

Section 5 - Departmental Structure

The City of Austin's vision of being the most livable city in the country means that Austin is a place where all residents participate in its opportunities, its vibrancy and its richness of culture and diversity. Austin residents share a sense of community pride. Local government plays a critical role in determining a city's quality of life. Local government services can make a resident's life easier or more stressful and turn non-residents away or invite them to join in Austin's future.

5.1 Department Vision and Mission and Objectives

The Solid Waste Services 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, SWS employs approximately 400 staff members and operates five different facilities throughout the city.

Solid Waste Services Department Vision and Mission Statement

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 in 2010.

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.

Department 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.

Department 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.

5.2 Best Managed City Priorities

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 been re-focused toward core services to our customers, aggressive waste diversion in pursuit of Zero Waste, and regional partnerships to build green jobs in our local economy.

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

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

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.

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

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

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

- Training and Career Development,
- Employee Safety,
- Professional Discipline, and
- Supportive response to employees in need.

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

Fiscal integrity requires rate base equity, accountability, and structural balance budgeting.

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.

Solid Waste Services Staff Training

Every staff member in the Solid Waste Services Department directly contributes to the City’s Zero Waste goals. To ensure that all staff members understand their roles and their impact on the success of the Zero Waste programs, all divisions will be involved in an internal stakeholder-driven training and development program to generate staff-driven solutions toward increasing efficiency and establishing productivity standards.

5.3 Management Values

As the Department pursues new directions, we are tasked with concerns regarding fairness, discipline, equity, respect, and hiring practices. We are also tasked with customer service needs, as well as the implementation of Zero Waste strategies.

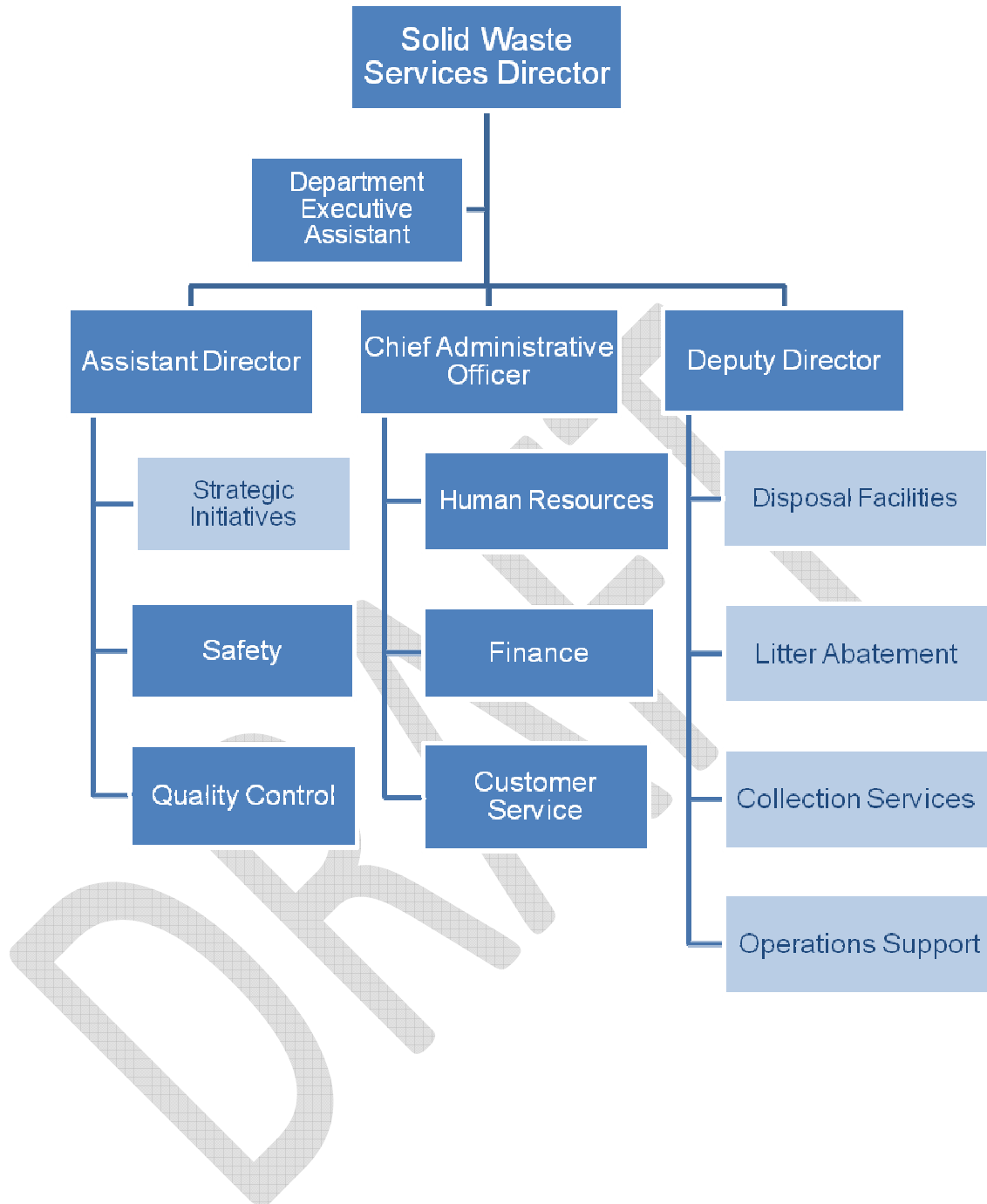
To pursue these new directions, we need to implement a new management style, with a focus on problem resolution, respect for various opinions, and commitment toward delivering services through the corporate city mission of “Best Managed City.” This new management style is based on the following basic principles and values:

- Strategic Planning – developing “visionary but pragmatic” implementation strategies to achieve progressive long-range goals.
- Reality-based Implementation Strategies – utilizing planning strategies through benchmarking and sub-goals, calendar date tracking, and multi-level project scheduling to guide staff efficiently and effectively on staff task assignments.
- Results-based Objectives – through a process of barrier identification with the philosophic belief that nearly all barriers can be overcome through creative problem solving and teamwork.
- Employee Development – building strength, capacity, and character within our staff through training opportunities and employee growth tracks that encourage promotion and recognition.
- Respect for all Staff – insuring a safe and productive work environment where staff feel valued and appreciated for their hard work.
- Open Communications – creating a transparent and open environment where creative ideas are openly shared, concerns and issues are honestly addressed, and communications are clear and broadly based throughout the organization and to the public.

5.4 Department Organization

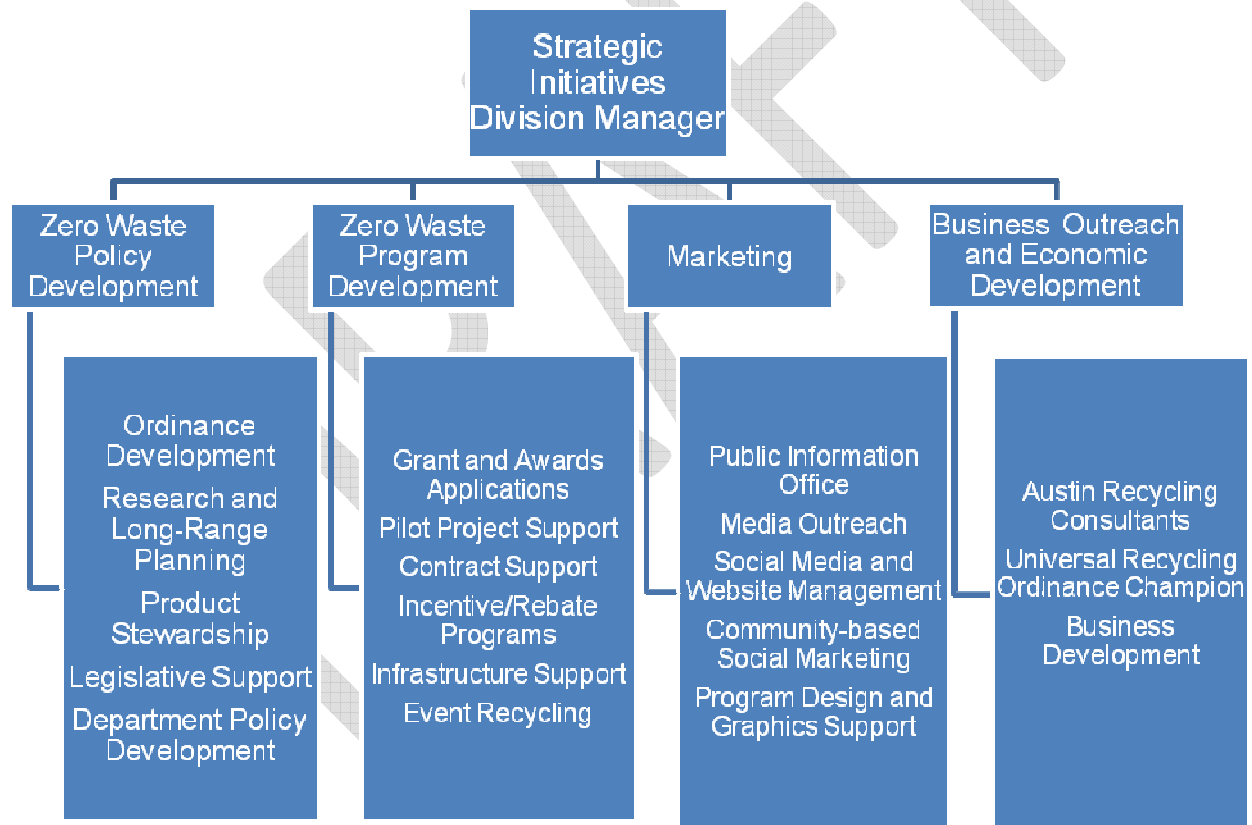
The Department has primary responsibility for planning and implementing Zero Waste policies and programs and developing the Zero Waste infrastructure within the City. All of the Divisions within the Department will contribute to the implementation of the Master Plan. The divisions with lead responsibility for undertaking the initiatives identified in this Master Plan are the Strategic Initiatives Division, the Diversion Facilities Division, the Litter Abatement Division, the Collection Services Division, and the Operations Support Division. Internal support is provided through the Customer Service Division, Human Resources Division, Finance Division, and the Quality Assurance Division. These divisions are highlighted in the organization chart below.

(Organization charts will be upgraded with better graphical representation.)



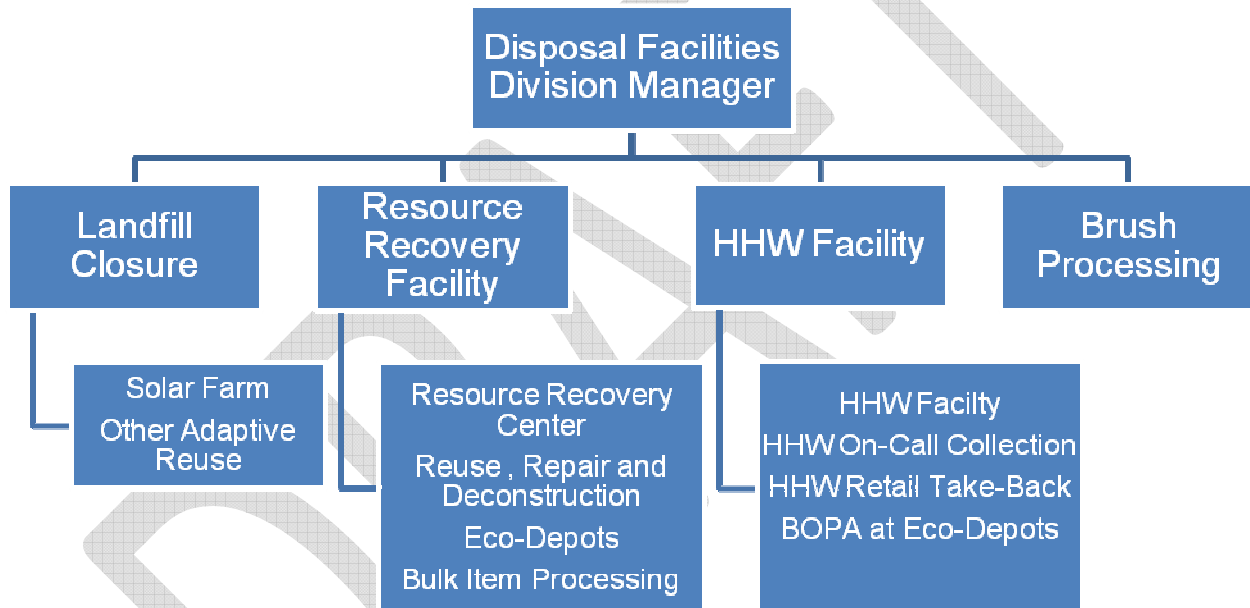
Strategic Initiatives Division

The Strategic Initiatives Division is responsible for long and short range planning and implementation of Zero Waste initiatives and provides support to the other Solid Waste Services divisions. Additionally, the Strategic Initiative Division supports other City departments and serves as the Department's liaison to develop new policies, programs and facilities to achieve the City's sustainability goals. The Strategic Initiatives Division leads all marketing and public outreach activities for the Department. To implement the programs and policies identified in the Master Plan, new staff positions will be needed over the next five years to conduct the work of the Strategic Initiatives Division. New resources are needed in Zero Waste research, ordinance development and implementation, multifamily and commercial technical assistance, City Department technical assistance, media outreach, community-based social marketing and product stewardship. The Strategic Initiatives Division is organized as follows.



Diversion Facilities Division

The Diversion Facilities Division is responsible for the management of the closed landfill, Resource Recovery Facility, bulk item recycling, Household Hazardous Waste facility and collection, and brush processing. To implement the programs and manage the facilities identified in the Master Plan, new staff positions will be needed over the next five years to conduct the work of the Disposal Facilities Division. New resources are needed in household hazardous waste on-call collection; household hazardous waste retail take-back; BOPA materials collection at Eco-Depots; bulk item processing and household hazardous waste facility expansion. The Diversion Facilities Division is organized as follows.



Litter Abatement Division

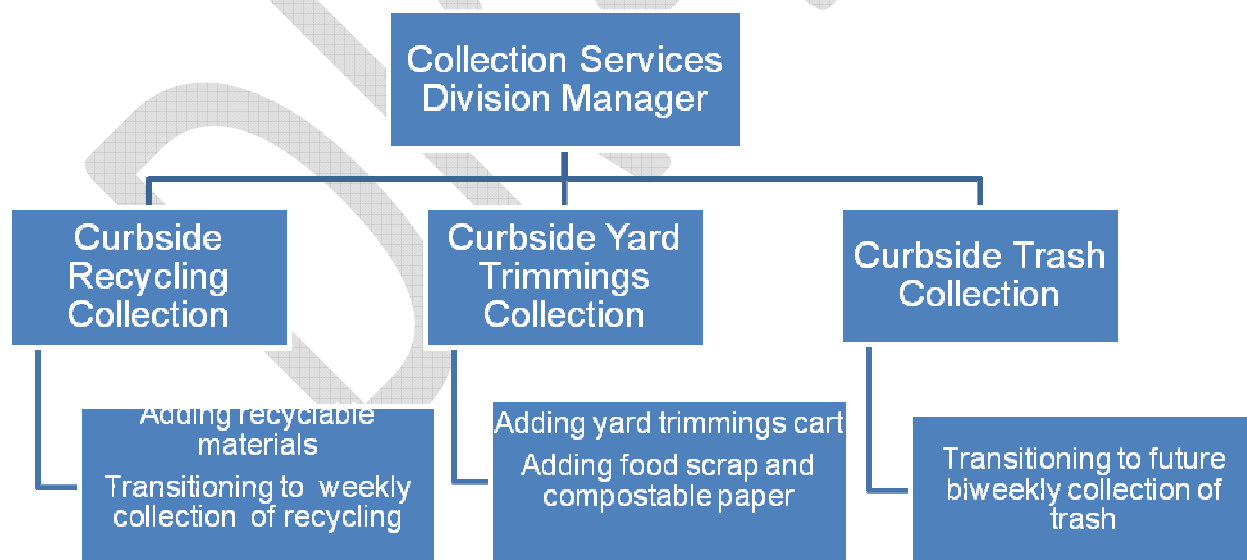
The Litter Abatement Division is responsible for litter control, street cleaning, dead animal collection, and bulk and brush collection. New Zero Waste initiatives that will be implemented by the Litter Abatement Division include: piloting on-call bulk collection and transitioning from scheduled bulk collection days to on-call services, pilot special services for apartment complexes for move-in/move-out services, partnering with non-profit service providers for reuse and repair of bulk items, providing recycling containers adjacent to litter containers throughout the City. To implement the programs identified in the *Master Plan*, additional staff resources will be used to divert additional bulk items and enlarge the service area of the Public Area Recycling program. The Litter Abatement Division is organized as follows.



Collection Services Division

The Collection Services Division is responsible for curbside collection of trash, recycling, yard trimmings, and Christmas tree collection. Currently, the division manages 20 collection routes for recycling, 10 collection routes for yard trimmings, and 47 collection routes for garbage. New Zero Waste initiatives that will be implemented by the Collection Services Division include: adding materials to the single stream recycling program, transitioning to weekly collection for recycling, providing wheeled carts for compostable material, adding food scraps and compostable paper to the yard trimmings collection program, and expanding recycling and composting services to all Solid Waste Services customers.

To implement the programs identified in the *Master Plan*, the Department will need to rebalance its recycling, yard trimmings and trash collection routes to efficiently collect the materials set out by the Department's customers. The Department will evaluate the staffing and routing requirements needed to fully implement the yard trimmings and food scrap diversion program. The *Master Plan* also includes transitioning to every week collection of recyclable materials and every other week collection of trash. Evaluation of collection system transitions will be undertaken once the Department has implemented pilot programs to test routing efficiencies, load densities and route configurations. The Collection Services Division is organized as follows.



Operations Support Division

The Operations Support Division is responsible for providing logistics support to the other divisions through cart maintenance, vehicle coordination, purchase of green clean-fuel vehicles, routing including use of Geographic Information Systems (GIS), facility maintenance (responsible for minor maintenance for Solid Waste Services buildings) and Material Recovery Facility (MRF) contract monitoring. New Zero Waste initiatives that will be implemented by the Operations Support Division include: providing an organics cart for each customer, providing choices in cart sizes for recycling and composting (64 and 96 gallons), and providing a 21-gallon cart option for trash collection. The Operations Support Division will also be responsible for procuring and installing a more advanced routing/GIS system for route vehicles. The Operations Support Division is organized as follows.



5.5 Quality Assurance

We deliver quality services through sustainable and innovative best practices.

The Department Value noted above requires a stronger focus on *quality* in the delivery of services. Previous attempts to add quality controls have yielded modest results. As with most large organizations, institutional processes are resistant to change. As we strive for continuous improvement in our services, there must be strong internal mechanisms to implement quality at each functional service delivery point.

To this end, the Department has created the Quality Assurance Division, to be staffed by October 2011. The purpose of this new division is to add quality review of all functions within the Department, with the end goal of delivering *quality services* to our customers. This new division will be charged with implementing total quality management techniques in all operations of the Department, with a focus on making the Department a positive example of supporting the vision of a Best Managed City.

The Quality Assurance Division will act as an internal auditor, offering recommendations for improvements to operations, administrative processes, and employee practices. The audit functions of this Division will be of a positive nature, in full collaboration with the other Divisions and their staff. The spirit of a cooperation and respect by the Quality Assurance Manager will allow the quality philosophy to be more fully integrated into the internal functions and external services of the Department. The Division Manager will report directly to the Department Director, and offer support toward adding a stronger focus on *quality* in the delivery of all Department services.

The Quality Assurance Division will initially establish the following review processes to support the division mission of improving quality within all operational units of the Department:

- Customer Service
- Financial Integrity
- Carbon Footprint Reductions
- Employee Safety Assurance
- Performance Measures
- Employee Career Development

Customer Services – to provide quality service for all customers

The QA Division will research and analyze customer service deficiencies, with a focus on systematic changes to operations and administrative functions that prevent similar service deficiencies from occurring again. This preventive focus will require stronger responsiveness to customer complaints, and recommend direct actions that support quality service objectives. Through an internal audit of repeat customer complaints, the Division will recommend service changes and processes to prevent reoccurring problem situations.

Financial Integrity – to insure quality fiscal management

The QA Division will research and analyze customer rates in comparison to like public sector and private sector services provided in other Texas communities. The Division will work with the Finance Division to perform a detailed Cost of Service Study for all services provided by the Department. The results of this cost study will recommend operational changes to reduce expenses, and offer a rate structure that better reflects the direct and indirect costs involved in delivering the service. In addition, the QA Division will provide periodic internal audits of fiscal practices to ensure proper fiscal management to local and state governmental financial standards.

Carbon Footprint Reductions – to search for reductions of operational environmental impacts

The QA Division will audit and analyze collection routes to attain a minimum of a 10% reduction in vehicle miles traveled each week. The Division staff will also work in collaboration with the routing staff to provide more frequent bulk collection services to certain high need areas of the city, with the proper equipment and the least miles traveled. The Division will continuously research new measures to reduce the Departments carbon footprint and support the goals and objectives of the Department Sustainability Strategic Plan.

Employee Safety Assurance – to audit safety practices to ensure a safe work environment

The QA Division will periodically audit the safety training program and recommend new measures to ensure a safe work environment for all staff. The Division staff will work in collaboration with the Safety Division staff to research the cause of commonly occurring vehicle accidents, and recommend operational and procedural changes. In addition, the Division will audit the employee injury rate and benchmark to other like cities with similar services.

Performance Measures – to research and analyze best metrics for providing quality service

The QA Division will audit and analyze the Department performance measures and recommend operational changes to achieve the desired objective of each measure. The QA Division will research other like cities and seek more appropriate measures for the new departmental goals and objectives.

Employee Career Development – to offer employees career track advancement opportunities

The QA Division will research and analyze the Department's job classification structure and recommend changes that support the business objectives of each Division. The goal is to support employee needs for career development. The Division will develop a career track for each position, in collaboration with the Human Resources Division. In addition, the Division will audit the skills and needs of supervisors and crew leaders, and offer suggested training in support of employee development objectives.

5.6 Space Facility Needs and Infrastructure Development

The Department is addressing future space needs for its existing facilities and developing new infrastructure to meet the planned initiatives of this Master Plan. Expansions or new development will be needed at the Department's Todd Lane facilities, and a need has been identified for a new North Service Center. Each of these is described below.

The Department's Todd Lane Facilities are located on Todd Lane, just south of Highway 71 and east of Interstate 35 within the City of Austin. The facilities consist of the Household Hazardous Waste (HHW)

Facility, the Materials Recovery/Transfer Station (MRF/TS) and the Kenneth Gardner Service Center (KGSC). The Department operates a composting facility in collaboration with the Austin Water Utility (AWU) at the Hornsby Bend Wastewater Treatment Facility. In addition, the Department operates cart maintenance and a Resource Recovery Facility at the closed FM 812 Landfill.

Household Hazardous Waste Facility (HHW)

The HHW Facility is located at 2514 Business Center Drive, adjacent to the Department's other solid waste facilities on Todd Lane in south Austin. The HHW Facility occupies approximately 1 acre and is comprised of a 2,500-square-foot office building, a 100-foot by 50-foot canopy, a small decontamination/shower building, and portable storage sheds and outbuildings. Residents of the City of Austin and Travis County can drive into the facility for HHW drop-off. The facility staff also provides a city-wide door-to-door pick-up program for elderly and disabled residents. Hours open to the public will be expanded in October 2011 to include every Saturday throughout the year. Additional expansion of hours will occur as resources become available.

Materials Recovery/Transfer Station (MRF/TS) and Resource Recovery Center (RRC)

The MRF/TS is located at 3810 Todd Lane on a 7 acre parcel. The MRF/TS was originally used as a materials recovery facility (MRF) to process recyclables from a dual-stream collection system, before the Department moved to a commingled single-stream collection system. After the move to a single-stream collection system, the MRF/TS was used to collect and handle the single-stream recyclables from the route vehicles and transferred these materials to a recycling processing facility in San Antonio. Since October 2010, the Department hauls collected recyclables to a recycling processor in Creedmoor directly from the routes, eliminating the expense of transfer operations at the Transfer Station. Currently, the MRF/TS is not in use to transfer or process materials. The MRF/TS currently has approximately 9,000 square feet of usable tipping floor.

