needs of the City. Some examples of public education activities include youth education, speakers' bureaus and an annual report.

SWS currently provides two free classroom presentations for 2nd and 3rd grade students in the Austin Independent School District (AISD) elementary schools. These presentations introduce students to the concepts of recycling, waste reduction and zero waste, and correspond with the Texas Essential Knowledge and Skills (TEKS) requirements. Staff desires to expand the youth education program by developing a new scope of work to be competitively bid through City's process.

SWS will prepare an annual report to provide the Austin community with updates on programs, services and progress toward the Zero Waste goal. This document will report on how well SWS is doing in meeting the specific objectives outlined in the Master Plan and will include but not be limited to the following:

- Departmental awards and accomplishments
- Brief background and history on the Department
- Program highlights – the latest and greatest
- Community partnerships and research
- Operational and administrative overviews

The annual report will be developed and distributed widely, including other City Departments, the Mayor and Council, as well as the general public. The report will be printed for distribution, posted on the City's website and content delivered at various community engagement opportunities.

2.18 Financial Responsibility

The City Manager, the Financial and Administrative Services Department and the Department Directors provide oversight to ensure consistency in fiscal policies throughout the City. The Finance Division of the Department has primary responsibility for managing the Department's finances. Financial management entails updating and maintaining the Department's business plan, generating a five-year financial forecast and producing the annual operating budget, which includes estimating expenditures, projecting

revenues and developing the rate structure necessary to support the Department's operations. Current and historical budget information may be viewed online at <http://www.ci.austin.tx.us/budget/default.htm>

The Business Plan is used to communicate financial and operational plans to City staff, City Council and Austin residents and is the beginning step in the creation of the Annual Budget. The Finance Division prepares the Business Plan for each fiscal year (October 1st through September 30th) based upon input and guidance from the Department Director, executive team and managers within the Department with oversight from the Budget Office and City Manager.

Five-year forecast projections are used as a tool to provide the City Manager and City Council with an early financial picture of the Departments progress towards its long-range goals and how that progress will affect our financial structure over the next five years. It also serves as the starting point in developing the annual operating budget.

The final document prepared in the Budget process is the Annual Operating Budget. This document details the organization, budget and performance goals for the Department for the next fiscal year as well as projections for the current fiscal year's end.

Beginning in 2012, the Department Director will present an Annual Report to Austin residents and stakeholders during Earth Week in April of each year.

Expenditures

The expenditure categories identified in the Annual Operating Budget fund summary are Program Requirements, Transfers Out and Other Requirements.

Program Requirements include expenditures, listed by major program, necessary to support the policies, plans and infrastructure required for daily operations. Current programs are described below:

Brownfields Remediation - The U.S. Environmental Protection Agency (EPA) defines Brownfields as real property, the expansion, redevelopment or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant or contaminant. Cleaning up and reinvesting in these properties protects the environment, reduces blight and takes development pressures off of green spaces and working lands. Expenses for Brownfields Remediation are included in this category.

Collection Services – Collection Services include expenses for operations and maintenance, including employees and equipment for garbage, recycling and yard trimmings collection, brush and bulk collection, including processing costs for all activities. Also included are any service contracts that the Department has with private haulers.

Litter Abatement – Litter Abatement includes those expenses for litter control, street sweeping and the Household Hazardous Waste facility.

Operations Support – Operations Support includes expenses for routing, cart and container maintenance, the service request center, billing services and the new quality control unit.

Support Services – Support Services includes expenses related to purchasing, financial monitoring and budgeting, administration and management, information technology (IT) support, human resources, facility, public information and safety related items.

Waste Diversion – The Waste Diversion Program includes expenditures for the following: Zero Waste program development, business outreach, seasonal programs (Christmas tree recycling, shred days, etc.), the Recycling Center and the Resource Recovery Center. This includes expenditures related to the new Universal Recycling Ordinance and the new policies, programs and infrastructure for Zero Waste implementation as described in this *Master Plan*.

Interfund Transfers and Other Requirements are two items included in the overall Department’s Fund Summary for budgetary purposes. Although Interfund Transfers can be incoming, the majority are “transfer outs,” which are expenses to the Department. Transfers out are made to the Sustainability Fund, General Obligation Debt Service Fund, Capital Improvement Projects Fund, Communications and Technology Management Fund, Combined Transportation Emergency & Communications Center (CTECC) Support, and Environmental Remediation.

Other Requirements are those expenses not listed under Program Requirements, including Workers' Compensation, Liability Reserve Fund, Insurance - Fire/Extended Coverage, Additional Retirement Contribution, Utility Billing Support, and 311 System Support.

Cost of Service Study

In an effort to calculate necessary revenues to support current services as well as new Zero Waste programs, the Department has performed a cost of service study that segments all expenditures between two major revenue fees; Cart Fees and the Anti-Litter Fee. Major programs and Services have been re-classified to support the elements of this Master Plan. Administrative expenditures and payroll requirements are pro-rated through the major program categories noted below.

Under Development – to be discussed at Sept 14th SWAC Meeting

Cart Fees: Expenditures with added Diversion Programs	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20
Trash Collection								
Recycling Collection								
Organics Collection								
Bulk/Brush Collection (Clean Austin)								
Eco Depots (Reuse Austin)								

Cart Fees: Expenditures with added Diversion Programs	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20
Total Program Expenses								

Under Development – to be discussed at Sept 14th SWAC Meeting

Anti-Litter Fee: Expenditures with added Diversion Programs	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20
Litter Abatement								
Street Sweeping								
Alley Flushing								
HHW (current program)								
Dead Animal Pickup								
HHW Expanded Programs								
HHW North Facility								
Brownfield & Recycling Economic Development								
Landfill Redevelopment								
Total Program Expenses								

The projected expenditures noted above are calculated with current estimates of program implementation expenses as well as estimated personnel and equipment needs. These estimated program expenditures will be re-evaluated each year through the normal budgetary processes. All program expenses displayed in this master plan as reasonable estimates, yet City Council will be presented with a new program budget each year for adoption. Therefore, adoption of this Master Plan does not imply adoption of the identified program expenditures.

Revenues

Revenues are generated through Utility Service Fees, or curbside Collection Fees, include the garbage cart fee and base customer fee for residential and commercial customer accounts serviced by the Department. The cart fees are assessed according to cart size (21 gallon, 32 gallon, 64 gallon, and 96 gallon). Rates for larger cart sizes have recently been set higher than the proportional gallon increase in order to discourage waste and increase diversion towards the City's goal of Zero Waste. All fees are collected according to the Council-approved fee schedule. Current and projected rates (through FY 20) are shown in the schedule below, as estimates for generated required revenues to fund all Department responsibilities.