The Department's Resource Recovery Center (RRC), currently located at the FM 812 Landfill site will be relocated to the Todd Lane Materials Recovery/Transfer Station (MRF/TS) and modified. The MRF/TS will be renamed as the new RRC. This new RRC is envisioned to handle all bulky items. The new RRC will include a reuse yard for building materials; provide repair and refurbishment for reusable bulk items and other reusable materials. The repurposed facility will also accommodate the public drop-off of bulk materials delivered by the public. The enriched loads from the Department's new On-Call Bulk Items Collection initiative will be transported to the RRC without compaction for floor sorting. A floor sorting operation is a simple method to divert potential recyclables, reusables and repairable materials from other discarded materials. Vehicles delivering materials to the facility will be directed to separate areas to unload their materials, depending on the material or generator type. Staff will sort these materials on the floor to pull recoverable materials from the other discarded materials, and separate them into bins or debris boxes for shipment to market.

The Master Plan calls for the new RRC to be in service by FY2013. No new space will be needed for this infrastructure project. The facility will require minor upgrades and routes will need reconfiguration. The facility upgrades will be made to enhance the facility for better use in receipt, unloading, sorting and consolidation of materials for markets within the existing space. Initially, a skip-loader/forklift and some

additional bins would be needed to operate the facility. Staff and equipment growth will coincide with population and materials growth.

Kenneth Gardner Service Center (KGSC) and Service Center 12

KGSC is a south service center is located at 4018 Todd Lane adjacent to both the MRF/TS and the HHW Facility. The service services primary function is to provide housing of the field staff, management, and support staff as well as provide parking and fueling for all field vehicles. The service center includes Fleet Operations for maintenance to a portion of the Department vehicles and equipment. Fleet performs various levels of service such as routine inspection, oil changes, tire rotations to more extensive engine, transmission and other services. The KGSC is currently at capacity with no land area for expansion.

Landfill Redevelopment

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 under 30-year post-closure care within the USEPA Subtitle D requirements for landfill site care and maintenance. The *Master Plan* includes new development for this closed landfill. The Department is considering installing a landfill-gas-to energy facility to beneficially use the methane generated for production of electricity. This project is in the initial planning stages and is planned to be operational in FY14. The Department is also considering two additional projects for redevelopment of this site: a solar farm development over the landfill site; and the redevelopment of the set-aside buildable land as an Eco-Industrial Park. See Section 12 Disposal Management for more details regarding Eco-Industrial Park.

One beneficial use of this property would be construction of a solar farm on the capped landfill surface. The site would be used to generate renewable solar energy. The Department, working cooperatively with Austin Energy, will design and construct (consistent with post-closure maintenance requirements) a large solar-array with a financial arrangement. Grants may be available to partially finance capital costs. The solar farm development will not require any new facility space needs, as it will be used to cover the existing landfill. The solar farm development is projected to be in service by FY'15.

Personnel Office Space Needs

The Department's personnel are located throughout the City of Austin at a number of City owned facilities, including:

- FM812 Landfill
- Kenneth Gardner Service Center (KGSC)
- Todd Lane Materials Recovery/Transfer Station
- Rutherford Campus Administration Building 1
- HHW Facility
- Hornsby Bend Brush Grinding Area

The majority of the Department staff are located at the Rutherford Campus Administration Building, located at 1520 Rutherford Lane, and KGSC at 4108 Todd Lane. There is approximately 18,000 square feet of building area utilized for the workers and office staff at these various locations. Office space is nearing capacity at all of these facilities.

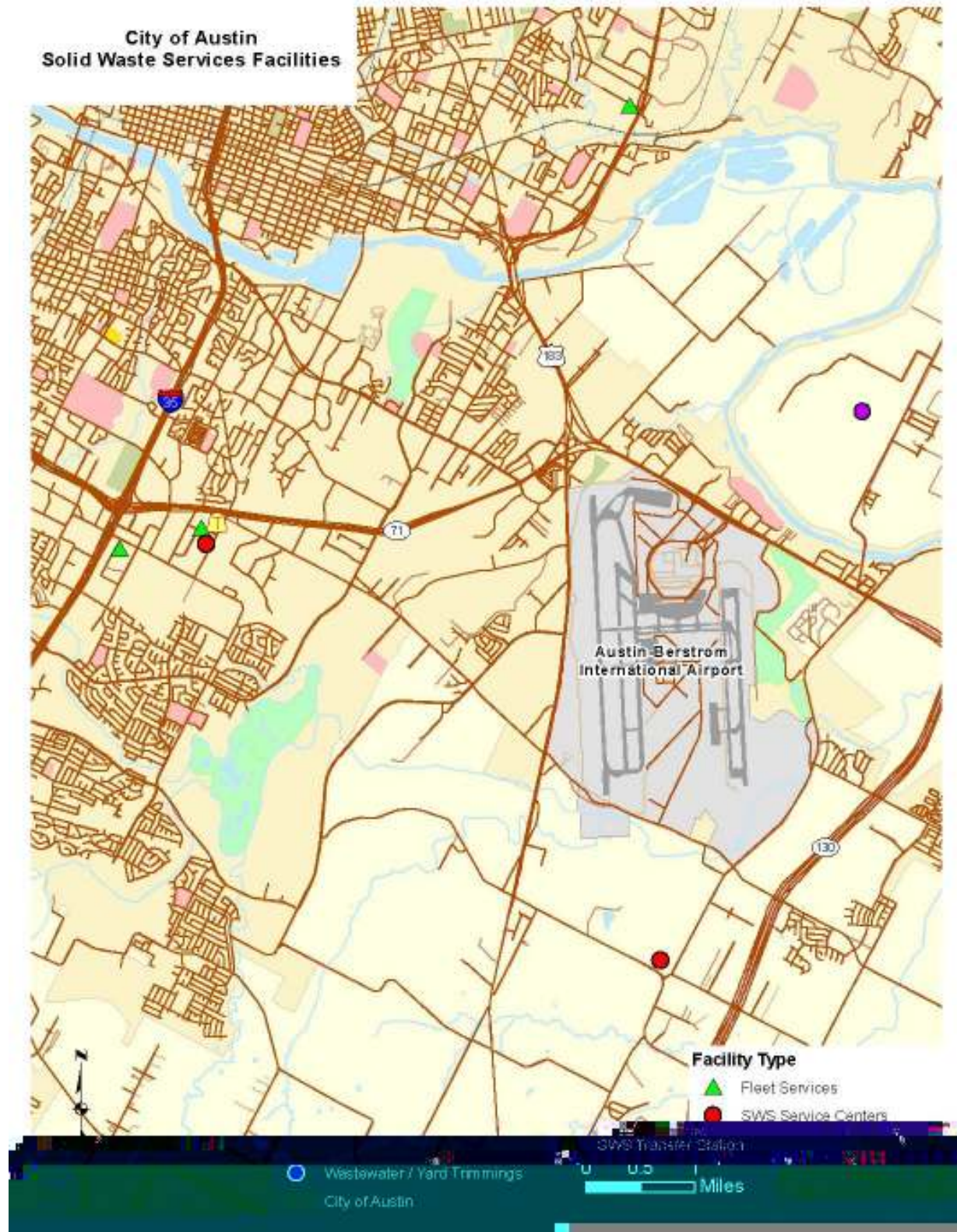
Space Feasibility Study

The Department will need to expand its facilities to house the expanded collection fleet to meet the anticipated housing growth of the City. Additional facility space needs are identified throughout the Master Plan to fulfill the service requirements of the Department as well as to implement the proposed Zero Waste programs. A Space Feasibility Study was commissioned in the summer of 2011 to explore the operational needs for additional office space as well as expanded operational needs related to proposed programs noted in this Master Plan.

Throughout the public input periods in the development of the Master Plan, citizens have noted the extreme distances traveled to drop material off at the HHW Facility. To address the public needs for a more convenient location for household hazardous waste drop-off, the Department plans to locate a North HHW collection center.

In addition, the Department vehicles travel to the South Service Center for fueling needs throughout each service day. Beginning in October 2012, the northern recycling routes will deliver collected recyclables to a north recycling processing facility. To address the added carbon footprint of these excessive road miles, the Department plans to locate a North fueling center, and possibly a North service center.

The Space Feasibility Study was commissioned to UTE Consultants, Inc. of The Lawrence Group Architect Team, and supported by the City of Austin Real Estate Office. The commissioned Space Feasibility Study will explore expected expansion requirements, how best to utilize existing facility structures, and anticipated new facility needs. The Department has also invited Fleet Services to co-locate at the proposed North Service Center, to service the Departments vehicles on-site.



Note: Map to be revised for readability.

Section 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 (City) Highest and Best Use Hierarchy.¹ As listed in the City's Zero Waste Strategic Plan (Strategic Plan), waste reduction practices include reducing, refusing, and returning:

- Reduce consumption by purchasing and using less
- Reduce toxic materials in products
- Replace toxic materials in products with less toxic or non-toxic alternatives
- Reduce packaging
- Apply Environmentally Preferable Purchasing standards to purchasing
- Purchase products with less packaging
- Encourage durable, reusable packaging

Waste reduction is a very important strategy for reaching Zero Waste. According to research conducted by the Institute of Local Self-Reliance, for each ton of municipal discards² wasted through landfilling, about 71 tons on average has been created upstream from the mining, manufacturing and distribution of materials in the product lifecycle³. By recycling one ton of municipal discards, we prevent only one ton of discarded materials from being wasted. However, by reducing municipal discards by one ton, through waste reduction or waste prevention strategies, we effectively prevent 72 tons of discarded materials from being wasted (e.g. one ton of municipal discards plus 71 tons of upstream discards). Thus, waste reduction has a significant multiplier effect in the progress towards Zero Waste.

Waste reduction can be employed at any point in materials manufacturing, distribution and consumption. The figure below illustrates the Zero Waste loop and identifies the key decision points and initiatives that can be undertaken to reduce wasting. The Solid Waste Service Department (Department) can support residential, commercial and institutional generators in waste reduction. The Department staff can also establish waste reduction practices within its own offices and facilities and work with other City departments to ensure that City government practices service as a model for the community.

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

² "Municipal discards", also referred to as "municipal solid waste", are those discarded materials produced by residential, commercial and institutional generators.

³ Grassroots Recycling Network, *Wasting and Recycling in the United States 2000*, page 18.

6.1 City Department Waste Reduction

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.

Waste Reduction in City Offices and Facilities

The City of Austin has over 12,000 employees, including the Department's nearly 400 employees. All City of Austin employees have a profound influence on changing the culture within City government and city-wide to promote waste reduction and Zero Waste. To develop the best practices for waste reduction in City offices and facilities, the Department will undertake the following tasks:

- **Conduct waste audits** – conduct waste audits of all City department offices and facilities to understand how and where discarded materials are generated as well as how they flow through offices and facilities to ultimately be recycled or wasted.
- **Apply the results** – based on results from the audit, identify areas of City offices and facilities where discarded materials could be reduced (e.g., paper-intensive office areas, break rooms, rest rooms, maintenance facilities);
- **Make disposal more challenging and recycling easier** – coordinate with facilities management staff to implement ways to make recycling easier and disposal more difficult. For example, some Zero Waste companies locate waste containers in common areas only and place recycling containers in individual offices, thereby prioritizing recycling and making it less desirable to generate waste;
- **Community-based social marketing** – use community-based social marketing techniques within City departments to identify strategies for waste reduction (e.g., form small working groups to problem-solve and develop stakeholder-based solutions, utilize e-newsletters, case studies, posters, etc);
- **On-going commitment to improve** – provide a mechanism for personal responsibility and leadership within each department to focus on problem-solving and team-building. Reward innovation and celebrate success on an on-going basis. Leaders within each department, including managers, should be encouraged to step up and serve as an example to others.
- **Sustain the best practices** – convert the identified best practices into standard practices by incorporating the new strategies into city-wide Standard Operating Procedures while encouraging each department to adopt additional waste reduction SOPs specific to their operations. Coordinate with corporate Human Resources Department to include these practices into training modules, new employee orientation, personnel manuals, goal setting and performance reviews.
- **Repurposing equipment and facilities** – Equipment and vehicle managers have to balance the long-term effectiveness of specialized tools, equipment and vehicles with other concerns such as maintenance requirements and other cost considerations. The Department will partner with

various Departments, especially the Sustainability Office to develop a cost-benefit analyses mechanism that incorporates the values of waste reduction, repair and reuse, and can assist departments in prolonging the useful life of equipment and facilities.

Waste Reduction in City Department Purchasing

Environmentally Preferable Purchasing (EPP) is a key strategy for waste reduction. The Department is committed to work closely with the Sustainability Office to support other City departments in implementing Best Practices for EPP. Buyers within each department can assist with this initiative by testing EPP tools and techniques prior to implementing them citywide. The Department can initiate EPP strategies in its own purchasing such as working with suppliers to provide customized online catalogs where only reusable, recyclable and recycled-content products are available for purchase. This approach can assist buyers to reduce mistakes when ordering products.

Waste Reduction in City Department Meetings and Events

Regularly practicing waste reduction techniques at all department meetings and functions is critical to ensuring behavior change. In its own operations, the Department will:

- Make meetings as paperless as possible, projecting the agenda and meeting materials and providing on-line access to meeting materials that can be downloaded.
- Use reusable serving-ware and refillable beverage containers while eliminating the use of difficult to recycle products such as expanded polystyrene
- Provide visible and accessible reduction, reuse and recycling services in every meeting room and at every meeting or event.
- Communicate actions taken to reduce waste and encourage meeting participants to bring these methods back to their offices and homes.
- Encourage all Department employees to demonstrate leadership in waste reduction in their community.

6.2 Residential Waste Reduction

The Department's outreach efforts are primarily focused on encouraging and educating residents to practice waste reduction. More detailed strategies for encouraging residents to reduce the generation of discarded materials are incorporated into the Department's Communications Plan in Section 27.

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. EPA⁴, including but not limited to:

⁴ 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;

6.3 Commercial and Institutional Waste Reduction

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.

The Department will research and publicize best practices for waste reduction at work, including but not limited to methods such as those promoted by the U.S. EPA⁵:

- Post a list of paper-saving tips at each copy machine and setting the copy machine to default to double-sided printing;
- Making reports and other documents available on-line
- Requesting reduced packaging from suppliers and include requirements in bid specifications and contracts
- Shred waste paper and use it for packing material
- Use rechargeable batteries wherever possible

⁵ 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

Section 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.¹

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
 - repair, refurbishing, and remanufacturing firms
 - creative reuse centers and artists
 - local and regional online material exchanges; and
- Providing additional opportunities for reuse through the 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.² The amount of reusables in the waste discard stream is largely dependant 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.³ Therefore, Austin residents could create an estimated 150 to 500 new green jobs by diverting all reusable items from landfills.⁴

7.1 Reuse and Resale Businesses

In the 80s and 90s, conspicuous consumption and upward mobility was good for the inventory-side of for-profit or non-profit resale shops. As people constantly upgraded their material possessions, it led them to donate, consign, or sell goods in perfect condition. While consumption has slowed in recent years, the concepts of sustainability and voluntary simplicity have become the driving force behind the selling-side of resale shops. "Reduce, Reuse, and Recycle" is the motto of many resale shoppers, who understand the ecologic costs of even the simplest cotton shirt and hope to leave a better world by minimizing their impact on the environment.

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

² *Austin Zero Waste Strategic Plan*, December 4, 2008, page 6.

³ *Waste to Wealth: Recycling Means Business*, 10 December 2008. Institute for Local Self-Reliance.
<http://www.ilsr.org/recycling/recyclingmeansbusiness.html>

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

Due to the current economic situation, a new breed of shopper has discovered resale and is taking advantage of the values found in purchasing, as well as donating, consigning and/or selling gently-used items. The future of these reuse operations is bright because there are always customers who shop resale for the adventure of finding a wonderful bargain or unusual item, however, the true value of reuse is the reduction of waste disposal by the reusing gently-used goods.

Many unwanted business and household items can be feedstock for repair and resale enterprises that return items for reuse. These enterprises and programs also help people acquire important skills, including retail, which can be essential to career development. Examples of reuse businesses the Department can help facilitate the growth of include:

7.2 Conventional Reuse Businesses

The Department will encourage expansion of the conventional reuse businesses currently established within the City.

Antique Stores and Consignment/Thrift Shops

These resale shops can be for-profit or nonprofit. Unwanted household furnishings and apparel are the most commonly traded materials at antique, consignment, and thrift shops, however the range of materials accepted varies widely from stores to store. For-profits generally purchase or received consigned materials, while nonprofits receive inventory through donation. Austin's best known nonprofit thrift stores include Goodwill and St. Vincent de Paul, and a few of the for-profit antique and consignment shops include Buffalo Exchange, Savers, and Austin Antique Mall.

Building Materials Reuse Centers

Building Materials Reuse Centers can be non-profit or for-profit entities that sell used and surplus building materials, supplies and equipment. "ReStores"⁵ are one example of these centers. Founded in 1992, the Austin Habitat for Humanity ReStore is the nation's most well known building materials reuse center.

Re-stores can offer reduced prices for building materials and supplies that are still in good useable condition. A re-store These centers typically rely on three sources of materials for inventory/saleswork; (1) by working with a deconstruction entity that provides recovered building materials (non-profits can receive donations from builders, contractors, brokers, and businesses that are remodeling their construction projects.), for-profits often pay contractors for materials, (2) by working with retail stores, who can provide overstocked surplus or outdated, but still useful, products; and (3) by accepting materials from homeowners and landlords that are remodeling and want to see their old but still useful cabinets, appliances, and flooring put to good use. It is important for a reuse center to establish relationships with all of these sources of inventory.

⁵ Habitat for Humanity has developed several hundred Re-Stores around the country, <http://www.habitat.org/env/restores.aspx> (accessed June 20, 2011). The term "re-store" is now used generically as denoting a used building materials resale store.

7.3 Creative Reuse Businesses

The Department will support and/or encourage creation and expansion of new creative reuse businesses.

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. One excellent local example is [Austin Creative Reuse](#), and two other examples are [Teacher's Treasures](#) in Indianapolis IN, and [Treasures 4 Teachers](#) in Tempe AZ.

Used Books, Media & Musical Instrument Stores

These operations buy and sell used books, media, and musical instruments. They understand the value of these resources, and make it easy for the public to buy, sell or trade used goods. One national chain that has an outlet in Austin and carries a range of used books and media is HalfPrice Books; and two local shops that carry some used musical instruments are Strait Music and Play It Again Music. A few examples of national resale shops that focus solely on used materials include McKay Books and Music Go Round.

Austin Public Library - Recycled Reads

Recycled Reads is run primarily by volunteers with materials withdrawn from the Library's collection and the community's donations. The store gives books a second chance and is an active participant in the City's Zero Waste Plan by ensuring obsolete materials are handled in an environmentally responsible way by keeping these materials out of landfills. Items Recycled Reads is unable to sell go to third party recyclers that fund and support literacy programs. In this way the Library contributes to a socially responsible cause by ensuring that knowledge and learning is passed along to others in need. Books that are unusable as reading material are responsibly recycled for reuse.

Upcycling

Another part of the creative reuse economy are what is known as "upcyclers". These artists and designers create fashion, jewelry, home furnishings, sculpture and more by repurposing discarded materials. There are hundreds of upcycling-based artists and designers in Austin (too many to list), but many of them showcase their wares at local craft shows.

7.4 Repair & Remanufacturing Businesses

The Department will encourage creation and expansion of new creative reuse businesses, operated by local entrepreneurs.

Appliance Repair

Discarded appliances can be refurbished and made available for sale at greatly discounted prices. This process also trains workers in mechanical and electrical skills. Appliances that are too old for meaningful repair are recycled through the scrap metals yards and brokers. Appliance fix-it shops take responsibility

for removing liquids such as Freon from refrigerators, prior to final recycling as prescribed by law. Some high schools offer appliance repair in their vocational skills training center.

Bicycle Repair

Non-profit bicycle repair operations focus on imparting skills and refurbished bicycles within their communities. Often these shops combine sale of refurbished bicycles with sales of new bicycles and accessories. Some college towns offer a free refurbished bicycle for on-campus residents, reducing the need to park vehicles on campus.

Computer & Electronic Refurbishing

Refurbishing computers and personal electronics is a recognized way of reducing landfill use and helping the environment. It's also a great way to decrease or eliminate the digital divide in our country. But we must do our part by also purchasing reliable, high-quality refurbished products. TechTurn is one of the country's leading computer refurbishers and its state of the art facility is located in Austin.

Clothing & Shoe Reuse

There is a vibrant international market for unwanted apparel. A clothing reuse operation can collect high-grade textile discards and segregate quality items that can be repaired and resold in local markets. Reused clothing stores throughout the US make high quality items available at modest prices through the thrift resale market. These entities also train workers in skills associated with textile refurbishment. Clothing refurbishing enterprises and programs can link with local college design and fashion training programs. The University of Cincinnati Fashion Design Program encourages the reuse of discarded clothing material in the design of new clothing and fashion styles. Another example, the Korean Cultural Center, located in the City of Los Angeles is producing embroidered canvas bags for sale as replacements for one-way paper and plastic grocery and shopping bags.

Household Furniture Refurbishing

Furniture repair shops are involved with cosmetic repairs on slightly damaged items or comprehensive overhaul of wood or metal-framed furniture. These facilities train workers in upholstery skills and woodworking. Some of these operations reuse mattresses by stripping out stuffing, sterilizing the material for reuse, and recycling of the broken metal springs.

Office Furniture & Equipment Remanufacturing

There are a variety of business that sells used and refurbished office equipment and furniture. The businesses and nonprofits can save up to fifty percent by purchasing remanufactured office furniture and equipment. Remanufacturing office equipment and toner cartridges is an earth conscious way to help save the planet's limited natural resources. Austin is home to several office furniture remanufacturing companies, as well as a toner and printer remanufacturing companies.

7.5 Bulk Collection, Reuse Austin

Most cities have bulk items that have to be collected on a regular basis such as furniture, appliances, windows, and other building materials. If not collected, some bulk items are improperly discarded on streets, alleys, and parks.

Reuse partners

Items collected could be made available to fix-it shops as inventory for their operations. Other entities can recycle materials that cannot be refurbished. In some cities, a non-profit for reuse precedes the garbage company's bulk pickup truck and collects whatever they think is reusable. The Department will explore utilizing existing community resources to partner in this way.

Lot sales

Lot sales allow fix-it shop operators to bid on a large number of bulk items as opposed to single item acquisition. This approach allows for speedy processing of bulk items. In Austin, Goodwill offers the Blue Hanger Outlet Stores which is where all the reusable items are sold after being considered unsellable in their network of area stores.

Austin City-wide Garage Sale

Citywide Garage and Antique Sale is held at the Palmer Events Center numerous times a year, when dealers from all parts of Texas convene to display and sell their collectables. The event organizers, display antique, vintage, collectible and second hand merchandise. The sale features local residents and businesses selling antiques, fine laces and linens, books, china, Texas collectibles, pottery, vintage clothing and accessories, estate jewelry and fishing lures. There is an entry fee to support the organizing and space rental expense.

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. This added effort to reuse bulk items collected off the streets can be coordinated with the Eco-Depots noted below. Additional description of Reuse Austin program is noted in Section 13 Other Core Business Services.

7.6 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. There are different approaches the Department can take to implement Eco-Depots. The proposed Zero Waste initiative for Eco-Depots is to sign a service agreement with one or more organization to host City Eco-Depots at a number of sites throughout the City. The Eco-Depot will collect materials that the City wishes to recover, and the non-profit will charge a fee to operate the Eco-Depot.

Eco-Depots can be developed in many different forms including trailers and small sheds/stations to collect a variety of recyclable, reusable and repairable materials. 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. Materials collected here could include recyclables, reusables and not so easy to market materials such as carpet.

A good way for the City to implement the Eco-Depot Zero Waste initiative is to partner with non-profit organizations that which already have sites city-wide. The Department would will place four (4) Eco-Depots around the city to be utilized for residential drop-offs of large bulky items, as well as other reusables. This additional infrastructure will enhance and support the Reuse Austin program.

New Resources: Eco-Depots & Teacher Creative Reuse Center

The Department will support and establish four (4) 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 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. These additional resources include a 0.5 full time equivalent (0.5 FTE) Waste Diversion Planner estimated to be approximately \$37,000. Site development and structure cost are estimated at \$250,000. Equipment for the sites is estimated at \$100,000.

City Implementation Tasks for Eco-Depot Development

Task	Lead Responsibility	Participants	Schedule (FY)
1. Site four locations for eco-depot operations.	Diversion Facilities Division	Director	FY12
2. Bid out service contract for 4 Eco-Depots.	Diversion Facilities Division	Purchasing Office	FY13
3. Manage and monitor Eco-Depot contract(s) to ensure optimal performance.	Diversion Facilities Division	Finance Division	On-going
4. Work with Austin Independent School District in establishing a site for a Teacher Creative Reuse Center .	Diversion Facilities Division	Strategic Initiatives & AISD	FY12
5. Bid out service contract for Teacher Creative Reuse Center.	Diversion Facilities Division	Purchasing Office	FY13
6. Manage and monitor Teacher Creative Reuse Center contract to ensure	Diversion Facilities Division	Finance Division	On-going

City Implementation Tasks for Eco-Depot Development

Task	Lead Responsibility	Participants	Schedule (FY)
optimal performance.			

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Section 8 Recycling

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.

8.1 Recycling Definition and Guiding Principles

The City of Austin is a member and sponsor of the National Recycling Coalition (NRC), a national non-profit advocacy group and a professional membership organization. NRC members span all aspects of waste reduction, reuse and recycling; local recycling coordinators, state and federal regulators, corporate environmental managers, environmental educators, consumers and waste management professionals. The NRC represents and advocates for every sector of the recycling industry across the country. The NRC, as a member-oriented coalition, develops meaningful partnerships with corporate, government, and nonprofit leaders to bring about important changes in the way we use, manage, and recycle natural resources.

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.

The NRC also developed a set of guiding principles that the Department will utilize in its development and promotion of city-wide recycling diversion. These principles are¹:

In conjunction with source reduction, reuse, and composting, the recycling of valuable materials is essential to a sustainable environmental, energy, and economic future.

- Recycling is resource management, not waste management.
- Recycling is not disposal.
- Thermal combustion is not recycling.
- Recycling programs must be designed to minimize contamination in consideration of the needs of upstream users.
- Materials recovery is the preferred management option for all residential, commercial, and industrial discards.
- Recyclables are substitutes for virgin materials.

Recycling is a shared responsibility and requires citizen engagement.

- Recycling requires the participation and collaboration of all stakeholders – citizens and consumers, providers and consumers of raw materials, product manufacturers, product distributors and retailers, providers of recycling infrastructure, and all levels of government.
- Recycling programs must be accessible and convenient for all residential, business and institutional settings.

¹ NRCrecycles.org

Recycling goals must be clear, achievable, and measurable.

- The foundation of successful recycling policy and programs is accurate and unbiased information.
- Stakeholders should develop a uniform system for measuring discards, recycling, and composting, and waste disposal.
- Customized and achievable recovery goals should be established.
- Stakeholders should work to expand uses of their products, which commonly include recycled content.
- Recycling stakeholders should support development and dissemination of sound, scientifically based, and balanced educational material that informs citizens on the need for recycling and engages consumers in the recycling process.

Products and packaging should be designed to take into account and address environmental impacts.

- Products should be designed, manufactured, packaged, distributed, managed, and used to optimize the continuing value and recovery of the used materials and minimize the environmental and climate impact throughout the life cycle of the product.
- Manufacturers should develop and support programs that optimize the recovery of recyclable materials.
- Product and package environmental claims and labelling programs should be standardized, accurate, enforceable, and useful for consumers.

Successful recycling requires sustainable and equitable economic policies.

- The cost and value of recycling, in comparison to alternative management options and waste disposal, must be transparent to consumers and policymakers and recognize sustainable development measures for resource depreciation (land and natural resources), energy savings, and environmental impact.
- Government policies and programs must not favor virgin materials use and waste disposal over materials management by source reduction, re-use, recycling, and composting.
- Government tax policies must provide direct and in-direct incentives for recycled materials utilization, new recycling technologies, and infrastructure development.
- Recovered materials (waste materials and byproducts that have been recovered or diverted from solid waste, including recyclables, reusable products and products that may be refurbished) must have access to global markets.

Think globally, act locally.

- Taking into account regional and local differences, state and local collection policies and programs should utilize practices that optimize participation rates, cost-effectiveness, direct incentives, and energy efficiency.
- Local governments should have the necessary authority, sufficient means and tools, to implement successful residential, commercial, and institutional recycling programs.

8.2 Recycling Collection Systems

The Department provides collection services for single-family households and some small scale multifamily and commercial customers. 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 described in this section, 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.

Role of the City

Because the Department directly controls 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. These policies are further described in the Policies Section 21. 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.

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:

- Adding additional material types to the single-stream program;
- Transition to weekly collection for residential customers;
- 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; and
- Providing outreach, commercial technical assistance, and community-based social marketing initiatives.

If there is a service void and/or no private sector service providers are willing or able to provide service, the Department will also provide recycling collection from multifamily and commercial generators. Based on input from multifamily and commercial generators and private sector service providers, the Department will evaluate whether it will be necessary to expand recycling collection beyond the Department's current customer base. If needed, the Department could contract for services for specific generators, such as those located in the Central Business District (CBD) or for small multifamily complexes that are not able to attract a service provider on the open market. The Department could also expand its operations beyond its current customer base if deemed necessary by the City Council.

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.

Department Infrastructure

The infrastructure of the Department is primarily based on its collection activities. The Department has signed long-term agreements with two local recycling processors to sort and market recyclables collected by the Department and/or via City contracts. The Department will undertake the following initiatives to expand recycling processing capacity in the City:

- 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);
- 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); and
- Develop four Eco-Depots throughout the City to handle hard-to-recycle materials, including batteries, motor oil, paint and anti-freeze (Section 7).

Role of Non-Profit and Private Sector Services Providers

Austin has a large and diverse recycling infrastructure with additional capacity to meet the needs of the City diversion goals. Non-profit and private sector service providers are expected to collect and process recyclable and reusable materials generated by multifamily complexes, commercial establishments, special events, and City facilities requiring dumpster service. Service providers will also develop new processing capacity for recyclable materials generated in the City, and provide technical assistance to generators of recyclable materials.

8.3 Department Recycling Collection Services

The Department currently provides every other week (biweekly) collection of single stream recycling in 96-gallon wheeled carts. Additions to the recycling program will include:

- Adding materials eligible for collection in the single stream program;
- Transitioning from biweekly to weekly collection;
- Providing a choice in the size of the containers (64 and 96 gallons); and
- Expanding recycling collection to all Department customers.

The Collection Services Division currently collects paper, boxboard, cardboard, aluminum and metal cans, glass and rigid plastic containers #1 through #7² in the single stream recycling carts. Additional recyclable materials can be accommodated in the single stream system. This program will add in future years: aseptic and gable-top containers, durable plastics (household items and engineering grade plastics), plastic wrap film, aluminum foil, and small scrap metal items.

² 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.

The Department will conduct annual customer surveys to assess program acceptance and identify customer concerns.

Cost and Diversion Estimates for Recycling Collection

Initiative	Date of Initiation (FY)	Initial Year of Full Implementation (FY)	Initial First Year Implementation Costs	Annual Costs ¹	Annual Diversion Tons
Expand Recycling Collection to all City customers	FY12	FY13			
Annual additional material to Recycling Residential Collection	FY12	FY15			
Transition to weekly Recycling Collection (bi-weekly trash collection)	FY16	FY17			

¹ Annual cost includes staffing resources.

Resources for Recycling Collection

Additional staff and collection routes will be needed when recycling services are provided to all Department customers. As recycling diversion increases, trash generation will correspondingly decrease. This transition will require rebalancing routes frequently, and transferring assets and personnel from trash collection to recycling collection. Adding more recycling collection routes is expected to cost an additional \$2 million annually for staff, vehicles and equipment. Some cost savings could be realized from reducing the number of trash collection routes. However, this savings has not been quantified and the program will need a significant period of piloting and refinement prior to implementation.

This initiative also includes transitioning to weekly collection of recyclable materials and every other week collection of trash. Transitioning to every other week collection for dry rubbish -- the non-recyclable material leftover in the garbage cart -- will require the City to petition the Texas Commission on Environmental Quality (TCEQ) to allow for every other week collection. Texas statute states that "MSW containing putrescibles shall be collected a minimum of weekly to prevent propagation and attraction of vectors and the creation of public health nuisances." The intention of the new collection program would be to have the putrescibles collected weekly in the yard trimmings cart. The garbage cart would be reserved for non-recyclable, non-compostable inert materials.

Implementation Tasks for Recycling Collection

Task	Lead Responsibility	Participants	Schedule (FY)
1. Add aseptic and gable-top containers to the single stream recycling program	Collection Services Division	Strategic Initiatives Division	FY12-FY13
2. Add aluminum foil and scrap metal to the single stream recycling program	Collection Services Division	Strategic Initiatives Division	FY14
3. Add durable plastic and plastic wrap to the single stream recycling program	Collection Services Division	Strategic Initiatives Division	FY15
4. Conduct glass collection pilot for multifamily and commercial customers	Contract with non-profit service provider	Finance Division	FY12 - FY13
5. Provide information to Solid Waste Services customers and 311 staff on new materials to be collected through the single stream recycling program and the availability of the 21 gallon cart for trash.	Customer Services Division	Strategic Initiatives Division	FY12 and ongoing
6. Conduct public education and marketing campaign on weekly recycling collection and biweekly trash collection; identify neighborhoods for pilot	Collection Services Division	Strategic Initiatives Division	FY14 – FY15

Implementation Tasks for Recycling Collection

Task	Lead Responsibility	Participants	Schedule (FY)
program			
7. Conduct pilot program on weekly recycling collection and biweekly trash collection; conduct follow-up stakeholder marketing; evaluate results; assess and refine program	Collection Services Division	Strategic Initiatives Division Operations Support Division Finance Division Customer Service Division	FY15 – FY16
8. As appropriate, implement weekly recycling and biweekly trash collection citywide when residential diversion reaches 60%	Collection Services Division	Strategic Initiatives Division Operations Support Division Finance Division Customer Service Division	Estimated to be FY17
9. Assess and refine recycling and trash collection program	Collection Services Division	Strategic Initiatives Division Operations Support Division Finance Division Customer Service Division	every 5 years ongoing

Section 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.

A growing trend nationwide is toward a centralized composting process. Composting processes have evolved into different disciplines such as in-vessel composting, anaerobic composting, windrow composting and static-pile composting; all of which can handle large volumes of organics at single facilities. In addition, decentralized composting processes can reduce the carbon footprint while consuming organics in more localized situations that do not require large collection programs.

The Department recognizes that, in addition to helping the City achieve its Zero Waste goals, composting also addresses the community's interest in enriching the region's soil, strengthening sustainable food production, and completing the food cycle. These additional benefits were identified by the Sustainable Food Policy Board's letter to the Austin City Council and were considered while developing the Department's Master Plan (See Appendix ??).

EPA Food Waste Recovery Hierarchy

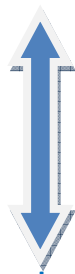
Food is such a valuable resource that can be used to protect our soil and water or grow our next generation of crops. There are many higher uses for it to consider instead of disposing in a landfill or through bio-fuel (incineration). Both EPA and USDA recommend following the food recovery hierarchy below as the preferred options to make the most of excess food. The food waste recovery hierarchy comprises the following activities, with disposal as the last, and least preferred, option:

- Source Reduction – Reduce the amount of food waste being generated;
- Feed People – Donate excess food to food banks, soup kitchens and shelters;
- Feed Animals – Provide food scraps to farmers;
- Industrial Uses – Provide fats for rendering; oil for fuel; food discards for animal feed production; or anaerobic digestion combined with soil amendment production or composting of the residuals
- Composting – Recycle food scraps into a nutrient rich soil amendment
- Landfill – Disposal options are the least preferred.

Highest and Best Use Food Waste Composting Hierarchy

In the collection of residential food discards, feeding people and animals has been eliminated as options, as the collected food discards are too low grade for these purposes. For purposes of this Master Plan, the Department desires to utilize collected residential discarded food waste through a highest and best use philosophy. A modified Food Waste Composting Hierarchy is noted below for City future planning purposes:

Highest and Best Use



- Home-based Composting** – Highest and best use of food scrap, with the lowest carbon footprint.
- Humus & Mulch** – Second highest end-use with minimal processing requirements.
- Vermi-compost** – Best processing of compost with the least energy requirements.
- Aerobic Composting** – Best central processing option with the highest end-use of compost.
- Anaerobic Digestion** – Final end-use disposal option with energy capture.
- Landfilling** – Disposal method that often creates unmitigated methane release to the environment.

Lowest End Use

Multiple Sources of Organics

Yard trimmings and food waste organics are generated through residential settings, commercial buildings, professional gardeners, food processors, restaurants, bars, school cafeterias, and landscapers. Given the large variety of sources, as well as the varied collection methods available, the Department desires to seek alternative methods to divert organics, in addition to traditional large-scale collection and processing methods. To develop and support various collection and processing needs, there is a need to explore future drivers for the utilization of organics.

Nutrition

In February of 2010, the United States Presidential Commission on Cancer released its final report, which included the recommendation to eat more certified organic foods. The report documents that our food supply now contain on average, only 40 percent of the nutrient density that they did 60-100 years ago. According to the report, organic matter is the key to our soil's functionality and the long term health of plants and, thus, people. A community-based composting program can enrich local soils for proper nutrition density.

Water

The Lower Colorado River Authority's *Soil Depth and Soil Amendment Specifications Background* guidance document stated that soil will hold about 1.5 quarts of additional water per cubic foot for every 1 percent increase in organic matter. On a county-wide scale, our soils are commonly thought to hold less than 1 percent organic matter, which would imply that only 25 percent of our annual rainfall can be absorbed by our soils. The remaining 75 percent of our annual rainfall is forced into runoff due to the absence of sufficient organic matter in our soils. An increase in soil organic matter of 1 percent results in increased rain water retention, and thus reduced irrigation requirements, of 0.5 inches per rainfall event. Most central Texas soils, including urban soils, are deficient in organic matter and

cannot provide residents with a consistent and reliable source of moisture for growing plants. Adding nutrient rich compost made from food scraps into our soils is one way to retain more water.

Carbon Footprint

Collection and landfilling organic materials has proven to be a fuel intensive process requiring a significant investment by the City in both equipment and labor. As fuel prices increase, price pressure on the cost of providing the service will increase. Options for reducing the carbon footprint of recyclable materials such as yard trimmings and food scraps can be addressed through a community-based composting program.

Green Jobs

The diversion of organic matter into local soils creates green jobs as well as local resiliency for both individual incomes and community economic development. Food organics and yard trimmings can be used to support local agricultural operations, including community gardens, through a system for distribution of these resources.

Green Barter

Green Barter provides a useful framework for the exchange of services and value among multiple parties that may not have the cash flow to support simple transactions. It increases the awareness of resources in the community. The Department may be able to play a role in a green barter system by providing points, similar to frequent flier miles, along specific collection routes to residents for their aggregate collection volumes. Points could be divided among individual residents and then redeemed or donated. The technology exists using bar code technology to award bonus points to individuals for the diversion of food scraps to local agricultural operations. A local concept such as Green Barter could create significant new opportunities for diverting organics into ecosystem services, while addressing the needs of targeted social sectors such as low income and non-profit groups. Green Barter is further discussed in Section 24 Communications Plan.

New Technologies

Numerous new composting technologies are becoming commercially available in recent years. Composting worms have long been recognized for their ability to digest food scraps on residential and commercial scales in order to produce high-value worm castings. Innovations in Black Soldier Fly systems make it possible to use a naturally occurring local species to dispose of food scraps while producing a high value protein animal feed suitable for backyard chickens and/or tilapia. Food waste reduction machines and fermentation systems also offer promise for large and small scale generators, respectively. On-site medium scale in-vessel compost systems can produce quality compost within a few days of addition of food scraps, while greatly reducing the moisture content and hauling costs.

Through the stakeholder outreach process undertaken to develop the Master Plan, the Department identified several Zero Waste initiatives that will divert significant amounts of organic materials from landfills. These include policies, programs and infrastructure. The Zero Waste initiatives that address organic materials are described in this section.

10.1 Residential Backyard Composting and Community Gardens

Wherever possible, the lowest carbon footprint option for residential organic materials will be to utilize the organic materials on-site via back-yard composting for the improvement of the homeowner's soil while generating the maximum value. Soil organic matter is critical to a property's ability to increase shade, rainwater collection, and nutrient density, and thus reduce a household's operating expenditures, and increase the resiliency of their lifestyles.

Community Gardens

Community gardens will play an increasing role in the provision of locally grown, nutrient-dense foods. Distributed collection systems for food organics should thus be encouraged, making it possible for community gardens to serve as a source of high-quality food organics with the lowest carbon footprint. Community Gardens should receive additional merit in systems such as Green Barter or other social and environmental rewards systems that improve the connection between food waste generators and community garden food producers. Additional investment is planned in creating community gardens in target neighborhoods to further promote human food sustainability practices as well as proper composting of locally generated organics from the targeted neighborhoods. The Department will be an active participant in this inter-departmental Community Gardens effort.

Home Based On-Site Composting

The main barrier to increased adoption of composting systems in the single family segment remains education and awareness. Conventional composting systems are available at local garden centers and even some national retail home and garden stores. The next generation of composting systems has many advantages, but education and training will be required to help assist residents to have a positive experience which will endure and ensure no waste of food scraps.

The Department recognizes that most Home Owner Associations (HOA) currently ban home-based backyard composting. These association regulations are based on the false assumption that home-based composting draw un-welcomed animals or creates unsanitary conditions for the neighborhood. The Department will work with HOAs through an education program to encourage proper home-based composting techniques to address these concerns. The Department will also work with the Planning and Development Office to establish proper allowances for home-based composting.

Multi-Family Residential On-Site Composting

Multi-family residential settings generally do not provide garden space where organic materials can be transformed into nutrients, used for carbon sequestration, or used for improved rain-water holding capacity. On the other hand, multi-family settings can provide community green garden space to enrich the lives of its residents.

On-site apartment complex community gardens may be provided as options for improving the economic resiliency of residents through the production of their own gardens, as well as increase community engagement, environmental awareness and nutrition. New technologies facilitate on-site conversion of food scraps into potting soils without the use of yard trimmings. This enables people to garden in small spaces such as balconies and porches while also increasing their economic resiliency with respect to

food production. Most multi-family living arrangements have some small space in which to collect and compost food scraps using these new technologies.

The majority of multi-family and commercial locations employ professional yard maintenance companies to maintain their properties. These companies can provide a simple service of removing yard trimmings from the site. The Department has an interest in facilitating the composting for these materials through the local privately operated composting operations. These materials provide an excellent source of high quality carbon for use in centralized composting facilities. Yard trimmings from multi-family and commercial locations could also be provided to local community gardens and farmers.

Additional training and education is fundamental for community engagement and for any organic collection program's success. These educational opportunities are described in Section 24 Communications Plan.

10.2 Composting Education

Public awareness of the value of composting is still generally low. Consumer attitudes towards composting are weak, especially with regard to the goal of significant diversion of a community's food wastes. Education and workshops will continue to be essential to the City attaining its Zero Waste goals. To honor the principles of maximum value added, composting education activities will approach different segments with different solutions, such as residents of single family homes with yards versus tenants without yards, elderly and others unable to do on-site composting for soil production. Families with nutritional goals for gardening and community garden opportunities will be supported through inter-departmental support from the Department, as well as from Health and Human Services, Parks and Recreation.

Composting workshops are designed to connect education to action. The Department will provide complete and easy to understand information that compares a variety of systems in order to increase resident's commitment levels. The primary objective of the composting education and rebate program will be to educate residents on the various composting solutions available in the marketplace as well as more promotion on the benefits of composting. A variety of goals such as the production of soil amendments, destinations for food waste, and secondary products such as worms, animal protein or nutrient teas can provide residents with enthusiasm for adopting non-conventional compost systems.

School education is essential as well toward the proper efforts to compost. The Department is committed toward developing a curriculum-based school education program, as described in more detail the Section 24 Communications Plan. The re-designed school education program will include basic composting education and offer school-based projects to promote composting on school grounds. The Department will work in collaboration with the Austin Independent School District to develop such school-based pilots and demonstrations programs.

10.3 Compost End-Use Classification System

The development of a stronger retail market for compost will ultimately be determined by the public perception of compost quality. Education and awareness of the role of mulch and compost will be increased in order to support the marketplace for increased supply of compost materials.

Currently, Federal and State grading standards for compost are based on contaminant tolerance measurement systems. These graded systems permit compost for food grade production to contain acceptable tolerance levels of cadmium, chromium, copper, mercury, nitrogen, lead, and zinc. These heavy metals are regulated to limit point and non-point sources of pollution to the water, soil, or air. However, this graded system is not consumer friendly, and generates distrust and poor public perceptions of compost quality. A new consumer-based classification system is needed to assure the public of safe use of the various grades of compost produced and distributed.

A system for identifying the appropriate compost for the specific application needs to be developed. This suggests that the Department support research and implement an end-use classification system as an advisory to end-users on the most appropriate usage for each grade of compost. Markets for the richest compost should be designated for food production in community gardens. Markets for the low end--use compost should be designated through the principle of appropriate use. For example, compost for roadside embankments may not be appropriate for food production. This system of positive controls for the quality of organics would provide significant support to compost producers and quality assurance to consumers.

The Department supports the implementation of a system for the classification of compost with a goal to increasing local sales of compost to residents. Such a system would also support the commercial marketplace by providing export opportunities beyond the Austin area for compost produced from city food organics and yard trimmings.

End-use classification should follow the Highest and Best Use principles of Zero Waste. There are several quality end-use classifications that can support the following consumer products:

- Sustainable organic food production
- Back-yard food gardens and community gardens
- Farm soil amendments for food production
- Mulch for trail surfaces
- Non-food flower beds and community flower gardens
- Soil water retention and growing medium for landscaping
- Topsoil and turf dressing
- Roadside embankments

To develop and implement a consumer oriented compost end-use classification system, the Department will work closely with the US Composting Council, a non-profit composting organization. The US Composting Council (USCC) provides support for generators of organic residues, compost producers, policy-makers, regulators, professionals and product users for the purposes of advancing the industry. The USCC is involved in research, training, public education, composting and compost standards,

expansion of compost markets and the enlistment of public support. The USCC provides resources, educational materials, training, networking, and career advancement opportunities for professionals and all those affiliated with the composting and organics recycling industry. USCC members include compost producers, marketers, generators of organic residues, policy makers, regulators, equipment manufacturers, product suppliers, academic institutions, public agencies, nonprofit groups and consulting/engineering firms. More information can be found at www.compostingcouncil.org

10.4 Composting Incentives

Beginning in 2010, the Department initiated a new composting incentive program. The new program offers \$75 rebates to customers who purchase a home composting unit. By expanding the program, the desired goal will be to reach at least 10% of customers within 10 years, adding one percent impact each year. In addition, the Strategic Initiatives Division will undertake the following tasks to increase on-site and neighborhood composting:

- Develop a master composter and junior composter certification program;
- Partner with the City's Climate Protection Program to develop a method for customers to document energy and water savings from composting;
- Partner with Austin Energy (AE) to revisit requirement of using Dillo Dirt™ for the AE Green Building certification;
- Coordinate with Watershed Protection to include training for xeriscaping into the composting training program;
- Partner with Watershed Protection to engage home owner associations in removing limitations of home-based composting;
- Engage multi-unit complexes to encourage them to develop on-site composting efforts, or adopt valet services to pickup recycling and composting in addition to trash and recycling;
- Engage in partnerships with restaurants and food processors to support increased food organics diversion; and
- Partner with Austin Independent School District to support composting pilots and demonstrations on various school properties.

Cost and Diversion Estimates for Composting Incentives

Initiative	Year of Initiation	Initial Year of Full Implementation	Initial Capital Costs	Annual Costs
Compost Rebate Program	FY11	FY12	\$0	\$50,000
Compost Public Education	FY13	FY14	\$0	Included in Communications Plan section
AISD Compost Education & Pilots	FY13	FY14	\$0	Included in Communications Plan section
End-Use Classification System	FY13	FY15	\$0	\$50,000

Initiative	Year of Initiation	Initial Year of Full Implementation	Initial Capital Costs	Annual Costs
Multi-Family/Commercial Organics Education	FY14	FY15	\$0	Included in Communications Plan section
Multi-Family & School-based Pilots and Demonstrations	FY14	FY16	\$0	\$50,000

Resources for Composting Incentives

One additional staff position is required to coordinate, promote and market the composting organics program and providing training in neighborhood and on-site composting and xeriscaping. Program costs for this initiative are based on backyard compost bin rebates at \$75 per household and 10% participation of approximately 182,000 households at 1 percent participation growth per year for 10 years.