The Anti-Litter Fee covers operational costs for litter control, street sweeping and the Household Hazardous Waste disposal facility. New zero waste expenditures to be covered by the Anti-Liter Fee includes The residential Anti-Litter Fee is assessed to any residence that has an active utility account

and includes all multi-family units. The fee is charged to all accounts regardless of occupancy. The Department also charges a commercial Anti-litter Fee to businesses within the service area with active utility accounts.

Proposed New Fee Structure

The Department proposes a new cart fee structure that better reflects the Pay-as-you-Throw (PAYT) concept. PAYT programs, also known as unit-based pricing or variable-rate pricing, provide a direct economic incentive for individuals to reduce the amount of waste they generate. Under PAYT, households are charged for waste collection based on the amount of waste they throw away—in the same way that they are charged for electricity, gas, and other utilities. As a result, residents are motivated not only to recycle more, but also to think about ways to generate less waste in the first place.

The proposed fee will be based on a per gallon fee, so that the resident pays for the number of gallons of trash service provided weekly. An example is 50 cents per gallon trash service, yielding a monthly fee of \$48.00 for 96 gallon trash, \$32.00 for 64 gallon trash, \$16.00 for 32 gallon, and \$10.50 for 21 gallon service. Although this is simply an example of the fee structure, it demonstrates the stratified rate fees paid based on the amount of trash collected at the curb. Annually, the Department will calculate all program expenditures related to household services provided and calculate a per gallon fee that is charged based on the monthly trash volume. Although the fee is based on trash service, this monthly charge provides full residential service including trash, recycling and organics collection, as well as several waste diversion programs.

Likewise, the Department has performed a cost of service study for programs funded through the Anti-Litter Fee. This flat-rate monthly fee provides revenues for litter abatement, street sweeping, alley flushing, household hazardous waste, dead animal collection, and expanded waste diversion programs that benefit the entire community.

Proposed Residential Rates

Under Development – to be discussed at Sept 14th SWAC Meeting

	CART SIZE	BASE RATE	CART CHARGE	ANTI-LITTER FEE	TOTAL	\$ INCREASE
Fiscal Year 2011	32 gallon	\$8.75	\$4.75	\$5.00	\$18.50	N/A
	64 gallon	\$8.75	\$10.00	\$5.00	\$23.75	N/A
	96 gallon	\$8.75	\$19.20	\$5.00	\$32.95	N/A
Fiscal Year 2012	21 gallon	\$8.75	\$4.00	\$5.00	\$17.75	new service
	32 gallon	\$8.75	\$4.75	\$5.00	\$18.50	\$0.00
	64 gallon	\$8.75	\$10.00	\$5.00	\$23.75	\$0.00
	96 gallon	\$8.75	\$22.20	\$5.00	\$35.95	\$3.00

	CART SIZE	BASE RATE	CART CHARGE	ANTI-LITTER FEE	TOTAL	\$ INCREASE
Fiscal Year 2013	21 gallon					
	32 gallon					
	64 gallon					
	96 gallon					
Fiscal Year 2014	21 gallon					
	32 gallon					
	64 gallon					
	96 gallon					
Fiscal Year 2015	21 gallon					
	32 gallon					
	64 gallon					
	96 gallon					
Fiscal Year 2016	21 gallon					
	32 gallon					
	64 gallon					
	96 gallon					
Fiscal Year 2017	21 gallon					
	32 gallon					
	64 gallon					
	96 gallon					
Fiscal Year 2018	21 gallon					
	32 gallon					
	64 gallon					
	96 gallon					
Fiscal Year 2019	21 gallon					
	32 gallon					
	64 gallon					
	96 gallon					
Fiscal Year 2020	21 gallon					
	32 gallon					
	64 gallon					
	96 gallon					

The projected fees noted above are calculated to support current estimates of program implementation expenses as well as estimated personnel and equipment needs. These estimated program expenditures will be re-evaluated each year through the normal budgetary processes. All projected fees displayed in this master plan are reasonable estimates, yet City Council will be presented with a new program budget

and fee structure each year for adoption. Therefore, adoption of this Master Plan does not imply adoption of the identified proposed rates.

2.19 Implementation Schedule

As programs are staged for implementation over the course the next decade, the following schedule displays the projected dates of implementation based on available resources and the synergetic additive effects of programs, policies, and infrastructure development:

Implementation Schedule under Development

2.20 Diversion Calculations

Proposed programs displayed in this Master Plan are intended to increase diversion of material from landfilling. Diversion calculations are projected in tons over a period of years, assuming increasing public participation and capture effectiveness. Below is a representation of anticipated diversion through the proposed programs, policies, and infrastructure developments:

Diversion Initiatives - CoA Controlled (tons)	FY09 (Base)	FY15	FY20	FY25	FY30
Reuse Collection					
Reuse - Eco Depots & Teachers Reuse Center	0	500	2,000	5,000	10,000
Reuse Austin - Expanded Reuse Entrepreneur Opportunities	0	500	5,000	10,000	15,000
Recycling Collection					
Expanded Single-Stream Recycling – Residential	44,446	75,000	80,000	85,000	90,000
Contracted Recycling Services (plus URCO) - Commercial & Multi-Family	37,450	50,000	75,000	80,000	85,000
Contracted Recycling Services (plus URCO) - CBD & City Buildings	552	35,000	50,000	55,000	60,000
Clean Austin - Expanded Bulk Collection & Recycling	238	1,000	4,000	10,000	15,000
Public Area Recycling Containers	0	400	1,000	2,000	4,000
Event Recycling Ordinance	0	250	500	1,000	1,500
Organics Collection					
Compost Incentive Program	0	1,000	2,000	3,000	4,000
Full City-wide Organics collection (Yard Trimmings, Brush, Food Scrap)	28,175	30,000	50,000	75,000	80,000
Storm-Ready Austin - Storm Debris Management Program	0	6,000	10,000	10,000	10,000
Household Hazardous Waste					
South Austin HHW Facility	114	150	200	500	1,000
North Austin HHW Facility	0	150	200	500	1,000
Expand Door-to-Door & Retail Take-back Collection	0	50	100	250	500
Producer Responsibility Initiative	0	0	50,000	75,000	100,000
Total City-Hauled Diversion - Reuse, Recycling, Composting, HHW	110,975	200,000	330,000	412,250	477,000
Projected City-Hauled Waste Disposal	249,525	200,000	110,000	72,750	53,000