Implementation Tasks for Composting Incentives

Task	Lead Responsibility	Participants	Schedule (FY)
1. Assess and refine new composting incentives program; expand program	Strategic Initiatives Division	Compost incentive participants	FY 12
2. Develop compost program outreach materials; present new public education on household and community garden on-site composting	Strategic Initiatives Division	Residential and commercial generators	FY 12
3. Increase training sessions to include community gardens and garden stores on on-site composting.	Strategic Initiatives Division	Community and neighborhood groups, residential and commercial generators	FY13 and ongoing
4. Initiate Master Composter and Junior Composter certification program.	Strategic Initiatives Division	Parks and Recreation	FY14 and every 6 months ongoing
5. Develop End-Use Classification System	Strategic Initiatives Division	US Composting Council	FY13
6. Initiate Multi-Family &	Strategic	Residential and	FY14

Implementation Tasks for Composting Incentives

Task	Lead Responsibility	Participants	Schedule (FY)
School-based Composting Pilots and Demonstration Projects	Initiatives Division	commercial generators	
7. Reassess and refine compost incentives program	Strategic Initiatives Division	Generators, composting facilities, and compost end-users	Every five years

10.5 Organic Collection Systems

The Department provides collection services for single-family households and some multifamily and commercial customers. Most collection services provided to multifamily and commercial customers are provided by private sector service providers. Through implementation of the Zero Waste initiatives described in this section, 30 percent of organic materials will be directly diverted by the City and 70 percent of the organic materials will be diverted by non-profit and private sector service providers.

Role of the City

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 will 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 will 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. These policies are further described in Section 21 Policies and Ordinances.

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 weekly 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.

If there is a service void and no private sector service providers are willing or able to provide the organic collection service, the Department will also provide for collection of organic materials from multifamily and commercial generators. Based on input from multifamily and commercial generators and private sector service providers, the Department will evaluate whether it will be necessary to expand organics collection beyond the Department's current customer base. If needed, the Department could contract for services for specific generators, such as those located in the Central Business District or for small multifamily complexes that are not able to attract a service provider on the open market. The Department could also expand its operations beyond its current customer base if deemed necessary by the City Council.

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.

Public education regarding composting organics is further discussed in Section 24 Communications Plan.

City Infrastructure

The Department will work consider developing an organics processing pilot at the closed City of Austin FM812 Landfill. The pilot will evaluate the feasibility of adding food scraps and compostable paper to the composting program. Based on the results of the pilot, the City will consider expanding the composting facility on a clean site at the closed landfill to co-compost yard trimmings, food scraps, compostable paper. A TCEQ permit will be required for this activity. Based on feedback from the City's stakeholders, the Department will develop standards for the production of several end-use classifications of compost that does not incorporate biosolids, expanding the availability of high quality compost for certified organic growers. The goal is to utilize this site for experimentation and research. The Department will rely on private compost processors to participate in these studies and incorporate the new classification system into their operations. It is not the intent of the Department to expand its operations so as to infringe on private composting operations. It is the intent of the Department to spur new research and development to enhance organics processing and use.

Dillo Dirt™

"Dillo Dirt™" is a compost made by Austin Water Utility since 1989. It was the first program of its kind in the state and one of the oldest in the nation to successfully integrate treated biosolids with other organics in a composting operation. All yard trimmings collected curbside across the City by the Department, as well as some treated sewage sludge from Austin Water, are combined and composted to create Dillo Dirt™. The heat generated in composting (130 to 185 degrees Fahrenheit) is sufficient to

virtually eliminate human and plant pathogens. After active composting over a month, the compost is cured for several months, then screened. The finished Dillo Dirt™ meets all Texas and EPA requirements for unrestricted use.

Not only is Dillo Dirt™ used to enhance local soils, but it generates jobs as well. Most of the revenue from sales of Dillo Dirt™ are received by private vendors who sell to the public at retail prices of \$30 to \$35 per cubic yard. Dillo Dirt results in sales revenue of an estimated \$1.4M annually for local businesses, in addition to approximately \$400,000 in revenue to the City.

Role of Non-Profit and Private Sector Services Providers

There is a strong and growing private sector infrastructure for organics diversion in Austin. Service providers in Austin have developed expertise in assisting organics generators to manage organic materials internally and segregate organic materials for collection.

Non-profit and private sector service providers are expected to collect and process organic materials generated by multifamily complexes; commercial establishments such as restaurants, mobile food vendors, and food processors; special events; and City facilities requiring dumpster service.

Service providers will also:

- Develop compost capacity at large scale composting operations and community or neighborhood scale facilities;
- Provide technical assistance to organics generators; and
- Assist with on-site composting and training.

10.6 Department Organic Collection Services

The Department currently provides weekly collection of residential yard trimmings in containers and bags provided by the customers. Additions to the yard trimmings program in FY15 will include:

- Providing collection carts for yard trimmings and other organics;
- Adding food scraps and compostable paper to the yard trimmings collection program;
- Providing a choice in the size of the containers (64 and 96 gallons); and
- Expanding recycling and organics collection to all Solid Waste Services customers.

The Department will conduct a pilot program to insure that yard trimmings commingled with food scraps and compostable paper can be adequately composted for end-use markets. The pilot program is needed to test collection efficiency, public acceptance and processing capabilities for the materials generated. The pilot will also gauge contamination issues, such as plastic bags, utensils, and other non-organic material unintentionally collected in the carts. In addition, the pilot will include tracking and reporting of tonnages received in the pilot area to compare with the tonnage results on the regular yard trimmings routes to assess additional diversion potential of the food scraps and compostable paper fraction.

The Department will implement a two-year roll-out of the organics collection program to evaluate the staffing and routing requirements needed to fully implement the yard trimmings and food scrap diversion program.

Education and outreach materials will be sent to the organic collection customers to describe the program features and the types of organic materials that can be put in the yard trimmings carts. Additional information and tips to make the program more user-friendly and effective will be included as well. For example, customers will be encouraged to keep the yard trimmings cart lid secured during the week to prevent pests, empty kitchen food scrap containers directly into carts, or wrap food scraps in newspapers or place them in paper bags if they prefer. These steps help minimize odor and other related challenges. Prior to launching the program citywide, the Department will conduct customer surveys to assess program acceptance and identify customer concerns.

Cost and Diversion Estimates for Organics Collection

Initiative	Year of Initiation	Initial Year of Full Implementation	Initial Capital Costs	Annual Costs ¹
Organics Pilot Projects	FY11	FY12	\$0	\$50,000
Organics Residential Collection	FY15	FY16	\$12,000,000 (carts & trucks)	\$800,000 (operator salary and vehicle operations)

¹ Annual cost includes staffing resources.

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:

- 12 collection routes each day, 5 days per week, weekly collection
- 12 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 annually

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.

Implementation Tasks for Organics Collection

Task	Lead Responsibility	Participants	Schedule (FY)
1. Conduct research on adding food scraps and compostable paper to yard trimmings collection program; identify neighborhoods for pilot program	Strategic Initiatives Division	Stakeholders and citizens	FY 12
2. Conduct pilot program on adding food scraps and compostable paper to yard trimmings collection program; conduct follow-up stakeholder education; evaluate results; assess and refine program	Collection Services Division Strategic Initiatives Division	Operations Support Division Finance Division Customer Service Division	FY 13 – FY 14
3. Acquire equipment and implement adding food scraps and compostable paper to yard trimmings collection program citywide	Collection Services Division	Strategic Initiatives Division Operations Support Division Finance Division Customer Service Division	FY 15 – FY 16
4. Assess and refine food scraps and compostable paper collection program	Collection Services Division	Strategic Initiatives Division	every 5 years ongoing

10.7 Processing Options

Agricultural Based Composting

The goal of expanding compost processing opportunities, for purpose of this Department Master Plan, is to divert food scraps from the landfill to achieve the City of Austin Zero Waste goals. When utilized appropriately, composting provides the added benefit of improving the quality and quantity of food produced locally. Agricultural operators control the lands that produce our local food and are able to convert organics into improved soils for food production. The highest value added opportunity for organics is the production of the highest quality foods.

Attention should be placed on the cumulative volumes of food organics diverted to any individual location. A reasonable goal for soil improvement, as opposed to illegal dumping or storage of food scraps, would be for a maximum of 10 percent soil organic matter levels in the accessible soils of an agricultural producer.

Traditional Facility Based Composting

The organics collection programs provided through the Department and private sector service providers will generate mixed organic materials that will need to be processed. Currently the Department works with Hornsby Bend to process its collected yard trimmings. The Department will continue to work with Hornsby Bend for organics processing and continued operations as appropriate, based on the outcome of this pilot and others to be conducted concurrently. The Department will provide experimental demonstrations of compost processing of food organics at the closed FM812 Landfill.

At this time there are two other permitted private entities available to handle these organic materials and process them into a suitable compost material for marketing. These facilities include Texas Disposal Systems and Organics by Gosh. There are other private entities with various levels of permits and resources that may be able to receive this material in the future.

In the medium-term though FY20, the City's organics processing capacity is anticipated to be met through aerobic composting. The Department will also consider future implementation of emerging technology, such as anaerobic digestion, for treating source-separated organics and organics-rich municipal solid waste.

There are two basic methods to compost yard trimmings with food scraps; either through an aerobic open air process or an anaerobic process that contains and seals the materials from contact with air. Aerobic composting facilities are designed for collecting, grinding, mixing, piling, and supplying sufficient moisture and air to organic materials, including food scraps and compostable papers, to speed natural decay. The finished product of a composting operation is compost, a soil amendment suitable for incorporating into topsoil and for growing plants. Aerobic compost technologies include: windrows, in-vessel and aerated static piles. The technologies incorporated by the permitted composters in the Austin area utilize the windrow style of composting.

Current Collection Methods

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 to an additional approximately 50,000 tpy to over 80,000 tpy over the planning period.

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 the other permitted existing 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 Solid Waste Services 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.

Projected Need for Composting Capacity

Although the Department's additional need for composting capacity is approximately 50,000 to 80,000 tpy over the planning period, the overall city-wide capacity needs for handling these organics after the recommended initiatives and ordinances are implemented is well above the estimated capacity needs. This is due to the potential amounts of these materials generated by the private sector.

Tons Per Year		Tons Per Day		Projected Facility Needs	
Min	Max	Min	Max	Min	Max
346,000	775,000	1,000	2,000	2	4

City Implementation Tasks for Composting Capacity

Task	Lead Responsibility	Participants	Schedule (FY)
1. Work with Hornsby Bend to conduct pilot program of commingled yard trimmings and food scraps.	Collection Services Division	Hornsby Bend	FY12 -FY14
2. Enter into a service agreement with AW - Hornsby Bend to compost commingled organics collected by City crews.	Collection Services Division	Hornsby Bend	FY13
3. Encourage the private operators to increase infrastructure to handle the added estimated organic volumes required for collection from new ordinances to meet the City-wide Zero Waste needs.	Strategic Initiatives Division	Collection Services Division	FY14 - ongoing
4. Assess and refine composting collection programs.	Collection Services Division	Strategic Initiatives Division	every 5 years ongoing

10.8 Anaerobic Digestion

Anaerobic digestion is an emerging technology for treating source-separated organics. Anaerobic digestion is a biological process where microorganisms break down biodegradable materials in an oxygen-deficient environment, creating a biogas that can be used to produce electricity or converted into a transportation fuel. This type of biogas consists primarily of methane and carbon dioxide. Although the first phase of the biological process (hydrolysis phase) often operates in batch-type processes, the methane generating and subsequent electrical generation phase of these facilities are designed to operate continuously and provide uninterruptible power. With a proper feedstock, these reactions can reduce the volume of materials by approximately 70 percent and produce a biogas which can be converted into energy or fuel. The residuals or digestate from this process can be utilized in the on-site compost facility for further processing.

Although some emerging technologies, including anaerobic digestion, are currently under consideration or in development with the potential to provide substantial increases in diversion rates, many emerging technologies are not sufficiently advanced to the point of commercial adoption.

As the City achieves its interim 75 percent goal, commercially viable technologies available at that time can be adopted to achieve the 90 percent diversion goal. Evaluation of current emerging technologies supports these anticipated diversion rates. This initiative will be revisited after the City's achievement of its 75 percent goal and before FY'30 and the goal of 90 percent diversion.

10.9 Food Waste Disposal Units

Over the past year, City staff have been approached by representatives promoting the use of sink-based food waste disposals as a means to convey food waste through the wastewater system to Austin Water's anaerobic digesters. The City's Sustainability Office, in collaboration with AWU and the Solid Waste Services Department, led research about the potential added use of food waste disposal units and their impacts on city infrastructure.

After careful study of the issue, and providing a balanced perspective that integrates multiple aspects of this issue, specific to Austin's utility and sustainability perspectives, the City recommendation is to maintain its existing position on food waste disposals. This would mean the City does not support the use of food waste disposals in its promotional or educational materials and programs, and would continue its existing ban on commercial disposals. The recommendation rationale relates to the following impact areas.

- Water Quality Impact and Nutrient Loading
- Wastewater Infrastructure Impacts
- Waste Reduction and Solid Waste Infrastructure Impacts
- Water and Energy Conservation Impacts

Commercial Food Waste Disposal Units

In 2007, City Council adopted the recommendations of a Water Conservation Task Force led by Mayor Lee Leffingwell. This task force made multiple recommendations for prohibiting water-inefficient equipment. Those recommendations included a ban on new commercial garbage disposals, which often run water continuously and therefore use much more water than residential garbage disposals. For the City to support the broad use of food waste disposal technology, the plumbing code would need to be modified to lift the ban on commercial disposals; that action would represent a departure from Austin's history of using technical codes to advance water- and energy-conserving technology in new construction.

Many commercial businesses including restaurants have garbage disposals that were grandfathered in after the ban was adopted. These systems can stay in service until there is a need for a remodeling permit. There is no ban on residential disposals. Approximately 80% of residents have disposals, including close to 100% of new home construction. If the City chooses to encourage the use of garbage

disposals, various existing City campaigns encouraging commercial and residential customers to limit or avoid the use of their garbage disposal will have to be changed, representing a reversal of current messaging to customers.

Waste Reduction and Solid Waste Infrastructure Impact

Proponents of food waste disposal technologies may claim that point-of-use disposal units represent an easy and attractive solution to help the City reach its Zero Waste goals. However, this claim is not as simple as it may seem. Food waste that is introduced into the City's wastewater system and eventually land-applied or composted at Hornsby Bend and re-processed into Dillo Dirt is a better alternative compared to sending food waste to the landfill. But, other methods of food scrap management exist which may be more desirable alternatives. In evaluating support for food disposal units, the City should consider the following two factors: 1) the City's future plans for food scrap management; and 2) the City's commitment to the Zero Waste Highest and Best Use Hierarchy, as adopted in the City's Zero Waste Strategic Plan (Strategic Plan).

Future Plans for Food Scrap Management via Curbside Compostable Pickup

With adoption of the Strategic Plan, by resolution, the City Council identified composting as one of four priorities. To achieve Zero Waste goals, the Department plans to expand its education efforts to include separation of organics, such as food scraps, from the waste stream. This education effort will support the Department's goal to eventually implement a 3-cart residential collection system. These carts would be used to collect non-recyclable material to be sent to the landfill (brown cart), recyclable materials (blue cart), and organic materials for composting (green cart).

Promoting disposal of food scraps through a sink-based food waste disposal unit would send mixed signals to the public regarding the actions are intended to assist in achieving sustainability. Several businesses already segregate kitchen food scraps and contract with a commercial service that collects and composts the material. In doing so, they support the creation of green jobs and nurture our local composting infrastructure, both keys to a strong Zero Waste economy. The City and the Department will continue to encourage, recognize, and create incentives to support these green business activities.

Hierarchy of best use

Food scraps contain valuable nutrients that can be re-captured by using compost as a soil amendment. Composting, in the context of a hierarchy of best use, maximizes the value of food waste. Combining residential food scraps with wastewater sludge for subsequent anaerobic digestion and reuse, as recommended by proponents of food disposal units, will diminish the value of the final product. The high-value nutrient composition of food scraps, when put into the City's wastewater system, is intermingled with the variety of contaminants and pathogens normally present in sewage. This degradation reduces the value of the organic material, requires additional processing, and truncates the potential end-use of the resulting material.

The most efficient and sustainable method to deal with food waste would be to compost it on the same site where the waste is generated, and then grow more food at the same location using compost as

fertilizer. Unfortunately, many large generators of food waste do not have the land or expertise to grow their own food. The next best option is a centralized system of collection and composting of food waste.

In its effort to achieve Zero Waste, the City plans to implement a comprehensive waste management program for its customers. Additionally, the City is committed to supporting and investing in private sector technologies and services that preserve the value of food scraps, minimize risks to the City's infrastructure, and keep user costs low. In conclusion, the Department continues to support City policy to avoid the use of food waste disposal units.

DRAFT

Section 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 Solid Waste Services Department (Department). Some materials, including some pharmaceuticals, batteries, paint, and compact fluorescent lights are collected by retailers for diversion or proper disposal.

Hazardous materials generated by commercial businesses are regulated by the U.S. Environmental Protection Agency (EPA). Programs for proper handling and manifesting these materials are provided by private sector hazardous material handlers. Large quantities of commercially generated hazardous materials are outside of the scope of the City of Austin Household Hazardous Waste Program. The Solid Waste Services Department (Department) would like to provide programs for small businesses generating small amounts of hazardous materials, also known as Conditionally Exempt Small Quantity Generators (CESQGs). However, Texas state regulations prohibit municipal collection of CESQGs. The Department will seek a change in state regulations to include CESQGs in the Household Hazardous Waste Program.

The Diversion Facilities Division currently operates a household hazardous waste facility and provides door-to-door collection for seniors and disabled residents. The Disposal Facilities Division also supports take-back programs offered by local businesses at 30 locations citywide. The take-back program focuses 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;

- Advocating for Conditionally Exempt Small Quantity Generators (CESQG) to be included in the HHW program; and

11.1 HHW Facility Operations

The Department's HHW Program services residents of Austin and Travis County. The purpose of the HHW Program is to provide proper disposal and technical assistance to residents in order to ensure environmentally safe removal of hazardous materials from the waste stream. Residents can bring their leftover household hazardous products to the HHW Facility and safely dispose or recycle their hazardous waste. HHW programs provide an avenue for the community to reduce the environmental and health hazards associated with hazardous wastes, pollutants, and contaminants which enhance the quality of air, land and water. The legal mandates for this activity are the Texas Constitution Article XI, section 5, City Code Chapter 15-6-1 and 15-6-47, NPDES and TPDES permits and Texas Administrative Code 30 TAC 335 Subchapter N.

The HHW Facility is located in south Austin and occupies approximately one half acre. The HHW Facility includes a large service pad, a 2,500-square-foot office building, a 100-foot by 50-foot canopy, a small decontamination/shower building, and portable storage sheds and outbuildings. The HHW Program collected approximately 1,043,000 pounds of HHW in FY2010.

Drop off hours at the HHW facility are Tuesday-Wednesday between 10:00 am and 6:00 pm and the 1st Saturday of each month between 7:00 am and noon. Items collected at the HHW Facility include:

- Fluorescent bulbs
- Batteries (car and household)
- Cell Phones
- Household cleaning products
- Automotive products including oil filters
- Paint and thinners
- Pesticides and herbicides
- Photographic chemicals
- Mercury
- Aerosol Cans
- Pool chemicals
- Cooking Oil
- BBQ and camping propane cylinders

Items NOT accepted through the HHW Program include:

- Radioactive materials
- Syringes or medical waste
- Tires
- Electronics including computers or other appliances
- Compressed gas cylinders
- Explosive materials (including ammunition)

- Any waste generated by a business

Trained staff properly sort, handle and organize the materials dropped off by citizens. Latex paint is re-blended and offered to the public. Other items such as cleaners, paint, gardening products, along with other usable household supplies are offered to the public through the program's reuse store. Staff also provide hazardous waste technical advice and home pickup for the disabled and elderly. The HHW Program has 7.5 full time equivalents (FTEs) for FY11. Staff are required to take specialized HAZWOPER training for handling household hazardous waste training, with an 8 hour annual refresher course. The current FY11 operating budget is approximately \$ 825,000 annually. Funding for HHW services is provided through the Anti-Litter fee assessed of resident's monthly utility bill.

Performance Trends for Household Hazardous Waste Program

Measure	FY08 Actual Totals	FY09 Actual Totals	FY10 Actual Totals
Total lbs. of materials received through the HHW Facility	1,039,918	909,088	1,042,993
Total lbs. of materials reused or recycled through the HHW	236,161	227,047	263,689
Number of customers utilizing the HHW facility's drop off service	12,327	12,155	13,035
Average lbs. per household	84.36	74.49	80.01
Number of home pickups	New Measure June FY09	40 June 09 through Sept 09	67
% of waste stream diverted from landfills through HHW operations	New Measure FY10	New Measure FY 10	0.06%

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.

Projected Additional Needs for HHW Facility

Both of the HHW facility initiatives discussed above will be completed and operational by FY12.

City Implementation Tasks for HHW Facility

Initiative	Initial Year at Full Implementation (FY)	Annual Costs	Annual Diversion Tons
Expand Hours of Operations	FY12	\$119,000	<1%
HHW Expand into Materials Recovery/Transfer Facility	FY12	—	—

Task	Lead Responsibility	Participants	Schedule (FY)
1. Expand the hours of operation at the HHW Collection Facility	Diversion Facilities Division	Disposal Facilities Division	FY12
2. Add two new employees to staff the HHW Collection Facility.	Diversion Facilities Division	Disposal Facilities Division	FY12
3. Expand into a portion of the Materials Recovery/Transfer Facilities	Diversion Facilities Division	Disposal Facilities Division	FY12

11.2 Austin ReBlend Paint

Austin ReBlend is a 100 percent post-consumer, low VOC, rebled latex paint made from paint collected at the Household Hazardous Waste (HHW) Facility. Up to 55 percent of materials received annually by the HHW Facility is unused paint dropped off by customers. Approximately 60 percent of this unused paint is latex paint. The paint is inspected before it is chosen to be used in Austin ReBlend. It is then consolidated, blended, filtered and packed on-site by trained personnel to ensure a quality product.

In FY10 the HHW Facility collected over 300,000 pounds or about 30,000 gallons of unused latex paint. Most recently, from July 2010 through February 2011, the program rebled approximately 5,200 gallons or about 52,000 pounds of paint for reuse. About 284 participants received the paint.

Austin ReBlend paint is available in five gallon and two gallon containers and in two colors: Texas Limestone (off white) and Balcones Canyonlands (dark beige). Austin ReBlend is available at no cost to other City departments, for residential and non-profit use.

Austin ReBlend is a sustainable choice for paint for the following reasons:

- Helps keep paint out of landfills
- Conserves water used to make new paint
- Prevents pollution from the mining and extraction of raw materials
- Moves Austin further toward its zero waste goal

11.3 Door-to-Door Collection

The HHW Collections Program will conduct a pilot program for two years to assess whether door-to-door HHW collection is feasible for citywide application. The pilot program is needed to test collection scheduling and set-out requirements. The pilot area will be comprised of residential customers in both the southern and northern portion of the City where access to the City's HHW facility is limited by distance. Door-to-door collection of electronics will be offered through both the on-call bulk item collection pilot and the door-to-door household hazardous waste collection pilot. Costs and participation for the two approaches will be evaluated for cost-effectiveness.

11.4 Retail Take-Back Collection Program

The HHW Collections Program will expand its retail take-back collection program and request retailers that sell paint, fluorescent lamps, batteries, motor oil and other materials to take back materials for collection by City crews. Participating retailers will be identified on the City's website and other educational materials. This voluntary collection program will help identify the cost of services for a full city-wide retail take-back program as a transition to producer responsibility.

The HHW Collections Program will also expand its rechargeable battery collection sites, partnering with the Rechargeable Battery Recycling Corporation on an education campaign to encourage residents to use and recycle rechargeable batteries.

11.5 Conditionally Exempt Small Quantity Generators (CESQGs)

Currently, state regulations do not allow the City to accept hazardous waste from commercial generators. CESQGs are defined in the Code of Federal Regulations (CFR) as commercial businesses that generate less than 220 pounds per month of hazardous waste. These businesses are exempt from the reporting required of large quantity generators. However, the hazardous waste must be delivered to an offsite treatment, storage and disposal facility located in the U.S. that is "permitted, licensed, or registered by a State to manage municipal or industrial solid waste" (40 CFR 261.5 (f)(3)). Due to these expensive and cumbersome barriers, some businesses simply dispose of their hazardous waste in the general trash collection. To help increase environmental service to the local community, the Department will advocate for CESQGs to be included in the household hazardous waste program.

11.6 North HHW Collection Center

The Department is exploring the siting of a North HHW Collection Center to increase service convenience to the residents residing north of the river. The City owns and operates an HHW Collection Center in the south area of the city, however there is an identified need for a center in the north area to decrease costs for transport, decrease greenhouse gases and add needed capacity for its 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. An architectural feasibility study is underway to determine the cost and affordability of this service expansion.

11.7 Hazard Waste Reduction

A cost-effective measure to reducing the impact of HHW is to promote waste avoidance within our community. The Department will engage in a community outreach campaign on methods to reduce use of unnecessary HHWs and transition to alternative, less toxic products. The goal of this education campaign is to reduce the demand for costly HHW disposal methods and reduce the potential for environmental or health hazards associated with hazardous wastes, pollutants, or contaminants. The Department will also initiate state and local legislation to reduce the volume and toxicity of discarded materials through Extended Producer Responsibility.

For HHW material collected through the program, the Department remains committed to recycling or reusing chemicals and household products as a means of supporting its diversion activities and achieving the City's Zero Waste goals.

New Policies: HHW Collection

Several of the policies included in Section 23 will affect the diversion and proper disposal of HHW through Product Stewardship. 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.

In Section 23 – Product Stewardship of this *Master Plan*, EPR policies are outlined to handle household hazardous waste. These policies will shift responsibility from the City to producers, brand-owners and retailers, depending on the product, to take-back products and packaging at local stores or by sending them back to the producer.

New Programs: Household Hazardous Waste Collection

Initiative	Initial Year at Full Implementation (FY)	Annual Costs	Annual Diversion Tons
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The Department will provide the following programs to divert or properly dispose of HHW:

- Expanding the HHW retail take-back program from 30 to 100 retail locations;
- Expanding door-to-door collection of HHW to all residents -- currently provided only to seniors and disabled residents; and

New Infrastructure: Household Hazardous Waste Collection

The Department will plan, construct and operate a North Household Hazardous Waste Collection Facility in response to:

- Demand from north Austin and Travis County residents who refrain from safely or illegally disposing of their HHW due to their distance from the south HHW location;
- Interest from neighboring communities seeking partnerships with Austin to manage HHW from their residents; and
- Increased volume of HHW materials from area residents proportional to the City's population growth.

Resources for Household Hazardous Waste Collection Implementation

Five new staff will be needed to implement the new HHW collection programs; two positions are needed for the retail take-back collection program and three positions are needed for the on-call door-to-door collection program. Additional equipment will be needed to expand both programs. Funding to construct and operate a North HHW Collection Facility is necessary.

Expand Retail Take- back Collection Program	FY13	\$339,000	<1%
Pilot Door-to-Door HHW Collection	FY13-14	\$126,000	<1%
Implement Door-to-Door HHW Collection (as appropriate)	FY15	\$906,000	<1%

Implementation Tasks for Household Hazardous Waste Collection Implementation

Task	Lead Responsibility	Participants	Schedule (FY)
1. Solicit additional retail businesses to participate in the household hazardous waste take-back program	Diversion Facilities Division	Strategic Initiatives Division	FY12
2. Expand take-back program	Diversion Facilities Division	Strategic Initiatives Division	FY13
3. Promote participating retail businesses in the City's website and other publications	Diversion Facilities Division	Strategic Initiatives Division	FY12 – on-going
4. Assess and refine household hazardous waste take-back program	Diversion Facilities Division	Strategic Initiatives Division	Every 5 years on-going
5. Conduct pilot program on door-to-door household hazardous waste collection; conduct follow-up stakeholder meetings; evaluate results; assess and refine program	Diversion Facilities Division	Strategic Initiatives Division	FY13-FY14
6. As appropriate, implement door-to-door household hazardous waste collection citywide; promote door-to-door household hazardous	Diversion Facilities Division	Strategic Initiatives Division	FY15 – on-going

Task	Lead Responsibility	Participants	Schedule (FY)
waste collection program			
7. Assess and refine door-to-door household hazardous waste collection program	Diversion Facilities Division	Strategic Initiatives Division	Every 5 years ongoing
8. Advocate for inclusion of CESQGs in the household hazardous waste program	Diversion Facilities Division	Strategic Initiatives Division	FY13-FY15
9. As appropriate, expand household hazardous waste program for CESQGs; identify cost-recovery fees for commercial generators; promote household hazardous waste program to CESQGs	Disposal Facilities Division	Strategic Initiatives Division	FY16 – on-going
10. Assess and refine CESQGs program	Disposal Facilities Division	Strategic Initiatives Division	Every 5 years on-going
11. Evaluate sites and cost involved in constructing and operating a North HHW Collection Facility.	Solid Waste Service Department	Disposal Facilities Division	FY12-FY14
12. If approved, Construct and Operate a North HHW Collection Facility.	Solid Waste Service Department	Disposal Facilities Division	FY14 – on-going

Section 12 Disposal Management

The Austin City Council endorsed Zero Waste as a significant goal for the City. In doing so, the Council acknowledged that disposing of waste is not inevitable. The term Zero Waste means reducing the generation of discarded materials at the source and maximizing diversion methods to avoid landfills and incinerators. The overall goal is to strive for zero waste that is burned or buried.

The Austin City Council has 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.

Conversely, that implies 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.

12.1 City 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 under 30-year post-closure care within the USEPA Subtitle D requirements for landfill site care and maintenance.

With the closure of the FM 812 Landfill, the Texas Commission on Environmental Quality (TCEQ) requires that specific closure requirements be maintained during the 30 year closure period. This activity helps to ensure that the closed landfill remains environmentally secure and that no adverse impact occurs from municipal solid waste (MSW), methane or leachate.

The FM 812 Landfill post closure requirements consist of several core items. During the 30 year post closure care the following requirements will be maintained: maintain the right of entry and right-of-ways, maintain leachate collection system and maintain methane collection system. The Department is also obligated to conduct periodic maintenance to ensure integrity and effectiveness of final cover, FMLER liner, facility vegetation and drainage control systems. Department staff will correct issues related to settlement/subsidence, ponded water and erosion as they occur.

12.2 City Landfill Repurposing

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 benefits of capturing fugitive gases from the closed FM812 landfill and producing energy include:

- **Reduced Greenhouse Gas Emissions from Existing Landfills** – Landfills are the second largest source of methane emissions in the United States. Capturing and destroying methane with landfill gas technologies can substantially reduce the amount of methane emitted to the atmosphere.
- **Avoid Emission of Other Harmful Pollutants from Landfills** – Emissions of pollutants such as mercury, lead, and particulate matter are reduced as the result of applying landfill gas and waste to energy technologies.
- **Generate Revenue for Municipality** – By converting waste and landfill gas to energy, municipalities can both save money on energy bills, and generate revenues from power sales of renewable energy certificates or potential carbon credits.

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.

New Resources: Methane Gas Recovery

No additional staff are needed to research and install a landfill gas recovery system. Financial resources are needed to purchase equipment and contract for the installation and maintenance of the system.

Implementation Tasks for Development of Methane Gas-to-Energy System

Task	Lead Responsibility	Participants	Schedule
1. Research methane gas recovery systems	Diversion Facilities Division	Austin Energy	FY12
2. Install gas recovery system	Diversion Facilities Division	Austin Energy	FY13

Eco-Industrial Park

The Department is considering the redevelopment of the set-aside buildable land as an 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.

Based on the concepts such as by-product synergy or waste-to-feed exchanges, each business can support other business through material resource sharing and common on-site energy and water systems. The planned solar-array at the closed landfill site will assist in green electric power needs of the Eco-Industrial Park. The Department will offer the buildable land area at the FM812 closed landfill for economic redevelopment, in collaboration with the City of Austin Economic Redevelopment and Growth Office.

New Resources: Eco-Industrial Park

Additional resources are needed to design and implement the Eco-Industrial Park. These additional resources include a 1.00 FTE Department staff person positioned at the ERGSO office, estimated to be approximately \$XX,000.

Implementation Tasks for Development of Eco-Industrial Park

Task	Lead Responsibility	Participants	Schedule
3. Hire staff to design and implement Eco-Industrial Park	Strategic Initiatives Division	Economic Development and Growth Office	FY13
4. Solicit industries to locate at Eco-Industrial Park.	Economic Development and Growth Office	Private sector companies	FY13 – FY15

Solar Farm

The Department's FM 812 Landfill Site is now closed. One beneficial use of this 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.

The Department, working cooperatively with Austin Energy, will research the placement of a large solar-array. Grants may be available to partially finance capital costs. The Solar Farm development will not require any new facility space needs, as it will be used to cover the existing landfill. The Solar Farm Development is projected to be in service by FY15.

Projected Need for Solar Farm Development

The projected need is for a single project to be solicited from qualified developers or Austin Energy. The project initiative calls for it to be in service by FY15.

Implementation Tasks for Solar Farm Development

Task	Lead Responsibility	Participants	Schedule
1. Coordinate with Austin Energy to develop the solar project at the landfill.	Diversion Facilities Division	Austin Energy	FY12
2. Developer to permit, design and construct solar project.	Austin Energy	Private Developer	FY14
3. Commence operations of the solar project.	Austin Energy	Private Developer	FY15 – ongoing
4. Monitor the solar project in association with the required landfill post-closure maintenance required.	Diversion Facilities Division	Austin Energy	FY15– ongoing

12.3 Disposal Capacity Needs

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 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 landfilled annually. The following chart displays the disposal needs at given goal assessment dates.

Projected Diversion and Disposal Needs by Goal Year

	2012	2015	2020	2030
City-wide Diversion Goal	35%	50%	75%	90%
Total Diversion Tons City Collected				
Total Diversion Tons Private Sector Collected				
Total Disposal Tons Private Sector Collected				

	2012	2015	2020	2030
Total Disposal Tons Private Sector Collected				
Disposal Needs (tons/year)				

(tonnages are being re-calculated and will be inserted later)

Given that the landfilling contract expires at the 2030 goal year targeting a 90% diversion rate, there is no need to prepare for additional disposal capacity at this time. The City will re-evaluate its disposal needs beyond 2030 at the 2025 city-wide diversion assessments

12.4 Alternative Disposal Options

A new generation of high-temperature thermal combustion processing technologies that 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, the Directors from both departments discussed and agreed to develop a method that would evaluate proposed technologies using the Highest and Best Use Hierarchy, impact to climate change, and cost.

Highest and Best Use Hierarchy

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 (see Section 3) 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.

Climate Impacts of Disposal Technologies

It is the City of Austin's goal to pursue sustainable practices and reduce the effects of climate change. The Department manages its disposal stream through traditional landfilling. As landfills are a major source of greenhouse gases, particularly methane, it is in the best interest of the Department to explore alternative measures of disposal that reduce its impact on climate change.

Neither landfills nor combustion incinerators are an appropriate response to the challenge of implementing Zero Waste strategies. As the Department explores alternative disposal technologies, combustion is not an option. Instead, the principles of Zero Waste require the reduction of greenhouse gas emissions as well as reducing other environmental impacts. From a Zero Waste perspective, clean energy does not involve a form of energy production from waste that involves a greater impact on climate change through greenhouse gas emissions. The Department will not consider such claims of clean energy production unless the technology can provide direct evidence that it has less impact on the environment than traditional landfilling.

The Department is a participant in a life-cycle analysis study through the Department of Civil Engineering, Center for Sustainable Infrastructure Systems at the University of Colorado Denver. This study will provide an environmental and economic comparison of conventional landfilling with alternative energy conversion technologies. The major measuring stick is greenhouse gas reductions as compared to traditional landfilling. The study will also offer additional means to measure environmental impacts, through a systems analysis of each disposal method.

Types of Alternative Disposal Technologies

The term alternative disposal technology is all-inclusive of numerous processes. A subset of these processing facility types is called "conversion technology", a term used to describe new and emerging non-combustion thermal, chemical, and biological technologies.

As the University of Colorado life-cycle analysis yields an alternative disposal technology that has greenhouse gas reductions from traditional landfilling, the Department will research the need and potential for diversion from traditional landfilling. The study will also offer additional means to measure environmental impacts, through a systems analysis of each disposal method.

Specific examples of technologies that might meet the greenhouse gas reduction requirement include thermal conversion processes as well as biochemical conversion processes.

Thermal Conversion - Direct Combustion

Direct combustion is the complete oxidation of a fuel at high temperatures under controlled conditions yielding substantial net energy release. Temperatures in the combustion zone of the units are generally in the range of 1500° to 3000°F. Actual temperatures depend upon the type of fuel used, stoichiometric conditions (i.e., ratio of air to fuel), heat losses, and design of the combustion unit. The direct combustion process results in the production of hot gases, specifically, CO₂, water vapor, and some products of incomplete combustion, from which heat is recovered in the form of steam and production of a solid residue (ash).

In most modern MSW-fueled direct combustion systems, the heat energy of the combustion gases is recovered in a steam boiler. Energy in the steam is then used for heating, producing electricity using a turbine generator, or both.

The City of Austin will not classify or consider any direct thermal combustion technologies as a Zero Waste preferred method of management because the principle goal of Zero Waste is to divert material away from burying (landfilling) and burning (combustion).

Thermal Conversion - Gasification

Gasification is the process whereby solid organic matter is converted under controlled conditions of partial oxidation into fuel gases. Feedstocks appropriate for gasification include coal, wood, and organic materials in MSW. Partial oxidation is carried out by using less air than required for complete combustion of the fuel (i.e., sub-stoichiometric air), or by indirectly heating the organic matter. Temperatures range from 1400° to 3000°F. The gas that is produced is known as synthesis gas, syngas, or producer gas. Syngas consists primarily of carbon monoxide, hydrogen, methane, and other hydrocarbons, as well as carbon dioxide (CO₂) and nitrogen (N₂) in some gasification processes. Gasification processes may also result in the production of liquids and solids as byproducts.

The gasification process can theoretically be designed to optimize the production of gases or liquids. Syngas can be used as fuel in boilers or, if cleaned up, in internal combustion units. Furthermore, gasification products can theoretically be used to produce chemicals such as methanol and liquid fuels.

Thermal gasification of MSW may be considered by the Department in the future, only if it is economical, and the resulting greenhouse gases are reduced from the baseline comparison to landfilling. If gasification meets these environmental standards, the Department could fuel its vehicles with liquid fuels generated from this process, creating a closed loop to further reduce greenhouse gas generation.

Thermal Conversion - Plasma Arc Gasification

Plasma arc gasification is new to the field of MSW processing as a form of thermal gasification. The technology uses an electrical arc process to generate extremely high temperatures (9000° to 18000°F.) to decompose the waste and convert it to a very high temperature gas that is subsequently converted to heat and electrical energy using conventional energy conversion systems.

Through plasma arc gasification, the organic materials in the waste are broken down into basic compounds, while the inorganic materials form a liquid slag. Generally, an MSW feedstock is processed prior to plasma arc gasification to remove bulky and other undesirable materials. The syngas can be combusted and the heat recovered in a waste heat boiler. After conditioning, the syngas is combusted in an engine or gas turbine producing electricity. The remaining ash material forms a brittle slag that, when cooled, is an inert (non-hazardous) granular material that may have use as a construction aggregate or road base.

Plasma arc gasification of MSW may be considered by the Department in the future, only if it is economical, and the resulting greenhouse gases are reduced from the baseline comparison to landfilling. If plasma-arc gasification meets these environmental standards, the Department could utilize the generated electricity to power the proposed Eco-Industrial Park at the FM 812 Landfill.

Thermal Conversion - Pyrolysis

Pyrolysis is a process whereby organic matter is converted to gaseous, liquid, and solid fuels under high temperatures (700° to 1500°F) in the absence of oxygen. Feedstocks appropriate for pyrolysis include coal, wood, and organic materials in MSW. Pyrolysis is similar to the gasification process, but pyrolysis generally occurs at lower temperatures due to the lesser availability of oxygen. Similar to the case of thermal gasification, the pyrolysis process can be designed to optimize the production of gases or liquids. Syngas can be used as fuel in boilers, or in internal combustion units or gas turbines, if the gas is adequately cleaned. The liquid byproducts generated during the pyrolysis process, known as pyrolytic oils, can be used directly in boilers, or they can be refined for other uses such as in the manufacturing of lubricating oils and chemicals. Char is also produced as a result of pyrolysis and would require further processing to meet specifications for marketable commodities.

Pyrolysis of MSW may be considered by the Department in the future, only if it is economical, and the resulting greenhouse gases are reduced from the baseline comparison to landfilling. If pyrolysis meets these environmental standards, the Department could utilize the generated electricity to power the proposed Eco-Industrial Park at the FM 812 Landfill.

Thermal Conversion - Thermal and Catalytic Depolymerization

The depolymerization, or cracking, process theoretically converts polymers in plastic and other synthetic-fiber compounds of the waste stream into products such as diesel and gasoline. Typical feedstocks mentioned for catalytic depolymerization are waste oils, grease, and offal (i.e., processed animal soft tissue). Pressure and heat are used to decompose long chain polymers composed of hydrogen, oxygen, and carbon into short chains of petroleum hydrocarbons. This process is somewhat similar to that used at an oil refinery to convert crude oil into usable products.

There are two depolymerization methods that can be used to convert organic materials into fuel: thermal and catalytic. In the thermal depolymerization process, high temperatures (temperature ranges from 1000° to 1400°F) and high pressures are used to crack the large hydrocarbon molecules. The catalytic depolymerization process uses lower temperatures (500° to 700°F) and lower pressures than in the case of thermal depolymerization.

Depolymerization of MSW may be considered by the Department in the future, only if it is economical, and the resulting greenhouse gases are reduced from the baseline comparison to landfilling. If Depolymerization meets these environmental standards, the Department could fuel its vehicles with liquid fuels generated from this process, creating a closed loop to further reduce greenhouse gas generation.

Biochemical Conversion - Anaerobic Digestion

The typical anaerobic digestion process is one in which the organic matter found in the waste stream is converted in an aqueous environment in the absence of oxygen into a combustible gas. Potential waste-derived organic feedstocks are MSW-derived organics, wastewater treatment plant biosolids, manure, and food waste. Anaerobic digestion can take place in one or two phases. Typically, anaerobic digestion is a two-phase process in which the first phase blends into the second one without a noticeable interruption. These two phases are known as the “acid phase” and the “methane-producing phase.”

The end products of anaerobic digestion are: biogas, compost, and a solid or liquid residue. The biogas consists primarily of methane (60% to 70% by volume), carbon dioxide (29% to 39%), and trace amounts of hydrogen, hydrogen sulfide, and other gases.

Anaerobic digestion may be considered as the Department explores the delivery of food scrap discards to the Hornsby Bend Composting Facility. Direct composting of food waste is being explored, as a higher end-use than anaerobic digestion.

Chemical Conversion - Hydrolysis

Hydrolysis is a chemical reaction in which organic matter is converted to glucose or other simple sugars that can then be fermented or digested to produce other products or chemicals. Some of the products are conventional fuels (e.g., ethanol), which can be burned in energy conversion devices such as heaters and engines. Materials appropriate for chemical hydrolysis include wood and organic materials derived from MSW. In processes used to chemically hydrolyze MSW, an acid or enzyme is employed to break down the complex structures of the cellulosic materials contained in MSW, (e.g., paper, food waste, and yard waste) into simpler compounds (i.e., primarily sugars). Microorganisms can then easily ferment the sugars under appropriately controlled conditions into ethanol, or convert them in an anaerobic digestion system into methane-rich biogas.

Hydrolysis of MSW may be considered by the Department in the future, only if it is economical, and the resulting greenhouse gases are reduced from the baseline comparison to landfilling. Hydrolysis is unlikely to be endorsed by the Department, as there are higher end-uses of paper, food scrap, and yard trimmings.

Section 13 Other Core Business Services

The Solid Waste Services Department (Department) has numerous programs and services offered to the residents of Austin. This section describes six core services: 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. In particular, the Department experiences a larger customer base than the curbside collection program due to the options provided to and chosen by annexed communities. In FY11, these programs operated under the Litter Abatement Division with 93 employees and a total fleet of 104 vehicles, with an annual operating budget of \$9,200,000.

The Litter Abatement Division is responsible for litter control, alley flushing, street cleaning, dead animal collection, and bulk and brush collection. New Zero Waste initiatives that will be implemented by the Litter Abatement Division include:

- Exploring new proactive measures to prevent litter
- Placing and servicing recycling containers adjacent to public litter collection containers
- Exploring replacement of existing equipment with more climate-friendly equipment
- Exploring and implementing new performance measures to ensure stronger customer service and fiscal responsibility
- Exploring new public/private partnerships
- Developing and implementing the Clean Austin Program
- Developing and implementing the Storm Debris Management Program
- Developing and implementing the Reuse Austin Program

Additional resources are needed to redesign and implement these programs and initiatives.

13.1 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 legal mandates for this activity are the Texas Constitution Article XI, section 5, and the Health and Safety Code of Texas Environmental Laws Chapters 365, 342.004 and 342.021 (b).

The Litter Control program provides services in the Downtown/Central Business District (CBD) nightly (2:30 am to 6:30 am), 364 days per year. Litter crews use backpack blowers to remove litter from sidewalks, provide trash removal from more than 250 public right-of-way trash containers. The program recently replaced 20 regular litter control containers with 20 solar powered trash compactors equipped with adjacent recycling kiosks. This is a pilot program to evaluate the volume of recyclables collected, contamination rates, as well as effectiveness of the solar powered trash compactor's various features. At conclusion of the pilot, the Department will determine if additional solar powered trash compactors should be purchase and utilized throughout the City.

After the downtown area is serviced (6:30 am to 1:00 pm), the crews provide other services such as the cleanup of illegal dumps, City rights-of-ways, and special projects. The annual operating budget in FY 11 for Litter Control is approximately \$2.9 million. The program is funded through the use of Anti-Litter Fees charged to Austin utility customers.

Performance Trends for Litter Control Program

Measure	FY08 Actual Totals	FY09 Actual Totals	FY10 Actual Totals
Litter collected annually (tons)	378 tons	320 tons	326 tons
Illegal dumpsites cleaned	439	601	778
Right of ways cleaned	779	1286	1728

New Policies: Litter Control Services

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.

New Programs: Litter Control Services

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.

New Infrastructure: Litter Control Services

The existing services require backpack blowers to remove litter from sidewalks, and a rear-loader truck to provide trash removal from more than 250 public right-of-way trash containers. The Department will research and purchase more climate-friendly equipment to reduce its carbon footprint.

New Resources: Litter Control Services

Existing staff resources will be dedicated to provide litter collection programs. Additional resources are needed to redesign and implement a litter prevention program. These additional resources include a 0.25 full time equivalent (FTE) Waste Diversion Planner estimated to be approximately \$20,000.

Implementation Tasks for Litter Control Services

Task	Lead Responsibility	Participants	Schedule (FY)
1. Identify appropriate recycling container placement for the public area recycling program; procure sufficient containers for multi-year implementation schedule; design and place appropriate signage and messaging for recycling containers.	Litter Abatement Division	Strategic Initiatives Division Finance Division	FY12-FY15
2. Research and purchase	Litter Abatement	Strategic Initiatives	FY12-FY13

Implementation Tasks for Litter Control Services

Task	Lead Responsibility	Participants	Schedule (FY)
more climate-friendly equipment.	Division	Division Finance Division	
3. Explore new Litter Abatement measures, as a means to prevent litter.	Strategic Initiatives Division	Litter Abatement Division	FY12-FY13
4. Assess and Redefine Litter Control Services every 5 Years.	Litter Abatement Division	Strategic Initiatives Division Finance Division Customer Service Division	FY15 and every 5 years ongoing

3.2 Alley and Street Flushing

Alley/Street flushing washes contaminants from 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. The legal mandates for this activity are the Texas Constitution Article XI, section 5, and the Health and Safety Code of Texas Environmental Laws Chapters 365, 342.004 and 342.021 (b).