Projected City-Hauled Waste Generation	360,500	400,000	440,000	485,000	530,000
City-Hauled Diversion Rate	30.8%	50.0%	75.0%	85.0%	90.0%





Diversion Initiatives - Private Sector Controlled (tons)	FY09 (Base)	FY15	FY20	FY25	FY30
Waste Reduction					
Waste Reduction Assistance Program (WRAP)	0	5,000	10,000	15,000	20,000
Waste Pairing (By-Product Synergies)	0	10,000	30,000	35,000	40,000
Recycling Collection					
C&D Debris Ordinance: Development, Implementation, Enforcement	0	50,000	100,000	150,000	180,000
Commercial & Multi-Family Recycling (plus URCO impacts)	334,258	450,000	700,000	850,000	1,000,000
Glass Collection Pilots for Multi-Family and Commercial sites	0	5,000	10,000	20,000	30,000
Expanded Multi-Family Drop-off Recycling Services	0	30,000	100,000	140,000	150,000
Organics Collection					
Commercial & Multi-Family Organics (plus URCO impacts)	0	50,000	100,000	150,000	200,000
Total Private-Hauled Diversion - Reuse, Recycling, Composting, HHW	334,258	600,000	1,050,000	1,360,000	1,620,000
Projected Private-Hauled Waste Disposal	750,517	600,000	350,000	240,000	180,000
Projected Private-Hauled Waste Generation	1,084,775	1,200,000	1,400,000	1,600,000	1,800,000
Private-Hauled Diversion Rate	30.8%	50.0%	75.0%	85.0%	90.0%

Diversion Initiatives - City-wide Totals Controlled (tons)	FY09 (Base)	FY15	FY20	FY25	FY30
Projected Total Austin City-wide Diversion	445,233	800,000	1,380,000	1,772,250	2,097,000
Projected Total Austin City-wide Waste Disposal	1,000,042	800,000	460,000	312,750	233,000
Projected Total Austin City-wide Waste Generation	1,445,275	1,600,000	1,840,000	2,085,000	2,330,000
City-wide Diversion Rate	30.8%	50.0%	75.0%	85.0%	90.0%

The *Master Plan* is designed to be a living document with annual updates, and program assessments every five years. Material diversion will be calculated annually with available data. A full city-wide diversion assessment will be contracted every five years, to measure progress toward the five-year benchmarks as well as the City Council adopted diversion goals.

Section 23 Metrics and Measurement

Historically, there have been inconsistencies and significant challenges when measuring waste reduction and diversion. These measurement issues revolve around four metrics: waste diversion, waste reduction, recovered material streams, and public service effectiveness. The central measurement issues in each metric are *diversion activity*, *waste disposal reduction*, *waste stream composition* and *service expectations*. The Department is committed to measuring its progress toward service objectives including performance measures and waste diversion measures.

Metric of Waste Diversion		Measurement of diversion activity <i>Percent of waste generated diverted</i>
Metric of Waste Reduction		Measurement of waste disposal reduction <i>Decreased tons landfilled</i>
Metric of Material Streams		Measurement of waste stream composition <i>Percent of Marketable Materials</i>
Metric of Public Service		Measurement of service expectations <i>Level of Customer Satisfaction</i>

23.1 Diversion Goals

Success begins with the definition of the desirable end-state in mind – specific, actionable, measurable goals achieved within a given time span.

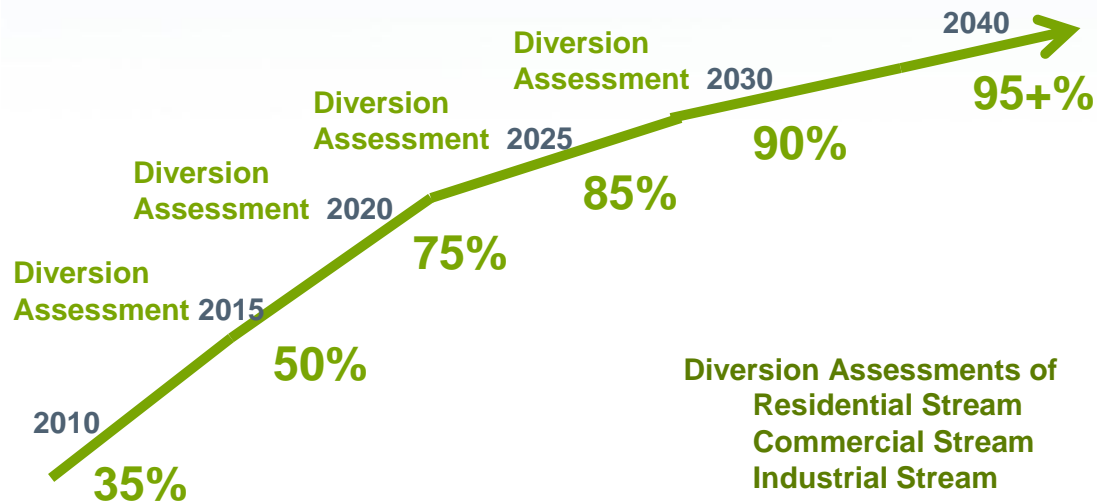
The City Council adopted *Zero Waste Strategic Plan* (2009) set the minimum standards for success as the following diversion goals:

- Reducing per capita solid waste sent to landfills and incinerators by 20 percent by 2012;
- Diverting 75 percent of waste from landfills and incinerators by 2020; and
- Diverting 90 percent by 2040.

The Department *Master Plan* strives to surpass those minimum standards by establishing the following diversion goals set to a time horizon:

- 50 percent by 2015
- 75 percent by 2020
- 85 percent by 2025
- 90 percent by 2030
- 95+ percent, working towards Zero Waste by 2040
- Restorative Economy by 2050

Zero Waste Diversion Goals



23.2 City-Wide Waste Stream Diversion Goals

The Department's diversion goals are based on the citywide generation of discarded materials, including materials generated by residents, commercial businesses, industries, institutions, and visitors. The Solid Waste Services Department handles a portion, about 25 percent, of materials generated in the City and diverted about 37 percent these City collected materials from landfills in fiscal year 2010. The diversion goals of the city involve all solid waste streams generated from within the City, regardless of who collects and hauls the material. Thus, it is extremely important that these goals are embraced and actions implemented throughout all sectors of the City.