A cold water flushing process is used and applied by a water truck equipped with spray nozzles. Alleys and streets in the CBD are flushed a minimum of four times per week each morning Friday-Monday during the hours 2:30 am to 6:30 am. One operator, using a flusher truck with a spray nozzle application maneuvers down the alleys and streets spraying cold water. Dumpsters, delivery trucks, pot holes, other obstacles, and the presence of homeless individuals in the alleys create challenges in providing this service. 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.

New Policies: Alley and Street Flushing Services

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.

New Programs: Alley and Street Flushing Services

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.

New Infrastructure: Alley and Street Flushing Services

The existing services require a flusher truck with a spray nozzle application, which maneuvers down the alleys and streets spraying cold water. The Department will research and purchase more climate-friendly equipment to reduce its carbon footprint.

New Resources: Alley and Street Flushing Services

If expanded service is implemented, additional staff resources and equipment will be needed to perform the service throughout the seven day week. Additional resources are needed to develop and implement a city ordinance addressing the parking in alleys. These additional resources include a 0.25 FTE Waste Diversion Planner estimated to be approximately \$20,000.

Implementation Tasks for Alley and Street Flushing Services

Task	Lead Responsibility	Participants	Schedule
1. Develop and present to City Council a new city ordinance that prohibits parking between 3:00am and 5:00am for cleaning services downtown.	Strategic Initiatives Division	Litter Abatement Division Downtown Austin Alliance	FY12-FY13
2. Install signs posting the parking restrictions.	Public Works Department	Strategic Initiatives Division	FY12-FY13
3. Meet with stakeholders to develop a seven day service.	Litter Abatement Division	Strategic Initiatives Division	FY12-FY13
4. If adopted, implement seven day alley service.	Litter Abatement Division	Finance Division	FY12-FY13
5. Research and purchase more climate-friendly equipment.	Litter Abatement Division	Fleet Department	FY12-FY13

Implementation Tasks for Alley and Street Flushing Services

Task	Lead Responsibility	Participants	Schedule
6. Assess and Redefine Alley and Street Flushing Services every 5 Years.	Litter Abatement Division	Strategic Initiatives Division Finance Division	FY15 and every 5 years ongoing

13.3 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. The legal mandates for this activity are the Texas Constitution Article XI, section 5, City Code 15-6-1 and 15-6-2, and a permit from the National Pollutant Discharge Elimination System (NPDES).

Residential streets are swept six times per year, thoroughfares/boulevards are swept monthly and the CBD streets are swept nightly. Debris that is collected through the street sweeping is unloaded in designated temporary locations and hauled to an area landfill. Air regenerative sweepers and dump/bucket trucks are the primary equipment used in this operation. Residential sweeping hours of operation are scheduled Monday-Friday, 6:30 am to 3:00 pm. CBD and Boulevards hours of operation are Sunday-Saturday, 2:30 am to 1:00 pm.

The City of Austin is divided into eight residential street sweeping zones that are serviced six times per year. Typically, street sweeping will not occur on the same day as collection services. On occasion an area within a zone may be blocked due to a road closure. Depending on the length of time the area is blocked will determine when the area will be swept. It takes approximately one week to service an entire zone, or 48 weeks to service the entire city six times. This leaves four weeks to make up any time lost due to storms, weather, and allows some additional time during the heavy leaf season. House counts range from 14,000 to 31,000 per zone. House counts vary from zone to zone due to historical collection data, area of city, miles, length of time to sweep due to congestion, vegetation, and or dense population.

Eight Operator Specialists operate curb-line air regenerative sweepers with water in residential neighborhoods throughout Austin. Once the hopper on the sweeper is filled, the debris is temporarily unloaded in a designated area. Two Operator Specialists operating a bucket truck will load the debris and take to an area landfill for disposal. The operating budget for Street Cleaning designated to residential street cleaning activities is approximately \$1.4 million annually. The program is funded through the use of Anti-Litter Fees charged to Austin Utility customers.

Designated boulevards throughout Austin are swept once per month or 12 times per year. Currently there are 115 designated boulevards that are divided in a north and south boulevard list. Four Operator Specialists per shift provide this service 7 days per week using curb-line air regenerative sweepers after sweeping the Central Business District. The boulevard sweeping operators are scheduled on the early morning shift from 2:30am to 1:00pm. The operating budget for FY11 for Street Cleaning designated to boulevard and downtown street cleaning activities is approximately \$1 million annually. The program is funded through the use of Anti-Litter Fees charged to Austin Utility customers.

Performance Trends for Street and Boulevard Sweeping Program

Measure	FY08 Actual Totals	FY09 Actual Totals	FY10 Actual Totals
Amount Material removed (tons)	7,769	6,361	6,252
Residential Street Swept (miles)	27,643	28,159	27,761
Boulevard Swept (miles)	4,679	5,910	7,352
Downtown Streets Swept (miles)	11,215	12,122	11,804
Material removed (Ave lbs per mile)	357	275	267
% of Res. Miles swept of total miles	63%	61%	59%
% of Blvd Miles swept of total miles	11%	13%	16%
% of DT/CBD total miles swept	26%	26%	25%

New Policies: Street and Boulevard Sweeping Services

To better measure the effectiveness of the brush collection services, one new performance measure will be implemented. Total miles serviced per daily route and annually will be measured to serve as a benchmark for productivity, workload distribution, and cost of service analysis.

New Programs: Street and Boulevard Sweeping Services

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, Litter Abatement 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 request 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

New Infrastructure: Street and Boulevard Sweeping Services

No new infrastructure is needed to implement these program enhancements.

New Resources: Street and Boulevard Sweeping Services

Existing staff resources will be dedicated to provide Street and Boulevard Sweeping services.

Implementation Tasks for Street and Boulevard Sweeping Services

Task	Lead Responsibility	Participants	Schedule (FY)
1. Develop a public notice program to inform residents when to clear roadways for street sweeping.	Strategic Initiatives Division	Litter Abatement Division	FY12-FY13
2. Research and implement more climate-friendly sweeper routes.	Litter Abatement Division	Operations Routing staff	FY12-FY13
3. Assess and Redefine Street and Boulevard Sweeping Services every 5 Years.	Litter Abatement Division	Strategic Initiatives Division Finance Division Customer Service Division	Every 5 years ongoing

13.4 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. The legal mandates for this activity are the Texas Constitution Article XI, section 5, and the Health and Safety Code of Texas Environmental Laws Chapters 365, 342.004 and 342.021 (b).

Any City of Austin resident may call 311 to request collection of a dead animal on an Austin public right-of-way. Dead animals can be placed at the curb for collection in a bag or box, but it should not be placed in the trash cart. The Department cannot collect dead animals on private property or in creeks, streams, or waterways. Any identifying tags are removed from the animal and returned to the owner if possible. Also, a pet search is available to assist customers in locating a lost animal. Dead animal requests are received primarily from the 311 call center, and other requests come from emails or drive-bys.

Two operators and two hermetically sealed vehicles with a wench are used to provide the service. In addition to dead animal pickups, the operator collects dead animals from the City's Town Lake Animal Shelter as part of the regular collection activities. This service is provided Monday-Friday between 6:30 am and 3:00 pm and Saturdays between 6:30 am and 11:00 am. Expenditures to provide this service for FY11 are approximately \$110,000 annually. The program is funded through the use of Anti-Litter Fees charged to Austin Utility customers.

Performance Trends for Dead Animal Collection Program

Measure	FY08 Actual Totals	FY09 Actual Totals	FY10 Actual Totals
Dead Animal Request Processed	7,745	7,214	5,627
Dead Animals Collected	14,823	11,546	9,717
Dead Animals Collected (tons)	158 tons	153 tons	142 tons
Dead Animals collected within 24 hrs	98%	94%	94%

New Policies: Dead Animal Collection Services

The Dead Animal Collection Services are required to maintain a safe and healthy environment. 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.

New Programs: Dead Animal Collection Services

As the dead animals are removed from the public right-of-ways, the animals are disposed of at an area landfill. The Department has researched state and federal rules regarding the disposal of animal carcasses, and is exploring opportunities to provide the dead animals to local composters that are permitted by the State.

New Infrastructure: Dead Animal Collection Services

This removal and handling of dead animals requires care for the employee as well as the animals. The Department will explore best practices in the field, including an upgrade of equipment to better handle the weight of the larger animals picked-up off the streets.

New Resources: Dead Animal Collection Services

Existing staff resources will be used to maintain this service, while the Department explores the transfer of this program to another Department.

Implementation Tasks for Dead Animal Collection Services

Task	Lead Responsibility	Participants	Schedule (FY)
1. Explore the possibility of transferring the program to another more capable service provider familiar with the care of animals.	Solid Waste Services Director	Litter Abatement & Finance Divisions	FY11-FY12
2. If the program is maintained by the Department, research and purchase new equipment to better handle the larger dead animals.	Litter Abatement Division	Strategic Initiatives Division Finance Division Customer Service Division	FY12
3. Assess and Redefine Dead Animal Collection Services every 5 Years.	Litter Abatement Division	Strategic Initiatives Division Finance Division Customer Service Division	FY15 and every 5 years ongoing

13.5 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. The legal mandates for this activity are the Texas Constitution Article XI, section 5 and City Code Chapter 15-6-2 and 15-6-5.

Out-of-cycle collection is provided as a special service for customers that may need immediate assistance. A service fee is charged for out-of cycle service for cost recovery of personnel expense. Actual charged fees vary depending on the amount of brush set out. Brush Collection also provides assistance with storm removal. The hours of operation for Brush Collection are Monday-Friday between 6:30 am and 3:00 pm.

The City of Austin is divided into 26 curbside collection routes for brush and tree limbs too large to be collected by Yard Trimming crews. Routes are collected on a rotational basis two times per year. House counts range from 5,000 to 10,000 per week on routes depending on volume, length of time to collect, area of city, historical collection data, etc. Brush Collection is cyclical and can vary from year to year, especially during a storm event or drought.

Customers are notified in advance of the scheduled collection week by direct mail. Information about the set out requirements is included on the yellow cards mailed to customers. Collection maps are posted on the Department's website.

Brush Collection crews provide storm debris removal and disaster relief efforts in the Austin metropolitan areas as well as to other cities when needed. Disaster relief efforts are managed as an additional service to the regular scheduled routes. Depending on the debris size, storm damage area and amount of storm debris needing to be removed, regular collection might be suspended until the storm debris is cleared from public streets.

There are a total of 15 employees providing Brush Collection. Hours of collection are Monday-Friday, 6:30 am to 3:00 pm. The tractor trailer and crane operations collect the majority of debris, with a rear loader crew to collect the difficult areas and smaller stops. Personnel and equipment are shared with Bulk Collection and shifted according to route demands. The operating budget for FY11 for Brush Collection is approximately \$1,500,000 annually.

Performance Trends for Brush Collection Program

Measure	FY08 Actual Totals	FY09 Actual Totals	FY10 Actual Totals
Total brush collected (tons)	7,380 tons	7,683 tons	7,350 tons
Total number of brush setouts	42,477	40,149	43,955
Average lbs per set out	347 lbs	383 lbs	334 lbs
% of waste stream diverted from landfills through brush collection	New Measure in FY 10	New Measure in FY 10	3.3%

New Policies: Brush Collection Services

To better measure the effectiveness of the brush collection services, two new performance measures will be implemented. Adding a participation rate measure and a cost per curbside collection setout measure will serve as a benchmark for productivity and cost of service analysis.

New Programs: Brush Collection Services

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
- *Storm Debris Management* - Partnering with Austin Emergency Response Team to quickly response to violent storms through Storm Debris tree and brush collection services.

Clean Austin

This new program, entitled Clean Austin, will enhance the brush collection services with increased focus on 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. In particular, certain areas in Austin require frequent tree care or leaf collection due to the number of trees in the area or due to natural growth cycles. For example, oak wilt is a significant problem throughout Central Texas and requires careful pruning during specific time periods. 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.

The Department will pilot an enhanced collection cycle that will offer residents in high need areas with brush collection four times per year, rather than two times per year. The pilot program is needed to test collection scheduling and set-out requirements. The areas selected for this enhanced service will be determined by field observations of neighborhoods experiencing high volume brush set-outs. The selected areas for the pilot will be geographically representative of all areas of the City.

The Department will also reevaluate the Out-of-Cycle brush collection service for cost effectiveness. Out-of-Cycle brush collection will be renamed On-Call Services. The Department will evaluate collection scheduling and set-out requirements, offering residents a fee-based cost-recovery service for On-Call Services.

Additional description and planning of the Clean Austin program is noted in **Section 7.**

Storm Ready Austin: Storm Debris Management

This new program, named Storm Debris Management, will enhance the responsiveness of the Department to violent storm debris clean-up needs. 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-a-ways, as well as other storm related debris.

The Storm Debris Management team will work in cooperation with Austin Energy response teams, as well as the Austin Emergency Operations Command Center. This response is an enhancement to the existing Brush and Bulk Collection programs. In the event of a major damaging storm, the Collection crews will postpone existing planned services and responds immediately with storm debris collection and material management. 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.

New Infrastructure: Brush Collection Services

The Department's brush collection services are focused primarily on the Hornsby Bend Composting Facility in the south 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 that many areas have environmentally sensitive concerns. The Department will seek out four collection sites for brush and woody compostables, in the four quadrants of the City.

New Resources: Brush Collection Services

Existing staff resources will be rededicated to provide these new brush collection programs. Existing resources are available at the Hornsby Bend Composting facility that will be used to divert more brush through a dedicated resident drop-off area. Four additional collection sites for brush and woody compostables, in the four quadrants of the City, will be sited for public use. Additional resources are needed to design and implement the Clean Austin and Storm Management programs. These additional resources include a 0.25 FTE Waste Planner estimated to be approximately \$20,000.

Implementation Tasks for Brush Collection Services

Task	Lead Responsibility	Participants	Schedule (FY)
1. Pilot Clean Austin: Conduct pilot program on enhanced cycles of curbside brush collection; conduct follow-up stakeholder meetings; evaluate results; assess and	Litter Abatement Division	Strategic Initiatives Division Finance Division Customer Service Division	FY12

Implementation Tasks for Brush Collection Services

Task	Lead Responsibility	Participants	Schedule (FY)
refine program			
2. Conduct pilot program on seasonal pruning cycles and out-of-cycle curbside brush collection; conduct follow-up stakeholder meeting; evaluate results; assess and refine program	Litter Abatement Division	Strategic Initiatives Division Finance Division Customer Service Division	FY12
3. Implement Clean Austin collection program citywide	Litter Abatement Division	Strategic Initiatives Division Customer Service Division	FY13
4. Explore the operational efficiencies and cost savings of combining the Brush Collection program with the weekly yard trimmings program.	Solid Waste Services Department	Finance Division	FY12
5. Assign a Storm Debris Management response team; Plan and Develop resources necessary to implement a Storm Debris Management Action Plan.	Litter Abatement Division	Strategic Initiatives Division Finance Division Customer Service Division	FY11-FY12
6. Implement the Storm Debris Management Action Plan.	Litter Abatement Division	Strategic Initiatives Division Customer Service Division	FY12

Implementation Tasks for Brush Collection Services

Task	Lead Responsibility	Participants	Schedule (FY)
7. Explore Public/Private partnerships for storm debris management.	Litter Abatement Division	Strategic Initiatives Division Finance Division	FY13
8. Explore and site four regional organics public drop-off sites.	Litter Abatement Division	Strategic Initiatives Division Finance Division	FY13
9. Assess and Redefine Bulk Collection Services every 5 Years.	Litter Abatement Division	Strategic Initiatives Division Finance Division	Every 5 years ongoing

13.6 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. The legal mandates for this activity are the Texas Constitution Article XI, section 5 and City Code Chapter 15-6-2 and 15-6-5.

The City of Austin is divided into 26 curbside collection routes for residents to dispose of items too large for garbage and recycling collection, such as appliances, furniture, lawn mowers, scrap metal, and tires, among other items. Routes are collected on a rotational basis through two citywide cycles per year. House counts per route range from 2,400 to 15,000 depending on volume, length of time to collect, area of city, and historical collection data. Customers are notified in advance of the scheduled collection week by direct mail. Information about the set out requirements is included on blue postcards mailed to customers. Collection maps are posted on the Department's website.

Out-of-cycle collection is provided as a special service for customers that may need immediate assistance. A service fee is charged for out-of cycle service for cost recovery of personnel expense. Actual charged fees vary depending on the amount of bulk items set out. Bulk Collection also provides assistance with storm removal.

There are a total of 22 employees providing Bulk Collection services. The hours of operation for Bulk Collection are Monday-Friday between 6:30 am and 3:00 pm. The tractor trailer and crane operations collect the majority of bulk material, with a rear loader crew to collect the difficult areas and smaller stops. Tires, appliances, and scrap metal are collected separately and taken to the Resource Recovery

Center to be recycled. Personnel and equipment are shared with Brush Collection and shifted according to route demands. The operating budget for FY11 for Bulk Collection is approximately \$2,200,000 annually.

Performance Trends for Bulk Collection Program

Measure	FY08 Actual Totals	FY09 Actual Totals	FY10 Actual Totals
Total bulk collected (tons)	7,792 tons	8,219 tons	7,710 tons
Total bulk setouts/pickups	72,215	79,129	69,490
Average lbs per set out	216	208	222
% of waste stream diverted from landfills through bulk coll.	New Measure in FY 10	New Measure in FY 10	0.1%

New Policies: Bulk Collection Services

To better measure the effectiveness of the bulk collection services, two new performance measures will be implemented. Adding a participation rate measure and a cost per collection setout measure will serve as a benchmark for productivity and cost of service analysis.

In addition, since many customers perform their own home remodeling, the Department will establish a policy to manage the recycling of construction debris from its residential customers. This could involve an expansion of the bulk collection services to include construction debris recycling. This policy will be researched within the Construction and Demolition (C&D) Recycling Ordinance, scheduled for development in FY13 and FY14.

New Programs: Bulk Collection Services

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
- Reuse Austin - Partnering with non-profits for repair and reuse of discard items

Clean Austin

This new program, named Clean Austin, will enhance the bulk collection services with increased focus on high need areas. As previously stated, 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 Department will increase services for identified high need service areas by enhancing bulk collection cycles where needed and offer a revised On-Call Service, previously named Out-of-Cycle collection

The Department will pilot an enhanced collection cycle that will offer residents in high need areas bulk collection four times per year, as opposed to two times per year. The pilot program is needed to test collection scheduling and set-out requirements. The areas selected for this enhanced service will be determined by field observations of neighborhoods experiencing heavy out-of-cycle set-outs which are often times due to high resident turnover. The selected areas for the pilot will be geographically representative of all areas of the City.

The Department will also reevaluate the Out-of-Cycle brush collection service for cost effectiveness. Out-of-Cycle brush collection will be renamed On-Call Services. These services are required for residents moving out of their homes and apartments, with the resulting demand for extra collection services of large bulky items. The Department will evaluate collection scheduling and set-out requirements, offering residents a fee-based cost-recovery service for On-Call Services.

The Department will work closely with the Austin Apartment Association and the Austin Realtors Association in coordinating implementation of this new program. Additional description and planning of the Clean Austin program is noted in [Section 7](#).

Reuse Austin

This new program, entitled Reuse Austin, will enhance the bulk collection services with increased focus on diversion opportunities. 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. Additional description and planning of the Reuse Austin program is noted in Section 7.

New Infrastructure: 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 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. Items collected, either through the drop-off or the curb collections, will be dropped off on the concrete floor of the enclosed facility, allowing for proper separation and cleaning under roof and not exposed to weather conditions. The public access to the facility will be redesigned to encourage a safe driving loop

for the public that does not cross other operational services. This redesigned facility will service the public and the bulk collections program.

In addition, the Department will place eight 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. Additional description and planning of the Eco-Depots are noted in Section 7.

Resources for Bulk Collection Services

Existing staff resources will be rededicated to provide these new bulk collection programs. Additional resources are needed to redesign the facilities that will be used to divert more bulk items into reuse opportunities. Additional resources are needed to design and implement the Clean Austin and Reuse Austin programs. These additional resources include a 0.25 FTE (Waste Planner).

Implementation Tasks for Bulk Collection Services

Task	Lead Responsibility	Participants	Schedule (FY)
1. Pilot Clean Austin; Conduct pilot program on enhanced cycles of curbside bulk item collection; conduct follow-up stakeholder marketing; evaluate results; assess and refine program	Litter Abatement Division	Strategic Initiatives Division Finance Division Customer Service Division	FY12
2. Conduct pilot program on move-out and out-of-cycle curbside bulk item collection; conduct follow-up stakeholder marketing; evaluate results; assess and refine program	Litter Abatement Division	Strategic Initiatives Division Finance Division Customer Service Division	FY12
3. Implement <i>Clean Austin</i> collection program citywide	Litter Abatement Division	Strategic Initiatives Division Customer Service Division	FY12

Implementation Tasks for Bulk Collection Services

Task	Lead Responsibility	Participants	Schedule (FY)
4. Prepare Todd Lane Transfer Facility for bulk collection and drop-off; transfer Resource Recovery program to Todd Lane.	Solid Waste Services Department	Finance Division	FY12
5. Conduct pilot program with non-profits to increase reuse diversion; evaluate cost and assess expansion.	Litter Abatement Division	Strategic Initiatives Division Finance Division Customer Service Division	FY13
6. Implement Reuse Austin collection program	Litter Abatement Division	Strategic Initiatives Division Customer Service Division	FY14
7. Assess and Redefine Bulk Collection Services every 5 Years.	Litter Abatement Division	Strategic Initiatives Division Finance Division	Every 5 years ongoing

Section 14 Special Events Diversion Opportunities

Special events are primarily recognized as festivals, street fairs, concerts, races, walks, and other athletic events. However, in Austin, they also include large and small scale community clean ups. The Solid Waste Services Department (Department) provides numerous services to ensure that special events in Austin reduce waste, properly manage large volumes of trash, and keep Austin's streets and waterways clean and litter free. In particular, event organizers may pay a Special Events Services Fee to contract with the Department's Litter Abatement Division for street sweeping services, litter control services, and/or collection of large or bulky items. The Special Events Services Fee is a flat rate fee of \$500 for two crew members providing four hours of service. Additionally, the Department's Strategic Initiatives Division partners with Keep Austin Beautiful (KAB) to provide complimentary waste management guidance, vendor training, volunteer recruitment and access to recycling containers. Although each special event is unique and poses different waste management challenges, they also offer the Department a tremendous opportunity to reach out to a captive audience about Zero Waste and the Department's programs and services.

Community Clean Ups. Each year, thousands of volunteers descend on Austin parks, right of ways, trails, and neglected neighborhoods to help clean up and remove debris and litter. The annual event is known as the KAB Clean Sweep. As an event sponsor, the Department provides complimentary collection of large and bulky items that are too heavy for volunteers to remove on their own. While Clean Sweep is a coordinated city-wide event, KAB also frequently serves as a primary point of contact to coordinate smaller neighborhood clean ups. KAB works with the Litter Abatement Division to schedule collection services and then coordinates with the citizen organizer to recruit and manage volunteers. Recovering recyclables and reusable items from community cleanups is a significant challenge. However, as the Department increases its capacity to manage reusable items and partners effectively with organizations that repurpose used products, diverting material from the waste stream of a community clean up will be attainable.

City Sponsored Events. In October 2009, the Austin City Council passed Resolution 20091022-040 directing the City Manager to implement recycling at all City sponsored and City co-sponsored events, including events sponsored or organized by City departments. Officially, the City does not currently have an approved definition for "city sponsored" event. Therefore, for the purpose of this report, a City sponsored event includes events that are recognized by City Council resolution or are sponsored by City departments. During 2010, the Solid Waste Services Department provided recycling collection services at 17 City sponsored special events. Despite achieving an average 44 percent diversion rate among most events, the Department was unable to obtain consistent waste management data from all events because event organizers utilized the City for recycling services but contracted with private haulers for garbage collection. In 2011, the Department streamlined services by coordinating all waste management needs for City sponsored events. The Department contracted with one private hauler for both recycling and disposal services, but only paid for costs associated with recycling services. The

event organizer paid for costs associated with disposal services such as dumpster drop off and collection as well as purchasing additional trash containers if needed. Department staff also provided complimentary event recycling containers, provided vendor training to minimize use of “undesirable” products such as Styrofoam and glass, and recruited/managed volunteers – also known as Zero Waste Ambassadors – to monitor and assist with education/outreach during events.