The Zero Waste policies and programs identified in the *Zero Waste Services Plan* are slated for implementation in the short-term (2015) and medium term (2020). Most of the Zero Waste infrastructure will be developed within those time horizons. Based on future research and collaboration with its academic partners, and other Zero Waste communities, the Department may identify alternative methods for reaching Zero Waste. While planning and implementing its Zero Waste policies and programs, the Department will monitor successes and seek out new opportunities to innovate, advance, and further develop Zero Waste policies. The *Master Plan* is designed to be a living document with annual updates, program assessments every five years, and detailed implementation steps undertaken by Department staff as well as community partners.

By 2050, the Department will contribute to a restorative economy. The concept of a “restorative economy” was coined by Paul Hawken and is exemplified in the following quote:

In a restorative, “least cost economy,” we move to that system of agriculture, forestry, transportation, construction, and communication that has the least cost to the environment... In a least-cost system, those resources, our “natural capital,” are valued at their true replacement cost. Instead of competing to produce the cheapest goods in terms of price, we compete to produce the goods and services we need according to which have the lowest impact on those resources, and thus the lowest cost to current and future generations.¹

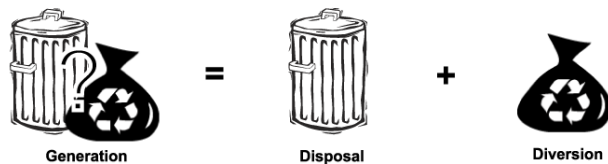
The City’s ultimate vision is to move beyond Zero Waste systems to an economy based on maximizing the value of goods and services. This is the Department’s path towards sustainability and it’s efforts toward reducing the impact of our ecological footprint on the environment.

23.3 Metrics of Waste Diversion: Measurement of diversion activity

Ultimately, the effectiveness of zero waste efforts is measured by the amount of material diverted to secondary uses and the reduced amount of materials sent to landfills for disposal. As the *Master Plan* is implemented, tracking and reporting progress toward achieving diversion targets is critical to an effective program. Investments should be based on quantifiable measures that indicate that these activities produce the most significant diversion results. Measuring results requires tools and methods to accurately estimate the diversion of materials sent to the landfill through recycling, reuse, or source reduction initiatives as they relate to the total amount of municipal solid waste generated.

Disposal includes waste sent to landfills, incinerators, waste-to-energy facilities and other disposal facilities. Diversion includes waste prevention activities and material sent to recyclers, composting systems, reuse facilities, and other secondary use options. Waste generation is defined as disposal plus diversion. In a generation-based measurement system, disposal and diversion are measured and added together to determine generation.

When measuring the diversion rate, it is important to have adequate data to document “Total Tons of Waste Generated” every five years. A full measurement of the entire waste stream, including disposal and diversion activities, involves an inventory of all points of generation. This inventory can be systemized through cooperation of haulers, recyclers, and disposal facilities. The over-all generation of wastes can be displayed in this manner:



¹ Excerpted from *The Restorative Economy* by Paul Hawken <http://www.well.com/user/suscon/esalen/participants/Hawken/statement.html>

Generation and Diversion Projections

To project discard generation through 2050, the current generation rate was estimated by adding the current disposed tons and the current diversion tons and projecting them through 2050 using estimated growth rates. The generation rate is calculated using the following formula: **Generation = Disposal + Diversion.**

Fiscal Year 2009 (October 1, 2008 through September 30, 2009) tonnage estimates were used as the base year. FY '09 was the most recent complete year of data available at the time of the estimate. The base year generation figures for FY '09 were projected forward to 2030 by using population growth information from the City's demographer.

The Residential Sector growth rate was estimated using the City's population growth rate including planned annexations. The Commercial and Industrial growth rate was estimated using the Travis County population growth rate to account for the daytime population in Austin.

City-wide Diversion Rate Calculation

The diversion rate is calculated using the following formula:

$$\frac{\text{Total Diverted Tons}}{\text{Total Diverted Tons} + \text{Total Disposed Tons}}$$

Diverted Tons includes all discarded materials diverted from disposal, including reuse, recycling, and composting. Disposed Tons includes all discarded materials disposed in landfills.

Estimated Tons of MSW Collected by the Department

The overall diversion rate for Department collected and hauled tons in FY '09 was approximately 31 percent. 111,000 tons were diverted and 249,500 tons were disposed.

Estimated Tons Collected through the Private Sector

The overall diversion rate for Private Sector collected tons in FY '09 was also estimated to be 31 percent. 334,300 tons were diverted and 750,500 tons were disposed.

A more detailed description of the methodology for estimating the City's generation, diversion and disposal is included in the *Needs Assessment Technical Memorandum*.

Overview of the Diversion Model



Tracking Achievement of Diversion Goals

To track diversion and disposal tons, the Department will be able to monitor performance from:

- Department programs – where tons are tracked directly;
- Service provider reports – pursuant to the new Universal Recycling and Composting Ordinance; and
- Generator reports- pursuant to the New Green Events and C&D debris ordinance.

For some policies and programs, the Department will have to rely on diversion and disposal estimates. The direct effect of these policies and programs serve to enhance the Department and private sector programs, but cannot be quantified separately. The monitoring approach for each of the new Zero Waste initiatives is summarized below.

Monitoring Performance by Zero Waste Initiative

Department Program Reports	Service Provider Reports	Generator Reports	Estimates Only
Recycling collection Organics collection Bulk items collection Brush collection HHW collection Eco-Depot collection Resource recovery center	Universal recycling and composting ordinance required reports City Department diversion from contract reports Private sector resource recovery centers	Green Events ordinance required reports Construction and demolition debris ordinance required reports	Rate structure incentives Extended producer responsibility initiatives Composting incentives Recycling Economic Development

23.4 Metric of Waste Reduction: Measurement of waste disposal reduction

The effectiveness of Zero Waste efforts can also be measured by the amount of material disposed to landfills or other disposal facilities. As the *Master Plan* is implemented, waste reduction tracking can be difficult to measure. The absence of waste reduction is best measured through waste disposal. Conversely, measuring a reduction in waste disposal can measure waste reduction efforts. Measuring waste reduction requires tools and methods to accurately estimate materials management related to disposal reductions.

Disposal Index

The concept of a landfill disposal index was presented by Dr. Nicholas Themelis of Columbia University in 2009. This index measures tons sent to area landfills per capita, inferring that fewer tons per capita creates a more sustainable solid waste system. As Zero Waste systems require a materials management approach, a modification of this measure is required. The Department proposes a new per capita measure of waste sent to landfills, incinerated, or disposed of by any other means, simply called the Disposal Index.

The disposal index is defined as the quantity of solid waste generated in a community that is disposed in landfills, incinerated, or disposed by other means, divided by the base population. The disposal index should be reported every 5 years, through a waste-shed analysis of tons disposed from the City, measured on a per-capita basis. A separate disposal index can be calculated for municipal solid waste, commercial solid waste, and construction-and-demolition waste. The disposal index can offer a better understanding of the effectiveness of waste reduction and recycling programs targeted toward these waste streams.

Waste-Shed Analysis

A waste-shed is a designated region where a large majority of waste generated in that region is disposed at disposal facilities within that region. There are two ways to evaluate a community's disposal volumes within a regional waste-shed. The first waste-shed analysis is the tracking of all waste generated within a region and the determination of where it is disposed. A flow chart represents the direction and volume of each community's waste hauls. The resulting flow schematic displays a self-contained region of generated waste streams with designated regional disposal facilities. The TCEQ charting of waste flows indicates a 33-county waste shed for Central Texas.

A second analysis of a waste-shed involves the specific tracking of wastes generated from within the City of Austin to disposal facilities. A thorough tracking of community-generated waste flows can offer the disposal tonnage statistics needed for calculating the disposal index. This involves the tracking of municipal, commercial and construction debris waste disposal. To accurately measure disposal tonnage, waste origin must be identified at the scales of the receiving disposal facility.

Waste origin information is essential in determining the community's disposal amounts. In some states, solid waste facility operators are required to obtain waste origin information on all loads delivered by

residential and commercial haulers. Texas does not have such a requirement. Thus, the Department will conduct a waste-shed analysis every five years, including waste tracking to disposal facilities. This analysis will be coordinated with the Departments 5-year diversion assessment study.

23.5 Metric of Material Streams: Measurement of waste stream composition

While estimates of waste disposal composition have been published by the USEPA, information on the composition of wastes generated from within Austin and entering landfills is more diffused and uncertain. Information on the composition of waste sent to landfills is important to monitor the effectiveness of diversion programs. Waste composition studies are used to assist in planning, policy development, and infrastructure sizing decisions for various facets of a zero waste program.

The most widely used methods for waste characterization is the site-specific sampling via sorting and weighing refuse by category. A standard method for determining waste composition by sorting has been published in ASTM D 5231-92. The ASTM method notes that the number of samples should be defined based on statistical criteria; load selection for sampling should be randomized and performed over a standard collection period and; the initial sample should weigh approximately four times the subsample that will be sorted.

Material Composition Studies

As a means toward better understanding the current waste disposal streams, the Department and the University of Texas at Austin (UT-Austin) may enter into an inter-local agreement to perform various waste audits. A zero waste consultant and campus interns may be hired through this agreement to perform the following services:

- Assess information gained from previous UT-Austin waste audit
- Expand the scope of the UT-Austin audit to 12 Market Categories of materials that comprise the entire stream of materials discarded
- Submit detailed report on the amounts, types, and value of materials currently being discarded on the UT-Austin campus.
- Develop recommendations on how UT-Austin can perform future studies in-house.
- Audit the City of Austin trash flow of 12 Market Categories of materials
- Audit the City of Austin residual trash from its single-stream recycling program.
- Conduct a “Resource-shed” review of the flow of materials to disposal sites from UT-Austin and the City of Austin.
- Submit a detailed report on the amounts, types, and value of materials identified in the City of Austin trash and recycling residual materials.

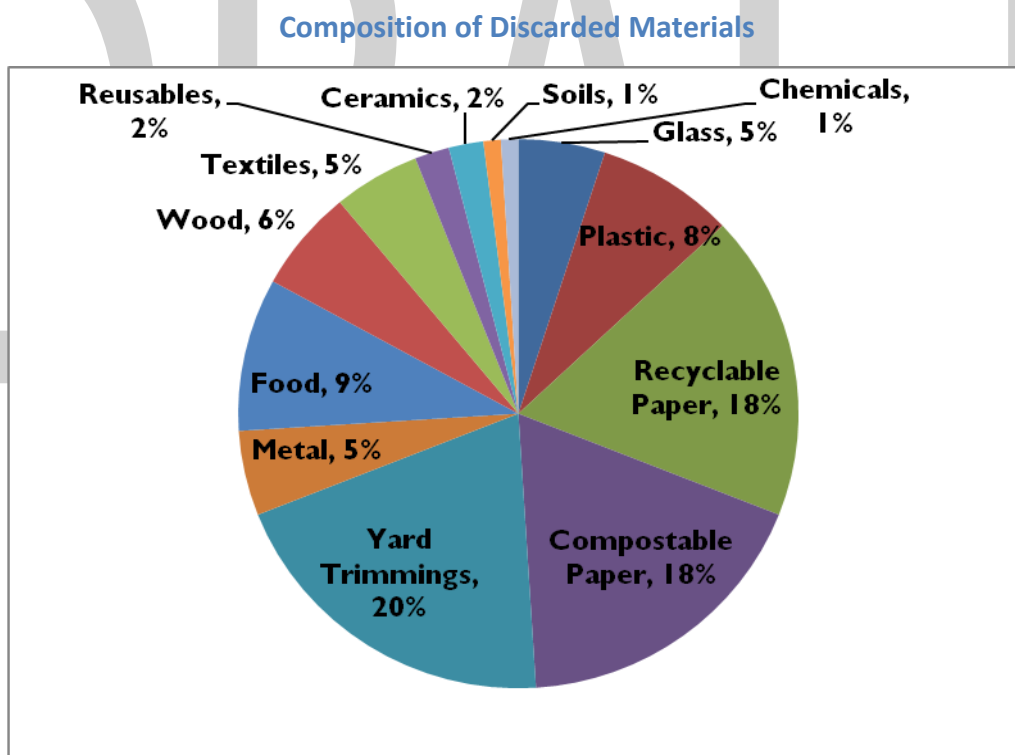
The purpose of this research study will be to quantify the flow of materials from its origins to common locations for purposes of evaluating how materials flow, consideration for new program development, and to evaluate the potential in Zero Waste planning of designing wastes out of the system. The research team will work with campus and city sustainability offices and other stakeholders to ensure unique issues and challenges of concern to them are addressed in the final report.

The resulting report will provide the Department will analysis of waste streams that can be redirected from landfills through new diversion programs. Analysis of the various waste streams will be performed approximately every five years to assist the Department in strategic planning and development of new diversion implementation strategies.

Diversion Composition Model

The diversion model was developed to evaluate the effects of the Zero Waste program initiatives on disposal and diversion throughout the City. The generation, diversion and disposal data for FY '09 were used for the baseline tons and include estimates by generator type (single family, multifamily, commercial, self-haul).