As a City sponsored event, thousands of dollars in fees are waived. However, there are no clear sustainability standards required of event organizers or vendors to maintain their City sponsored status. With guidance from the Department and other departments related to issuing permits for special events, the City should consider establishing standard contract language to be included in agreements with event organizers of City sponsored events and any vendor choosing to vend at a City sponsored event.

Diversion at Special Events

To specifically improve diversion rates at City sponsored events, the Department shall support the following activities:

- Work with event organizers to increase awareness that the event is a Zero Waste event. In partnership with event organizers, the Department will develop standard Zero Waste messaging to include in all advanced marketing, announcements at the event, and promotional signage, social media, and other collateral at City sponsored events;
- Establish and enforce standard vendor waste minimization guidelines. Currently, each event organizer contracts with their choice of food and service vendors. Establishing minimum standards such as prohibiting distribution of expanded polystyrene (EPS), glass, informational fliers, and individually wrapped condiments are proven methods to reduce waste generation, minimize litter, and increase diversion rates. The Department shall work with the City Purchasing Department to develop and incorporate standard guidelines for all contracts related to vending at City facilities and at City sponsored events. These guidelines shall apply to anyone vending food at a City sponsored event or on City property, including any subcontractors providing services at an event;
- Work with event organizers to provide waste management planning at least two months in advance. Most event organizers are focused on putting on a great event, they often forget to plan for waste management needs during the event and clean up after the event. As part of the special event permitting process, event organizers of City sponsored events would work with the Department in advance to plan for waste management services;
- Expand diversion services to include composting. Composting food scraps and food soiled paper products such as napkins and plates can help double current waste diversion rates at special events. Adding composting services could either be done through private contract, in partnership with Austin Water Utility (AWU), or through a combination of both. The Department shall explore contracting with a private hauler to provide dumpster service to events and transport material to a pre-determined facility for processing. If AWU's Hornsby Bend site is able to take food scraps and compostables, the material could be processed by AWU. However, if Hornsby Bend is unable to process the food scraps, the Department shall contract with a private hauler for both hauling and processing services until AWU is able to accept and process food scraps. Additionally, if the

Department is able to provide dumpster services, composting processing, and recycling processing at any point in its future, then the Department shall evaluate the option to utilize in-house staff and facilities to transport and process organics as well as recyclables from City sponsored events;

- Explore offering incentives to event patrons. Incentive programs that engage and reward event patrons for recycling and composting not only increase diversion rates, they also help educate the public about the City's Zero Waste goals. Based on success of the Austin City Limits Festival's event recycling program, at Juneteenth 2011, the Department encouraged event patrons to recycle and keep the event clean by giving away free t-shirts for each bag of recycling or trash collected. As a result, the diversion rate increased from XX to XX. To continue developing and offering incentive programs, the Department shall include funding and resources to support unique recycling incentive programs at City sponsored events;
- Invest in event recycling and composting containers. Most City sponsored events occur at City Hall, outdoor parks, recreation centers, and on City right of ways. The Department – either through capital investment, partnerships with private businesses or non-profits, or grant funding – shall ensure that there are enough temporary event recycling and composting containers for outdoor City sponsored events. Additionally, the Department should also help ensure that there are enough long-term containers for indoor City event venues. Lastly, installing permanent outdoor recycling and litter control containers along targeted high traffic parks, park venues, and right of ways that are frequently used as event venues or event routes would improve Department operational efficiency and safety at events. For example, to prepare for a parade along Congress Avenue, the Department must deliver and set up temporary event recycling containers to be installed next to existing public trash receptacles. Installing permanent recycling receptacles coupled with trash containers, similar to the Department's current BigBelly pilot program along Guadalupe Street, may reduce time required to set up temporary containers, thereby allowing the Department to focus on other priorities. The Department shall coordinate with KAB, the Parks Foundation, Downtown Austin Alliance (DAA), and other stakeholder departments to identify and secure funding for waste diversion infrastructure;
- Provide appropriate staffing for events on City right of way and parks. Utilizing volunteers to help monitor containers and prevent contamination keeps costs low and improves education efforts regarding proper recycling and composting practices. However, relying on volunteers comes with challenges and risks. First, recruiting volunteers requires staff to make contact with volunteer organizations and student groups. Once contact is made, staff must be available to respond to questions and help organize groups prior to the event. The Department may wish to modify its contract relationship with Keep Austin Beautiful to place volunteer recruitment responsibilities on KAB. Secondly, in order to manage volunteers, the Department will need volunteer coordinators on-site during the event and must provide incentives such as free parking, t-shirts, and food vouchers that entice volunteers to participate. Even with promises of free "swag", volunteers may choose not to arrive as planned. The Department cannot completely rely on volunteers to staff an event. Therefore, for all City sponsored events on City right of ways, the Department shall establish minimum staffing levels to ensure basic levels of service such as container set up, take-down, and general event management. Proper coordination among Keep Austin Beautiful for volunteer recruitment, Litter Abatement for minimum staffing, and Strategic Initiatives for coordination with the event organizer and other departments will ensure appropriate staffing levels for each City sponsored event. For City sponsored events at City parks, the Department shall coordinate and

develop a memorandum of understanding with the Parks Department to identify appropriate staffing levels and resources to address waste management at the event.

Based on standard practices adopted for City sponsored events, the Department shall then provide technical assistance to help other events to incorporate waste reduction and diversion measures.

Other Events in Austin. Currently, all large-scale special events in Austin held on City right of way or park property must comply with an extensive set of policies and procedures. Although planning for waste management is one of many permitting requirements, it is often the last priority for most event organizers. To increase awareness about proper waste management planning, Department staff currently participates in regular meetings with an interdepartmental team responsible for reviewing and approving special events permits. During permit review meetings, event organizers are asked to discuss their waste management plans and include dumpster placement in their final permit application. When asked if the event will include recycling, many event organizers state that providing recycling services would increase costs and create too many additional challenges. Therefore, the Department's next step is to encourage event organizers to plan further in advance and include waste diversion efforts.

Generally, the Office of Special Events housed in the City's Transportation Department recommends that event organizers begin planning at least 180 days or approximately 6 months in advance. The Department experiences a specific challenge regarding materials management planning for events in the Central Business District (CBD). When an event is conducted on public right of way, the existing litter control containers are used to capture waste generated. However, there are occasions where events either (1) unknowingly need additional litter control containers, or (2) wish to cover existing litter control containers so that attendees only use the containers provided by the event organizers, allowing the event to more accurately monitor its waste generation and diversion rates. Operationally, both scenarios pose a challenge for the Department. All events should be required to submit a waste management plan for review and approval by the Department. The waste management plan should be submitted as part of the special events permit process and include a site plan indicating location/placement of dumpsters and an assessment as to whether or not additional litter control containers will be necessary. For events that wish to cover existing litter control containers, the Department shall evaluate methods, mechanisms, and costs associated with purchasing and covering the existing litter control containers in such a way that the entire container is covered so that attendees do not "stack" waste on top of the containers. The evaluation shall also include the amount of time and staff needed to install the covers as well as a determination as to whether or not the covers can be loaned and installed by non-Departmental staff. As event organizers begin planning for waste disposal needs further in advance, the possibility of incorporating waste diversion measures become more attainable.

Starting in July 2011, the Department launched a pilot Event Recycling Rebate program with the goal of providing a financial incentive to event organizers to include recycling and/or composting at events. The program is simple. Event organizers are eligible for a rebate of 100 percent of the cost for recycling and/or composting services up to a maximum of \$750. The rebate program targets events in Austin that expect at least 500 attendees and are held outdoors. To claim the rebate, the event organizer must:

1. Submit an application to confirm eligibility;
2. Consult with Keep Austin Beautiful to receive training and best practices to reduce and recycle waste at events;
3. Obtain all appropriate City event permits;
4. Contract with a private service provider;
5. Conduct the event and provide at least recycling services; and
6. Submit the rebate request form which includes providing copies of weight tickets for landfill trash, recycling, and composting (if applicable) as well as copies of itemized invoices detailing the services provided. The form also asks a series of open ended questions seeking information about the challenges or ease of providing recycling services, composting services, and any other sustainability initiatives that were voluntarily implemented.

The pilot event recycling rebate will help offset some of the recycling and composting costs and allow event organizers to implement the best waste reduction and diversion practices for their event. Event organizers will also become more experienced in planning and implementing diversion services and more knowledgeable about costs associated with their efforts. The data gathered from the pilot program coupled with the experience garnered by the event organizers will be essential in developing an Event Recycling Ordinance and developing citywide sustainability standards for event organizers or vendors.

Event Recycling Ordinance. Based on the information gathered from the Event Recycling Rebate, the Department will be better positioned to present an Event Recycling Ordinance for Council consideration. Adoption of an Event Recycling Ordinance will expand reuse, recycling and composting to all special events in the City that require a City permit, including festivals, parades, athletic events, and street fairs, essentially expanding the Universal Recycling Ordinance to apply to large public events. Implementation of the ordinance would also allow the Department to phase-out or discontinue the Event Recycling Rebate. However, the Department would continue to partner with KAB to provide technical assistance, vendor training, and access to loan event recycling and composting containers. Additionally, if the City opts to consider a Green Events Ordinance or a Green Events Recognition Program which would include other sustainability initiatives such as air quality, water and energy conservation measures, the Event Recycling Ordinance should be incorporated or referenced.

Cost and Diversion Estimates for Event Recycling Ordinance Implementation

Initiative	Date of Initiation (FY)	Initial Year of Full Implementation (FY)	Initial First Year Implementation Costs	Annual Costs
Pilot Event Recycling Rebate Program	FY11	FY12		
Event Recycling Ordinance	FY12	FY13		\$89,000
Place permanent containers in	FY13	FY14		

Initiative	Date of Initiation (FY)	Initial Year of Full Implementation (FY)	Initial First Year Implementation Costs	Annual Costs
event areas				

¹Note that City sponsored events diverted 10 tons in 2010. Diversion estimates were not quantified for this initiative as it primarily serves as an outreach and education opportunity for City Zero Waste programs. Residents that recycle and compost at public events will learn to recycle and compost at home and at work.

Resources for Special Event Recycling

One additional staff member or contractor will be needed within the Strategic Initiatives Division to provide on-site waste diversion and volunteer management at City sponsored events, coordinate with Keep Austin Beautiful, provide technical assistance to private event organizers and direct them to event recycling resources.

The Department shall also annually evaluate the Special Events Services Fee considering the cost to provide enhanced services for all special events, including city sponsored events.

Implementation Tasks for Special Event Recycling

Task	Lead Responsibility	Participants	Schedule
1. Conduct a pilot event recycling rebate program	Strategic Initiatives Division	Event organizers, Keep Austin Beautiful, and service providers	FY2011 – FY 2012
2. Conduct stakeholder meetings on draft Event Recycling ordinance	Strategic Initiatives Division	Event organizers, Special Events Permitting Staff, service providers	FY2012
3. Present new Event Recycling ordinance to City Council	Strategic Initiatives Division	SWAC, City Council, private haulers, event organizers, Keep Austin Beautiful	FY 2012
4. Increase Event Recycling and Composting Container inventory for container loan program	Strategic Initiatives Division	Keep Austin Beautiful	FY 2012
5. Provide technical assistance and community-based	Strategic Initiatives Division	Private event organizers, non-profit and private	FY2013 – FY2014

Task	Lead Responsibility	Participants	Schedule
social marketing to private event organizers		sector service providers	
6. Increase permanent Event Recycling and Composting Container inventory among outdoor parks and streets	Litter Abatement Division	Keep Austin Beautiful, Parks Department, Parks Foundation	FY 2013 – FY 2014
7. Assess and refine Event Recycling Ordinance			Every 5 Years

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Section 15 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.

15.1 Economic Growth and Redevelopment Services Office (EGRSO)

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.

Resources for Recycling Economic Development Support

One additional staff member from the Department will be placed within the Economic Growth and Redevelopment Services Office. This new staff person will be responsible for retaining and attracting reuse and recycling industries to Austin, including the following activities.

Implementation Tasks for Recycling Economic Development

Task	Lead Responsibility	Participants	Schedule
1. Hire a staff person to support the Recycling Economic Development Program	Solid Waste Services Department	Recycling Economic Development Program	FY13
2. Identify sources of materials that could be made available to secondary materials processors willing to locate in Austin	Recycling Economic Development Program	Solid Waste Services Department	FY13 and on-going
3. Identify the companies, locally and nationally, that use the materials produced by Austin generators. Recruit these businesses to locate in the region.	Recycling Economic Development Program	Economic Growth and Redevelopment Services Office	FY13 and on-going
4. Provide an information clearing house for Austin businesses to support “waste pairings”	By-Product Synergy	Recycling Economic Development Program	FY13 and on-going

Implementation Tasks for Recycling Economic Development

Task	Lead Responsibility	Participants	Schedule
5. Development of a Business Waste Reduction Assistance Program and participation in a Green Business Leaders Advisory Council.	Solid Waste Services Department Recycling Economic Development Program	Recycling Economic Development Program Office of Sustainability	FY13 and on-going
6. Support the development of a “Re-Made in Austin” alliance of manufacturers that use recycled feed-stocks to share resources and promote the recycling and recycled content product manufacturing industries	Recycling Economic Development Program	Economic Growth and Redevelopment Services Office	FY2014 and on-going
7. Co-host regional workshops for economic developers and financiers, manufacturers, purchasing agents, researchers, government officials, consultants, and other interested parties	Recycling Economic Development Program	CAPCOG and Economic Growth and Redevelopment Services Office	FY2014 and on-going
8. Facilitate the development of Eco-Business Parks and Eco-Industrial Parks by networking potential developers to reuse and recycling-based processors and manufacturers	Recycling Economic Development Program	By-Product Synergy	FY2015 and on-going

15.2 Brownfield Real-Estate Redevelopment Program

Brownfield real-estate is defined as vertical and horizontal real property (Structures and Land), where the expansion, redevelopment or reuse may be complicated by the presence or potential presence of a hazardous substance, pollutants, contaminants, controlled substances, petroleum products, or is mine-scarred land. Examples of Brownfield real-estate redevelopment projects in Austin, before and after:

<u>Historical Use</u>	<u>Redevelopment</u>
• Illegal dumping on vacant property • Tax Foreclosure property • Vehicle & Equipment Storage & Repair Shop • Service Station • Warehouse • Industrial/Commercial Facilities	- Homewood Heights Community Garden - Guadalupe-Saldana Affordable Housing - African American Cultural and Heritage Facility - Top Hat - Hamburgers - Commercial Multi-businesses - Expanded commercial business
Tax value \$7,000,000	\$57,000,000

The economic benefits of reusing Brownfield real-estate include: reducing urban sprawl, creating new jobs, increasing the local tax base, improving the value of adjacent property, and mitigating public health and safety concerns.

The environmental benefits of reusing Brownfield real-estate include: preservation of open space and farmland, cleanup and sustainable solutions through state voluntary cleanup program, climate protection through convenient and diverse transportation models, addressing environmental justice through community participation, and redevelopment using green building and renewable technologies. Brownfield redevelopment can save money through reuse of existing infrastructure, utilities, roads, and services.

The Brownfield Redevelopment Program, through collaborative initiatives such as securing federal grant dollars from the U.S. Environmental Protection Agency, zero to low interest remediation loans, and assistance with revitalization planning, provides incentives and information to Brownfield property owners and other stakeholders so they can clean up and reuse their Brownfield properties. With the combined resources from various agencies, the Brownfield Program can help expedite the cleanup and revitalization of Brownfield properties.

Resources for Brownfield Redevelopment Program Support

Two staff members transferred from Watershed Department to the Solid Waste Services Department will be responsible for implementing the mission and objectives of the Brownfield Redevelopment Program, including the following activities.

Implementation Tasks for Brownfields Redevelopment Program

Task	Lead Responsibility	Participants	Schedule
1. Transfer Program and staff to Solid Waste Services	Solid Waste Services Department	Brownfield Redevelopment Program	FY11

Implementation Tasks for Brownfields Redevelopment Program

Task	Lead Responsibility	Participants	Schedule
2. Research potential Brownfield sites within Austin.	Brownfield Redevelopment Program	Solid Waste Services Department	FY2012 and on-going
3. Provide environmental site assessments to eligible property owners.	Brownfield Redevelopment Program	Solid Waste Services Department	FY2012 and on-going
4. Seek additional program support from State and Federal funding sources.	Brownfield Redevelopment Program	Solid Waste Services Department	FY2012 and on-going
5. Manage the Brownfield Cleanup Revolving Loan Fund.	Brownfield Redevelopment Program	Solid Waste Services Department	FY2012 and on-going
6. Provide Brownfield forums to educate developers and Brownfield property owners about potential land reuse opportunities.	Brownfield Redevelopment Program	Economic Growth and Redevelopment Services Office	FY2012 and on-going

Implementation Tasks for Brownfields Redevelopment Program

Task	Lead Responsibility	Participants	Schedule
7. Facilitate land reuse and redevelopment discussions with economic developers, financiers, manufacturers, government officials, consultants, and other interested parties	Brownfield Redevelopment Program	Economic Growth and Redevelopment Services Office	FY2012 and on-going
8. Form Brownfield Coalition (3+ entities), develop MOA and apply for US EPA Cleanup loan totaling \$1,000,000.	Brownfield Redevelopment Program	Solid Waste Services Department	FY2013 and on-going
9. Form Regional Brownfield Forum representatives to: educate, strategize solutions, resources, & partnerships.	Brownfield Redevelopment Program	Solid Waste Services Department	FY2014 and on-going
10. Establish Texas Chapter of National Brownfield Association	Brownfield Redevelopment Program	Solid Waste Services Department	FY2014 and on-going

15.3 Research and Development Program

Zero Waste research and development is essential to developing the City's future Zero Waste system. Currently, many products and packaging are designed for the dump and cannot be recycled or composted. Designing products and packaging with their end of life in mind will help the City work toward Zero Waste. Serious Zero Waste practitioners around the world¹ are focusing on these materials that cannot be recycled and composted, also known as legacy discards. They are striving to develop new designs in products and packaging that can be reduced, recycled or composted.

Areas for Zero Waste Research and Development include:

¹ AmbienteFuturo, Lucca, Italy <http://ambientefuturo.org/> (accessed January 16, 2011)

- Product Redesign
- Toxicity Reduction in Consumer Products
- Waste Reduction in Packaging

The goal of this initiative is to achieve advancements in the science of Zero Waste by ensuring that Austin is a center for Zero Waste research. As detailed in the policy descriptions in **Section XX Policies and Ordinances**, the Strategic Initiatives Division will support the work of the City's academic partners in conducting Zero Waste Research, and will support the work of its non-profit, city and regional partners, by facilitating cooperation and assisting with grant applications.

The policies and programs identified in this Master Plan will allow the City to achieve high levels of diversion. However, research will be necessary to achieve Zero Waste. Ten to fifteen percent of the materials currently disposed in landfills are materials that cannot be recycled or composted and have been designed for the dump. These materials include legacy discards that are materials and products that were placed into use before Zero Waste systems were devised, and will trickle out of homes and businesses for years to come. Research is needed to understand the composition of these materials, identify the products and packaging that require redesign, and the processes for returning potentially recyclable and compostable materials into useful products.

The City is fortunate to have access to research institutions located in Austin, including the University of Texas at Austin, Center for Maximum Potential Building Systems, and University of Arlington's Zero Waste Network at the Center for Environmental Excellence. As a result, the Department can support academic partnerships in new research and can also assist in applying for state and federal grants. The City's role will be to support its academic partners in pursuing research initiatives, facilitate meetings, and assist in identifying research projects and funding sources, including:

- "Zero Waste Incubator" for focused Zero Waste Research at an academic institution;
- Research in designing products and packaging for recyclability;
- Research in understanding the composition of materials that cannot be recycled or composted;
- Pursuing state and federal grants on behalf of academic partner; and
- Development of an internship program for job training and community development.

Resources for Zero Waste Research & Development Support

One additional staff member the Department will be responsible for the development of Zero Waste Research and Development, as well as supporting Product Stewardship initiatives, including the following activities.

Implementation Task for Zero Waste Research Support

Task	Lead Responsibility	Participants	Schedule
1. Identify potential Zero Waste research projects and funding sources	SWS Strategic Initiatives Division	Zero Waste Network	FY2012 and on-going

Implementation Task for Zero Waste Research Support

Task	Lead Responsibility	Participants	Schedule
2. Support University of Texas at Austin in their Zero Waste efforts; identify potential faculty and students interested in Zero Waste research	SWS Strategic Initiatives Division	University of Texas at Austin	FY2012 and on-going
3. Participate in national and international dialogues on Zero Waste	SWS Strategic Initiatives Division	All academic partners	FY2012 and on-going
4. Network academic partners to national and international colleagues and research studies	SWS Strategic Initiatives Division	All academic partners	FY2012 and on-going
5. Assess and refine Zero Waste research opportunities	Strategic Initiatives Division	All academic partners	Annually

15.4 Market Development and City Purchasing Policies

The goal of this initiative is to create markets for recycled and reclaimed materials through City purchases and through the promotion of local remanufactured products.

Market development is needed for reusable, recyclable and compostable materials and products that do not have readily available markets. Intermediate and end markets return recyclable and composting materials to manufacturing and production of new products. Traditional commodity recyclables, including paper, plastic and metals are worldwide commodity resources that are traded internationally and therefore do not need market development assistance.

Because of their special handling requirements, materials such as organics, reusables, and construction and demolition debris are typically marketed locally or regionally. The City has also experienced low market demand for glass cullet. Recyclable glass is currently transported outside of the region which makes it expensive to recycle.

Local market development can provide economic development and green jobs. Implementing an aggressive Zero Waste market development action plan has the potential to create 1,000 to 5,000 new

green jobs in recycling and organics collection and processing, materials reuse and repair, and local remanufacturing.²

The City utilizes general purchasing standards that provide some guidance to buyers for each department when developing specifications for commonly purchased goods and services. But, the City is lacking a comprehensive environmental purchasing program. Therefore, departments throughout the City do not have consistent standards specifically related to purchasing environmentally preferable products and services.

To enhance local market development the City will:

- Develop construction specifications for citywide building permits and Public Works contracts that support Zero Waste principles (e.g., for organics used in landscaping for new construction, glass, plastic and tires as recycled content construction materials);
- Work with other governmental entities, such as TXDOT, to clarify and adopt specifications for roadway projects that include more locally produced recycled content and materials;
- Develop a compost classification system to highlight different attributes and values of organic products;
- Specify Zero Waste vendor practices for City purchases for products and services, including green caterers and suppliers;
- Support the Sustainability Office and the Purchasing Office to develop environmentally preferable purchasing standards for use by all departments, including setting minimum recycled content standards and limitations on purchase of single-use products; and
- Conduct an annual “Re-Made in Austin” campaign through the Recycling Economic Development Program.

Resources for Market Development and City Purchasing Policies Support

Staffing costs included in Partnership with other City Departments initiative.

Implementation Tasks for Market Development and City Purchasing Support

Task	Lead Responsibility	Participants	Schedule
1. Review Transportation road construction specifications for reclaimed and recycled materials, including	Public Works Department	Strategic Initiatives Division and the	FY2012

² Calculated based on the methodology developed from research conducted by the Institute for Local Self-Reliance published in *Recycling Economic Development through Scrap-Based Manufacturing* (Michael Lewis, 1994).

Implementation Tasks for Market Development and City Purchasing Support

Task	Lead Responsibility	Participants	Schedule
recycled glass asphalt, recycled rubberized asphalt and recycled tires; modify City specifications to maximize reuse and recycling		Sustainability Office	
2. Inform residents and businesses about the quality of compost products, including certified organic compost and Dillo Dirt; provide a composting grading system to encourage “highest and best” use of compost products	SWS Strategic Initiatives Division	Austin Water Utility and the Sustainability Office	FY2013 and on-going
3. Prepare list of local Zero Waste businesses and amend the purchasing policy to provide preference for Zero Waste businesses, including green caterers and suppliers	SWS Strategic Initiatives Division	Purchasing Department and the Sustainability Office	FY2013 and annually
4. Prepare list of local reuse operations, manufacturers and composters using reclaimed and recycled materials; conduct media outreach and develop publications to encourage residents and businesses in Austin to embrace the “Re-Made in Austin” brand	Recycling Economic Development Program	Strategic Initiatives Division and the Sustainability Office	FY2013 and annually
5. Assess and refine	Recycling	Strategic	FY2014 and on-going

Implementation Tasks for Market Development and City Purchasing Support

Task	Lead Responsibility	Participants	Schedule
opportunities for local market development	Economic Development Program	Initiatives Division	

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Section 16 Citizen Engagement & Community Partnerships

The City of Austin (City) has a long history of active inclusion of its citizens and the community at large in various decision making processes. The Solid Waste Services Department (Department) is steering its operations toward Zero Waste, a high profile activity of value and interest to the community. Concerned citizens brought the Zero Waste concept to City Council, resulting in a 2008 Council Resolution establishing Zero Waste goals for the City. As such, the Department will engage the public in changes to Zero Waste policies.