The diversion model uses composition estimates from the *Capital Area Council of Governments Regional Solid Waste Management Plan* dated February 9, 2005. The “other” material category was divided into additional types (textiles, reusables, ceramics, soils and chemicals) based on the methodology presented in the *Zero Waste Strategic Plan*. The “paper” material category was further divided into “recyclable paper” and “compostable paper.”



Source: *Capital Area Council of Governments Regional Solid Waste Management Plan* dated February 9, 2005 with adjustments made by dividing the other category into textiles, reusables, ceramics, soils and chemicals and dividing the “paper” category into recyclable paper and compostable paper.

The diversion potential of each Zero Waste program initiative was estimated based on data from comparable policies and programs implemented in other communities, research based on national studies, and educated estimates based on experiences with other similar programs.

A “participation rate” and an “efficiency rate” were estimated for each initiative. The participation rate represents the fraction of households (for residential programs) or employees (non-residential programs) that are expected to participate in the program. The efficiency rate represents the fraction of each material that is diverted from disposal by a program participant. The product of the participation rate and the efficiency rate is the “capture rate.” A participation rate and an efficiency rate are specified for each initiative by material type.

The program assumptions also specify whether the material is moved into recycling, organics or other discard streams. Capture rates are applied by initiative to the fraction of the discard stream addressed by a particular initiative (for example, the Universal Recycling and Composting Ordinance applied to the single family residential garbage tons).

Example: Calculated Capture Rate

Initiative	Materials	Participation Rate	Efficiency Rates	Capture Rate	Composition	Tons Disposed	Type	Tons Diverted
Universal Recycling and Composting Ordinance (as applied to single family tonnage)	Paper	100%	75%	75%	18%	77,887	SWS Garbage	10,515
	Metal, glass	100%	80%	80%	10%	67,372	SWS Garbage	5,390
	Other recyclable materials	75%	75%	56%	26%	61,982	SWS Garbage	9,065
	Food, compostable paper	90%	30%	27%	27%	52,917	SWS Garbage	3,858
	Yard trimmings	95%	90%	86%	20%	49,060	SWS Garbage	8,389

Diversion rates and tons were projected for each Zero Waste initiative for each goal year through 2050.

Waste Generator Audits

In order to efficiently implement the Universal Recycling and Composting Ordinance (URO), and increase material diversion, the Department may pursue inter-local agreements with CAPCOG and one or more local universities. The goals will include inventories of the material disposal and diversion streams of the top 100 waste generators in the City by FY15. To begin this evaluation of waste generators, an intensive study of the top 10 waste generators will be performed in FY12, as a means to immediately impact the largest waste flows in the City. Each site audit will organize, analyze, and report the solid waste flows from the facility, and recommend waste reduction and diversion activities. To assist in this project, the

Department will utilize resources from the US-EPA WasteWise Program and the WasteWise Re-TRAC data management and reporting system.

Single-Stream Residential Recycling Composition Audits

To measure the effectiveness of the single-stream residential program and to increase material diversion, the Department has required the two contracted recycling material recovery facilities (MRFs) to perform quarterly composition audits. The composition study is performed by the facility operator, utilizing a reasonable sampling of delivered recyclable material and conducted in accordance with good industry practice. The composition study measures the quantities of Recyclable Material, Residual Material, and Trash extracted from the sample.

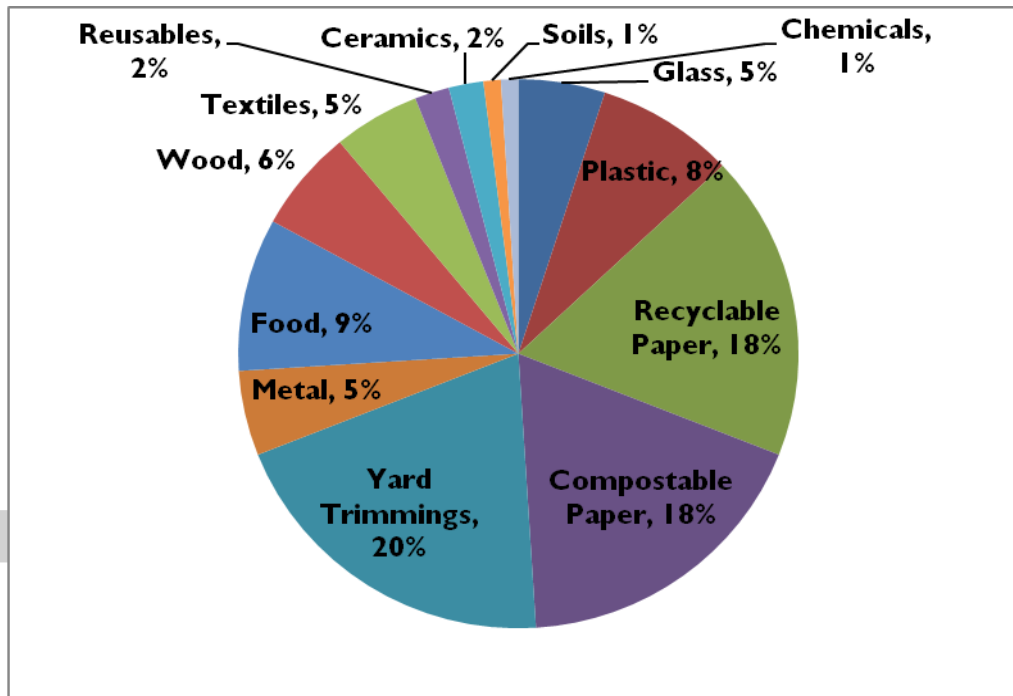
Each composition study presents a display of the percentage of each marketable recyclable, as well as the residual (trash) percentage. The results are utilized for the following three months to support financial calculations for market value paid to the City. The residual content is important to evaluate, as the trash content comes from two sources: mistakes of the public and residuals from the mechanical processing system. The Department utilizes the residual analysis to reshape the public education program to better inform residents on what is recyclable.

Twelve Market Categories of Recyclable Materials

The “Twelve Market Categories of Recyclable Materials” are also known as the “Twelve Master Categories”, “The Clean Dozen” and the “Twelve Master Commodities.” These are the commodity types that all discarded materials can be divided into for reuse, recycling and composting.

The Market Categories are; Reusable goods, Paper, Metals, Glass, Polymers, Textiles, Chemicals, Putrescibles (including food scraps and compostable paper), Wood, Ceramics (including rock, tile, bricks, concrete and asphalt), Soils, and Plant Debris (also referred to as Yard Trimmings).

Composition of Discarded Materials



Source: *Capital Area Council of Governments Regional Solid Waste Management Plan* dated February 9, 2005 with adjustments made by divided the other category into textiles, reusable materials, ceramics, soils and chemicals and dividing the “paper” category into recyclable paper and compostable paper.

The Twelve Market Categories of Recyclable Materials are grouped by four major material categories:

- **Organics** includes: Putrescibles (including food scraps and compostable paper) and Plant Debris (also referred to as Yard Trimmings). Organics represents about 47 percent of discarded materials.
- **Recyclable and Reusable Materials** includes: Reusable goods, Paper, Metals, Glass, Polymers, and Textiles. Recyclable and Reusable Materials represents about 43 percent of discarded materials.
- **Construction and Demolition Debris** includes: Wood, Ceramics (including rock, tile, bricks, concrete and asphalt) and Soils. Construction and Demolition Debris represents about 9 percent of discarded materials.
- **Household Hazardous Waste** includes: Chemicals. Household Hazardous Waste represents about 1 percent of discarded materials.

The Market Categories are addressed through various initiatives discussed in this *Master Plan*:

Material Categories Addressed by Zero Waste Initiatives

Zero Waste Initiative	Organics	Recyclable and Reusable Materials	Construction and Demolition Debris	Household Hazardous Waste	Non-Marketable
Policies					
Universal recycling and composting ordinance	✓	✓			
Green Events ordinance	✓	✓			
Construction and demolition debris ordinance			✓		
Rate structure incentives	✓	✓			✓
Extended producer responsibility initiatives		✓		✓	✓
Policies to reduce single-use and non-recyclable products and packaging		✓			✓
Take-back ordinance		✓		✓	✓
Zero Waste research	✓	✓	✓	✓	✓
Regional Cooperation	✓	✓	✓	✓	✓
Market Development and City Purchasing	✓	✓	✓		
Programs					
Recycling collection programs		✓			
Organics collection programs	✓				
Bulk item and brush collection	✓	✓	✓		
Household Hazardous Waste collection				✓	
Composting incentives	✓				
Recycling Economic Development	✓	✓	✓	✓	
Facilities					
Eco-Depots and private Resource Recovery Centers	✓	✓	✓	✓	
Resource recovery center expansion	✓	✓	✓	✓	
North household hazardous waste facility				✓	

The *Master Plan* is designed to be a living document with annual updates, and program assessments every five years. Material composition will be calculated annually with available data, and a contracted detailed material composition study every five years.

23.6 Metric of Public Service: Measurement service expectations

City Manager Marc Ott has challenged each City department to think about how they can be the best in their respective fields. In the process of pursuing the concept of “Best Managed City”, our departmental strategic planning has re-focused our effort to provide core business services to our customers. Two specific Department values address the focus on the delivery of services in a professional and financially responsible manner:

Customer Service – to provide efficient and reliable service for all customers

The Department’s approach to *customer service* is outlined in the following strategic areas of focus:

- Coordinated environmental services,
- Responsiveness and respect to customers,
- Tracking Metrics to measure effectiveness of service, and
- Systems Approach toward resolving reoccurring complaints.

Financial Responsibility – to insure the best value of services are provided for the lowest cost

The Department’s approach to *fiscal service* is outlined in the following strategic areas of focus:

- Fiscal accountability and oversight,
- Accounting accuracy,
- Cost & Rate Analysis, and
- Timely and Responsive.

City Performance Measures

The City of Austin’s “Managing for Results” business system integrates strategic planning with budgeting, performance measurement and decision making. The Department requires the highest quality performance information available to make good business decisions based on reliable data. The use of performance measures makes it possible to identify results required to achieve the Department goals. Performance information is collected throughout the year to evaluate progress in meeting the Department goals and objectives.

Citizens are able to view the City’s performance information by program and activity through the Austin City Connection internet database “ePerf.” The Department provides monthly and quarterly performance information to the City Budget Office and the Assistant City Manager.

It is challenging to determine customers’ service expectations. In addition to providing performance measures, the Department analyzes the results of City’s Annual Citizen Survey, to measure customer satisfaction.

As the Department explores better data collection systems, the Department will measure its customer service deficiencies. The *Master Plan* is designed to be a living document with annual updates, and program assessments every five years. Service expectations will be measured annually through customer surveys, and a contracted detailed customer survey every five years.

23.7 Other EPA Measurement Tools

Additional measurement tools are being developed to measure the effectiveness of waste diversion, greenhouse gas emissions, climate impacts, and material life-cycle analysis. EPA and its partners have developed several tools to help determine the greenhouse (GHG) impact of purchasing, manufacturing, and waste management actions.²

Waste Reduction Model (WARM)

WARM was developed to assist solid waste managers in determining the GHG impacts of their waste management practices. WARM compares GHG and energy impacts of sending materials to landfills, recycling, incineration, composting, and source reduction. WARM calculates and totals GHG emissions of baseline and alternative waste management practices—source reduction, recycling, combustion, composting, and sending materials to landfills. The model calculates emissions in metric tons of carbon equivalent (MTCE), metric tons of carbon dioxide equivalent (MTCO₂E), and energy units (million BTU) across a wide range of material types commonly found in municipal solid waste (MSW). For information on the WARM model, visit:

http://www.epa.gov/climatechange/wycd/waste/calculators/Warm_home.html

Recycled Content (ReCon) Tool

The Recycled Content Tool was developed to assist companies and individuals in estimating the life-cycle GHG and energy impacts of purchasing or manufacturing certain materials; it also calculates the GHG and energy benefits of increasing the recycled content of specific materials. For example, the tool will allow the user to estimate the GHG emissions and energy benefits of purchasing office paper with 35 percent recycled content instead of 25 percent recycled content. Emissions and energy impacts are calculated using a life-cycle perspective (i.e., what impacts will this purchasing or manufacturing decision have on emissions and energy use associated with the manufacture and disposal of a given material). For more information on ReCon, visit:

http://www.epa.gov/climatechange/wycd/waste/calculators/ReCon_home.html

Greenhouse Gas Equivalencies Calculator

This calculator, developed by the U.S. Climate Technology Cooperation, expresses quantities of Greenhouse Gases (GHGs) in terms of metrics such as number of cars, gallons of gasoline, acres of forest, etc. This calculator is useful for expressing GHG reductions or emissions in a way that is easier to comprehend. The greenhouse gas equivalencies calculator can individuals translate abstract measurements into concrete terms, such as "equivalent to avoiding the carbon dioxide emissions of 183,000 cars annually." This calculator may be useful in communicating the Department's greenhouse

² EPA Measurements tools can be found at the following website: <http://www.epa.gov/climatechange/wycd/waste/tools.html>

gas reduction strategy, reduction targets, or other initiatives aimed at reducing greenhouse gas emissions. For more information on the Greenhouse Gas Equivalencies Calculator, visit:
<http://www.epa.gov/cleanenergy/energy-resources/calculator.html>

NERC Environmental Benefits Calculator

The Northeast Recycling Council's (NERC) Environmental Benefits Calculator is a free tool for states, counties, municipalities, schools, businesses, and institutions to measure the environmental benefits from their recycling efforts. NERC's Calculator measures these benefits in terms of savings in air emissions, energy use, quantity of oil and gas consumed, cars off the road, household energy use, waterborne pollutants and other metrics. In addition, NERC's Calculator measures the energy savings from reusing or recycling computers. NERC's Environmental Benefits Calculator generates estimates of the environmental benefits of a study area, based on the tonnages of materials that are source reduced, reused, recycled, landfilled, or incinerated (includes waste-to-energy). The Calculator is based on per ton figures of the estimated energy use and emissions from several lifecycle analysis studies. The estimates are average figures based on "typical" facilities and operating characteristics existing in the United States. Factors that are not included in this Calculator are landfill gas recovery and generation of electricity by waste-to-energy. The Calculator incorporates U.S. EPA's WARM Calculator, as well as, facts and figures for the U.S. Department of Energy, Steel Recycling Institute, Glass Packaging Institute, and U.S. Climate Technology Cooperation Gateway, to name a few. For more information on the NERC Environmental Benefits Calculator, visit:
http://www.nerc.org/documents/environmental_benefits_calculator.html

WasteWise Re-TRAC

WasteWise Re-TRAC is a data management and reporting system to track a community's waste generation and reduction activities. WasteWise Re-TRAC enables an organization to track and standardize waste management data for the entire operational system. Users can track activities, input data, and generate internal reports whenever the need arises. In addition, GHG emission reductions can be calculated and translated into real-life equivalents. For more information on WasteWise Re-TRAC, visit: <http://www.epa.gov/wastes/partnerships/wastewise/retrac.htm>

23.8 Diversion Calculations

Proposed programs displayed in this Master Plan are intended to increase diversion of material from landfilling. Diversion calculations are projected in tons over a period of years, assuming increasing public participation and capture effectiveness. Below is a representation of anticipated diversion through the proposed programs, policies, and infrastructure developments:

Diversion Initiatives - CoA Controlled (tons)	FY09 (Base)	FY15	FY20	FY25	FY30
Reuse Collection					
Reuse - Eco Depots & Teachers Reuse Center	0	500	2,000	5,000	10,000
Reuse Austin - Expanded Reuse Entrepreneur Opportunities	0	500	5,000	10,000	15,000

Recycling Collection					
Expanded Single-Stream Recycling – Residential	44,446	75,000	80,000	85,000	90,000
Contracted Recycling Services (plus URCO) - Commercial & Multi-Family	37,450	50,000	75,000	80,000	85,000
Contracted Recycling Services (plus URCO) - CBD & City Buildings	552	35,000	50,000	55,000	60,000
Clean Austin - Expanded Bulk Collection & Recycling	238	1,000	4,000	10,000	15,000
Public Area Recycling Containers	0	400	1,000	2,000	4,000
Event Recycling Ordinance	0	250	500	1,000	1,500
Organics Collection					
Compost Incentive Program	0	1,000	2,000	3,000	4,000
Full City-wide Organics collection (Yard Trimmings, Brush, Food Scrap)	28,175	30,000	50,000	75,000	80,000
Storm-Ready Austin - Storm Debris Management Program	0	6,000	10,000	10,000	10,000
Household Hazardous Waste					
South Austin HHW Facility	114	150	200	500	1,000
North Austin HHW Facility	0	150	200	500	1,000
Expand Door-to-Door & Retail Take-back Collection	0	50	100	250	500
Producer Responsibility Initiative	0	0	50,000	75,000	100,000
Total City-Hauled Diversion - Reuse, Recycling, Composting, HHW	110,975	200,000	330,000	412,250	477,000
Projected City-Hauled Waste Disposal	249,525	200,000	110,000	72,750	53,000
Projected City-Hauled Waste Generation	360,500	400,000	440,000	485,000	530,000
City-Hauled Diversion Rate	30.8%	50.0%	75.0%	85.0%	90.0%

Diversion Initiatives - Private Sector Controlled (tons)	FY09 (Base)	FY15	FY20	FY25	FY30
Waste Reduction					
Waste Reduction Assistance Program (WRAP)	0	5,000	10,000	15,000	20,000
Waste Pairing (By-Product Synergies)	0	10,000	30,000	35,000	40,000
Recycling Collection					
C&D Debris Ordinance: Development, Implementation, Enforcement	0	50,000	100,000	150,000	180,000
Commercial & Multi-Family Recycling (plus URCO impacts)	334,258	450,000	700,000	850,000	1,000,000
Glass Collection Pilots for Multi-Family and Commercial sites	0	5,000	10,000	20,000	30,000
Expanded Multi-Family Drop-off Recycling Services	0	30,000	100,000	140,000	150,000
Organics Collection					
Commercial & Multi-Family Organics (plus URCO impacts)	0	50,000	100,000	150,000	200,000
Total Private-Hauled Diversion - Reuse, Recycling, Composting, HHW	334,258	600,000	1,050,000	1,360,000	1,620,000
Projected Private-Hauled Waste Disposal	750,517	600,000	350,000	240,000	180,000

Projected Private-Hauled Waste Generation	1,084,775	1,200,000	1,400,000	1,600,000	1,800,000
Private-Hauled Diversion Rate	30.8%	50.0%	75.0%	85.0%	90.0%

Diversion Initiatives - City-wide Totals Controlled (tons)	FY09 (Base)	FY15	FY20	FY25	FY30
Projected Total Austin City-wide Diversion	445,233	800,000	1,380,000	1,772,250	2,097,000
Projected Total Austin City-wide Waste Disposal	1,000,042	800,000	460,000	312,750	233,000
Projected Total Austin City-wide Waste Generation	1,445,275	1,600,000	1,840,000	2,085,000	2,330,000
City-wide Diversion Rate	30.8%	50.0%	75.0%	85.0%	90.0%

The *Master Plan* is designed to be a living document with annual updates, and program assessments every five years. Material diversion will be calculated annually with available data. A full city-wide diversion assessment will be contracted every five years, to measure progress toward the five-year benchmarks as well as the City Council adopted diversion goals.

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