16.1 Citizen Engagement

The Department is committed to effectively involving the public in its planning and programming activities. Throughout the past year the Department has been proactive in implementing a public involvement process that provides information, citizen input sessions, and full public access to key decision-oriented processes. In addition, the Department is committed toward continuing the involvement of the public in rule development, topical work groups, strategic planning processes, and development of implementation plans for new programs. The Department will also publish an annual report every April to update Austin citizens on the progress on the Departments activities in the past year.

The basic research and proposed programs presented in the Department Master Plan (Master Plan) were prepared by HDR Engineers and Department staff with significant input from stakeholders throughout the community, including Austin residents and businesses, the Solid Waste Advisory Commission (SWAC), other City Departments, representatives from communities and public agencies throughout the region, non-profit and private sector service providers, academic institutions, community organizations and environmental groups.

The *Master Plan* was developed over a 15-month period between April 2010 and June 2011. The policies, programs and infrastructure identified in the *Master Plan* were developed based on research conducted and presented to stakeholder meetings and workshops held in August and November 2010.

Citizens and stakeholders were invited to outreach workshops conducted in August 2009 prior to the beginning of the project to gather community values, interests and priorities. During the data gathering and research stages, public workshops were conducted in August and November 2010 to gather citizen input on the developing concepts and programs. The basic Zero Waste components were presented in a workshop in March 2011, which included substantial citizen input. In addition, the Department Director presented the draft plan to five Boards and Commissions, incorporating their input in the final writing stage. Commissions and Boards consulted on the draft plan include the:

- Solid Waste Advisory Commission
- Environmental Board
- Sustainable Food Policy Board
- Water and Wastewater Commission

- Resource Management Commission

Ensuring a robust public involvement process that includes a diversity of perspectives will help the City of Austin build a stronger regional understanding of Zero Waste implementation needs and issues. Active public involvement encourages proactive participation by citizens who will remain involved throughout the years of the Zero Waste journey.

16.2 Community Relationships & Non-Profit Partnerships

Several community-based organizations and community leaders representing a broad spectrum of the City's diverse interests also participated in the planning process.

The Department commits resources toward engaging the whole community. It is important not to leave Zero Waste to waste experts. Many different skills need to be deployed in the journey towards Zero Waste. All organizations including nongovernmental organizations, business, educational and governmental institutions that provide waste reduction, take-back, reuse, recycling and composting services should be involved in order to achieve Zero Waste. All of these groups and individuals will be challenged to pursue Zero Waste at home, at school, at university, at work and at play. The Department's communication with all sectors of the community will be on-going, in all implementation phases of the Master Plan.

Community Culture Change

The City and its stakeholders recognize that achieving Zero Waste will require a shift in attitudes and behaviors that are practiced in everyday lives. Current rates of consumption and disposal are unsustainable.¹ However, the City can embark on the path to Zero Waste through:

- Community-based approaches
- Social marketing
- Generator sector and demographic-specific solutions

Social marketing campaigns involve application of marketing alongside other techniques and tools to achieve specific social behavioral changes. A variation of social marketing has emerged as a systematic way to foster more sustainable behavior. Referred to as Community-Based Social Marketing by Canadian environmental psychologist Doug McKenzie-Mohr, Community-Based Social Marketing strives to change the behavior of communities to reduce their impact on the environment.² Realizing that simply providing information is usually not sufficient to initiate behavior change, Community-Based Social Marketing uses tools and findings from social psychology to discover the perceived barriers to behavior change and ways of overcoming these barriers. Among the tools and techniques used by Community-Based Social Marketing are focus groups and surveys to discover barriers and commitments, prompts, social norms, social diffusion, feedback and incentives to change behavior. The tools of Community-

¹ *Supporting World Population at U.S. Consumption Rates Would Require Five Earths*, March 26, 2008, <http://www.naturalnews.com/022890.html> (accessed January 16, 2011)

² McKenzie-Mohr, D. (2000). Fostering sustainable behavior through community-based social marketing. *American Psychologist*, 55(5), 531-537.

Based Social Marketing have been used to foster sustainable behavior in many areas, including energy conservation, environmental regulation, and recycling.

16.3 Regional Cooperation & Inter-local Agreements

Regional Cooperation can create a Zero Waste culture change throughout the regional waste-shed, including the 33 counties that use Austin area landfills.

The City works closely with the Capital Area Council of Governments (CAPCOG) to research new policy and program areas and to identify the existing and planned collection and processing infrastructure.

CAPCOG and the City collaborated to research regional private sector infrastructure resources. CAPCOG includes Bastrop, Blanco, Burnet, Caldwell, Fayette, Hayes, Lee, Llano, Travis, and Williamson counties and is responsible for regional solid waste planning. Approximately 245 haulers, processors, and household hazardous waste (HHW) materials handlers were identified within the City and CAPCOG area and 80 of these businesses responded to the survey.³

Stakeholders in the City identified regional cooperation as a key strategy for achieving Zero Waste. There are several approaches to regional cooperation, including formalizing and expanding the CAPCOG role in planning for Zero Waste; and the development of inter-agency or inter-local agreements between neighboring communities.

In 2010, the City's SWAC formed a committee to research strategies for regional coordination. The committee recommended the development of an inter-local agreement between the City of Austin and Travis County for the purpose of developing an Austin-Travis County Zero Waste Plan compatible with the Austin Zero Waste Strategic Plan. The approach would form the basis for establishing regional Zero Waste goals throughout Central Texas. As a first step in the process of establishing regional Zero Waste goals, all counties in the waste-shed would be invited to become signatories to an inter-local agreement to produce a comprehensive regional waste-shed master plan based on Zero Waste. The committee concluded that additional parties can easily become signatories to existing inter-local agreements, thereby allowing a measured, sequential process of adoption and implementation of regional goals at a pace determined by the parties involved⁴.

The Department will support regional efforts in Zero Waste planning and will engage in dialogues initially with Travis and Williamson counties and then expand to other adjacent counties to identify opportunities for regional coordination and to undertake project-specific regional opportunities. The Department will explore possibilities through this process of developing regional Resource Recovery Parks, regional reuse, recycling and composting infrastructure, and regional funding for Zero Waste. Likewise, regional planning and regional joint efforts in public education and marketing of recycling and

³ Needs Assessment Technical memo

⁴ City of Austin Solid Waste Advisory Committee Solid Waste Management Districts Subcommittee Final Report and Recommendations, March 1, 2010.

zero waste initiatives are desirable. Through inter-local agreements within the framework of CAPCOG, the Department will encourage regional solid waste planning efforts

Resources for Regional Cooperation

Staffing resources necessary for this initiative are included in Universal Recycling and Composting Ordinance, outlined in [Section 22 Polices](#).

Implementation Tasks for Regional Cooperation

Task	Lead Responsibility	Participants	Schedule (FY)
1. Continue to work with CAPCOG on regional plans and research; co-sponsor annual workshops on Zero Waste topics	Strategic Initiatives Division	CAPCOG	FY11 and on-going
2. Conduct meetings with representatives from Travis and Williamson counties to identify specific projects for regional cooperation, including media outreach and messaging; support the development of regional plans	Strategic Initiatives Division	Travis and Williamson counties	FY11 and on-going
3. Support the Central Texas Zero Waste Alliance in promoting Zero Waste planning and initiatives throughout Central Texas	Strategic Initiatives Division	Central Texas Zero Waste Alliance	FY11 and on-going
4. Assess and refine opportunities for regional coordination	Strategic Initiatives Division	All regional partners	FY16 and every 5 years on-going

Section 17 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 Solid Waste Services Department (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.

17.1 Tools to Foster Partnerships

Research conducted for the *Solid Waste Service Master Plan (Master Plan)*, included a survey of Best Practices and the development of several case studies of model public-private partnerships, including those in Boulder, Colorado and San Francisco, California. The case studies are included in **Appendix B**. The partnership surveys revealed several tools that can help foster successful partnerships. These emerged as common themes in survey responses. These tools or mechanisms allow members of the partnership to work with one another towards a shared goal, foster trust and effective communication. The most effective mechanisms found in these case studies are described below:

Alignment of Interests – In each of the case studies profiled, there was a mutual interest in moving towards a shared goal, or an alignment of interests. This mutual interest was to increase recycling and/or reuse of materials. Governmental entities generally have an interest in expanding recycling for the public interest, to reduce carbon emissions, and increase diversion rates. In contrast, if increased recycling would erode the client base for a partner (say of a landfill) and result in less income for a company, the two partners may not have an alignment of interests or a strong partnership.

Trusting Relationship – Trust is key to developing a strong partnership. All partners must feel confident that they are getting a fair deal.

Frequent Contact – Frequent contact between partners can create a positive working relationship and foster efficient communication.

Clearly Communicate Expectations – Establishing goals and putting expectations in writing can keep partnerships on track. Baseline information on the amount of customers a partner is expected to service, diversion rates, and expected processed tonnages should be established at the beginning of the relationship and reviewed periodically to ensure they continue to represent a baseline for the area.

Utilizing the Experts – Using the skills of each partner to their fullest ability helps foster a sound partnership. Instead of micro-managing, service providers may be able to determine the best way to handle work in a way that meets or exceeds established goals and expectations. It would be beneficial to have the most experienced partner negotiate with private vendors to get the best deal. Companies already in the business of operating a materials processing facility, landfill, composting facility, or other recycling entity may have experience and expertise that the city lacks. By using facilities already operational, the public does not have to arrange for financing for such facilities and can acquire use of those facilities through competitively awarded service contracts.

Innovations/Scope Modifications – Allowing each member of a partnership to come up with new ideas and to propose modifications to scope can foster success.

Stability – Ensure that rates and contracts are mutually beneficial, have aligned interests, and provide stability to all partners. There is more opportunity to develop a strong, two-way working relationship when there is stability knowing that the same provider will be in place for some time.

17.2 Opportunities for Partnerships

Fostering Partnerships with Current Service Providers

The City contracts for services with non-profit and private sector service providers for drop-off recycling, recyclables processing, and long-term landfill disposal. The City also contracts with service providers for collection services at Austin facilities and downtown businesses.

There is opportunity to more closely align Austin's goals with its service providers by employing some of the tools described in the case studies: alignment of interests, transparency, frequent contact, letting expectations be known, using experts, encouraging innovation and scope modifications, and stability.

Expanding Public-Private Partnerships

Research conducted for the Master Plan, included surveys of several non-profit and private sector companies operating in the City which identified several opportunities for new public-private partnerships. The results from these surveys are included in [Appendix B](#) and summarized below.

Partnering with Non-Profits with Specialized Expertise – There are several organizations in the Austin area that have expressed interest in partnering with the Department to implement various Zero Waste initiatives. These organizations have access to multiple facilities, staff, and other resources that minimize the need for new construction or other investments from the Department. Additionally, because many of these organizations have multiple locations, they offer increased opportunities for the public to conveniently access Zero Waste services. The Department could explore partnerships to open eco-depots, resource recovery centers, and other facilities as well as provide opportunities for job training and workforce development.

Partnering with Private Sector Service Providers for Processing Capacity - The private companies surveyed all indicated that they have unused capacity at their facilities and could process additional materials for reuse, recycling and composting from City generators.

The Department conducted follow-up meetings with additional private sector service providers. Many of the private companies wanted to stress that existing local resources are under utilized and there is much planned additional capacity. They would like the City to support the existing resources available in the area rather than construct new public facilities.

17.3 Developing Zero Waste Infrastructure through Zero Waste Policies and Public-Private Partnerships

The City's Zero Waste System includes both a:

- **Circle of Control** – services that are directly provided by the Department or through its contractors; and
- **Circle of Influence** – services that are provided by non-profits and other private sector service providers as a result of policies, ordinances and incentives.

Zero Waste policies, including ordinances, incentives, bans, take-backs, purchasing specifications, and advocacy, allow the City to support new non-profit, private sector and regional programs and facilities and expand the City's circle of influence.

Zero Waste policies are extremely important because they influence the 75 percent of materials that are generated in the City, but not directly handled by the Department. By setting an example and by working cooperatively in public-private partnerships and regional partnerships, the City can achieve Zero Waste citywide and lead the region and the state.

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.

17.4 Service Provider Partnerships

The City's new Universal Recycling and Composting Ordinance will require all commercial and multi-family generators to have recycling services. The City is also developing a new Hauler Ordinance to modify the Department's licensing process for private sector services providers. These policies are discussed in Section 22.

The Department ensures that all generators in the City receive collection services for discarded materials through several regulatory mechanisms:

- **Single family residences and multi-family units up to four units (with cart service)**—receive cart collection service provided by Department crews. Department crews collect trash and single-stream recycling in carts and yard trimmings in containers provided by residents.
- **Multi-family units (with dumpster service)**—receive dumpster service provided by a private collector through a contract with the City. No recycling or yard trimmings are collected.
- **Commercial businesses (with cart service)**—Approximately 2,000 commercial generators in the City receive Department cart collection services.
- **Multi-family complexes and Commercial businesses in the Central Business District**—In excess of 600 multi-family and commercial generators receive trash dumpster and compactor service provided by a private collector through a contract with the City. Approximately 70 accounts also receive cardboard recycling service and about 12 accounts receive glass recycling service.
- **Multi-family complexes and commercial businesses outside of the Central Business District**—Multi-family and commercial generators outside of the Central Business District receive trash dumpster and compactor service provided by private collectors licensed by the City. There are currently 13 licensed private solid waste collectors operating within the City. The City requires that all businesses with 100 employees or more and multi-family properties with 100 units or more must provide on-site recycling services. Under this requirement, businesses and multi-family properties continue to choose their own waste haulers and recyclers and to negotiate prices for these services.

17.5 Universal Recycling and Composting Ordinance

The City Council adopted Phase 1 of the Universal Recycling and Composting Ordinance 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 conducted an outreach process in 2011 to engage stakeholders on the planning and implementation of the new rules that will guide implementation of the program. The Department also conducted stakeholder meetings to discuss the implementation of Phase 2 of the ordinance to address food service establishments, retail, hospitality, manufacturing and industrial generators.

In Phase 2 of the Universal Recycling and Composting Ordinance, the City will implement a citywide policy for diverting compostable organics from landfills. Food scraps and compostable paper account for

about 30 percent of citywide disposal. Organics disposed in landfills create methane which is a powerful greenhouse gas, at least 21 times more powerful than carbon dioxide. Phase 2 of the Universal Recycling and Composting Ordinance will be fully implemented by 2016.

Phase 3 of the Universal Recycling and Composting Ordinance will include single family residents in the requirement to recycle and compost. Phase 3 of the Universal Recycling and Composting Ordinance will be fully implemented by 2016.

17.6 Education and Outreach Synergies

As described in **Section 27** Communications Plan, the Department is undertaking a major outreach effort to educate both residential and commercial generators about the new Zero Waste programs and the requirements of the Universal Recycling Ordinance. There are opportunities to build on these efforts with the non-profit and private sector service providers through:

- **Cooperative advertising and media buys** – the City can lead a regional effort to promote the Zero Waste programs and collection systems which can be amplified by outreach and advertising conducted by non-profit and private sector services providers.
- **Universal signage and terminology** – the City and local service providers can agree on common terms, such as “food scraps,” “organics” or “compostables” to ensure that all generators are familiar with the terms and what materials are included in the program. To the extent possible, the City and local service providers can agree to use similar images and colors for communicating what goes where (e.g., blue for recycling, green for composting, etc.).
- **Cooperative messaging** – through the development of its Communications Plan, the City can work closely with local service providers to streamline messaging and outreach tools. To the extent possible, the City and local service providers can agree about what kinds of materials are acceptable for recycling and composting regionally. This will help to reduce confusion between generators and increase participation in Zero Waste programs.

17.7 Service Opportunity Analysis

Coinciding with the implementation of the Universal Recycling and Composting Ordinance, the City will monitor the services available through private sector services providers. During, 2008, an analysis of the service gaps or service opportunities needed in the City was conducted for the Austin Zero Waste Strategic Plan. At that time the service opportunity analysis identified food scrap collection and processing and construction and demolition debris processing as potential service gaps. Since that time, several private sector service providers have begun to offer food scrap collection services and two composting operations have been permitted to compost food scraps.

At stakeholder meetings conducted by the Department in advance of the City’s adoption of the Universal Recycling and Composting Ordinance, some commercial generators expressed the concern that there was not sufficient, competitively priced, recycling and food scrap collection offered by the private sector. Some stakeholders expressed an interest in having collection services provided through the Department.

Non-profit and private sector services providers operating in the City have expressed a strong interest in providing recycling and food scrap collection and processing services to commercial generators in the City. At this time, the Department has concluded that there are sufficient private sector services available to provide cost-effective solutions to the commercial generators. The Department will continue to monitor service availability and pricing to ensure that the needs of the commercial generators are met.

To monitor the effectiveness of the Universal Recycling and Composting Ordinance and ensure that there are no service gaps, the Department will collaborate with non-profit and private sector service providers, commercial generators and other stakeholders. The Department will work to ensure that the business needs of the non-profit and private sector service providers are balanced with the needs of the generators and the City.

Section 19 City Department Partnerships

19.1 Partnerships with other City Departments

There are significant opportunities to expand partnerships between the Solid Waste Services Department (Department) and other City departments. The Solid Waste Services Director held meetings with twenty City Department Directors and with seven Boards and Commissions and one Council committee, to discuss the potential Solid Waste Services Master Plan (Master Plan) impacts on their departments, and to engage in collaborative future planning. Opportunities identified by the directors include the following activities:

Austin Convention Center and Palmer Events Center

- Continuation of visitor recycling opportunities through visitor recycling containers.
- Continuation and expansion of facility operations recycling.
- Continuation of food organics collection within the two facilities.
- Offering an Eco-Green Exhibit Center with Zero Waste displays.

Austin Energy

- Assisting in the deployment of a Solar Farm at the FM 812 Landfill.
- Promotion of construction and demolition diversion through the Green Building Program.
- Collection and material recovery of old energy-inefficient refrigerators.
- Promotion of the collection of energy-efficient fluorescent lamps through a retail take-back program.
- Participation in an inter-departmental school and public education program, to include energy conservation, litter prevention, nature conservation, water conservation, sustainable/green gardening, Zero Waste and resource conservation.

Austin Fire Department

- Participation in a Battery Recycling Retail Take-back Program, in coordination with the bi-annual smoke alarm battery change-over program.

Austin Police Department

- Coordination of an annual Pharmaceutical Take-back Program utilizing the Drug Enforcement Agency theme of “Good Medicine – Bad Behavior”.

Austin Water

- Continuation and expansion of the operations of the Hornsby-Bend Composting Facility.
- Support for the addition of an Organics Food Scrap collection and processing program, in cooperation with the Texas Commission on Environmental Quality.
- Participation in an inter-departmental school and public education program, to include energy conservation, litter prevention, nature conservation, water conservation, sustainable/green

gardening, Zero Waste and resource conservation.

Aviation Department

- Continuation of flight visitor recycling opportunities through visitor recycling containers.
- Continuation and expansion of facility operations recycling.
- Offering an experimental Organics Collection Pilot with the facility food vendors.
- Offering an Eco-Green Exhibit Center (similar to Convention Center) with Zero Waste Displays.
- Offering a “pilot” In-Flight Recycling Service for airlines serviced by ABIA.

Code Compliance Department

- Assistance in enforcing illegal dumping ordinances.
- Support in enforcing diversion ordinances, including the Universal Recycling Ordinance and the Construction and Demolition Recycling Ordinance.
- Support in public education efforts on rules and regulations regarding diversion activities.

Communications and Technology Management

- Continuation of the City effort to recycle outdated computers and electronic devices.
- Conversion of City printers and copiers to duplex.
- Support and leadership in green electronics purchasing policies.

Economic Growth and Redevelopment Services Office

- Locating Resource Consumption Small Businesses and encouraging their relocation to Austin
- Providing technical assistance in resource matching in cooperation with By-Product Synergies
- Support incentives to draw recycling re-processors to Austin, to reduce the shipping carbon footprint of local recyclers
- Support in the planning and development of an Austin Eco- Business Park and an Austin Eco-Industrial Park, drawing businesses that can reduce or consume waste generated locally, and provide a business environment that is water conservation and energy conservation oriented.
- Support Brownfields real-estate redevelopment incentives and marketing.

Fleet Services

- Continuation of vehicle fluids recycling within Fleet operations.
- Support and leadership in offering greening fuel options (Compressed Natural Gas, E-85 ethanol-based fuel, Hybrids, and Electrics) to Solid Waste Services Department operations.
- Continued support in eco-green purchasing for Fleet operations.
- Exploration of a joint-operation North Fueling Center with the Solid Waste Services Department

Government Relations Office

- Support for state and federal legislation that support material diversion, including but not limited to container recovery, product re-design, products bans, and extended producer responsibility.
- Support Brownfield real-estate redevelopment incentives to include Brownfield state and

federal tax incentives.

Health and Human Services Department

- Support for the development of food organic collection and storage standards.
- Support for the development of food-grade oils collection and recycling standards.
- Support for the Brownfield real-estate redevelopment initiatives to ensure safety of public health, provide expertise to minimize impacts to human health and the environment.

Law Department

- Support for the development of local policies and city ordinances that support implementation of the Universal Recycling Ordinance and other future diversion ordinances.
- Support for local ordinances that support material diversion, including but not limited to container recovery, product re-design, products bans, and extended producer responsibility.

Library Department

- Continuation of visitor recycling opportunities through visitor recycling containers.
- Continuation and expansion of facility operations recycling.
- Continued support of the operations of the “Recycled Reads” Branch, which includes the sale of “expired” books and electronic media.
- Participation in an inter-departmental school and public education program, to include energy conservation, litter prevention, nature conservation, water conservation, sustainable/green gardening, Zero Waste and resource conservation.
- House educational materials to be available to the public, such as DVDs of the Department’s Zero Waste reality TV show, Dare to Go Zero.

Neighborhood Housing & Community Development Office

- Support in the implementation of recycling opportunities at affordable housing rentals.
- Participation in an inter-departmental school and public education program, to include energy conservation, litter prevention, nature conservation, water conservation, sustainable/green gardening, Zero Waste and resource conservation
- Support Brownfield real-estate redevelopment identification of properties, incentives and marketing.

Parks & Recreation Department

- Continuation of visitor recycling opportunities through visitor recycling containers.
- Continuation and expansion of facility operations recycling.
- Development and support of the food organics collection within the PARD facilities.
- Offering Eco-Green Exhibits with Zero Waste displays at the Nature Center.
- Provide recycling opportunities at senior centers and recreation centers
- Participation in an inter-departmental school and public education program, to include energy conservation, litter prevention, nature conservation, water conservation, sustainable/green gardening, Zero Waste and resource conservation

- Explore potential PARD operated sites to host Eco-Depots.
- Continue support of the annual Christmas Tree Recycling Program.
- Continued use of composted mulch in PARD operations.
- Expanded support of Community Gardens and the collection and use of composted material.
- Use of recycled materials in PARD construction projects, including glass recycling in sidewalks and concrete surfaces.
- Support of recycled arts projects within the Artist in Residence Program, annual summer camps, and through the “Total Cool – Totally Art” Program.
- Reduce cigarette litter through a tobacco free parks policy.
- Support Brownfield real-estate reuses, by identifying sites, partnering to apply for green-space grant funds.
- Partner with SWS to offer recycling and composting at special events located in City PARD facilities

Planning & Development Review Department

- Promoting reduced waste generation through the Leadership in Energy and Environment Design (LEED) Program and the implementation of Green Building Standards.
- Assistance and leadership in the development and implementation of a Construction and Demolition Debris Ordinance through City permitting processes.

Public Works Department

- Continuation and expansion of Facility Operations Recycling.
- Development and support of glass recycling pilots, including sidewalk, curbing and road bed substitutes for aggregate.
- Development and support of tire rubber recycling pilots, including asphalt and road bed substitutes for aggregate
- Specifying engineering standards for reused and recycled materials in City construction projects.
- Support Brownfield real-estate redevelopment projects by soliciting and managing contracts.

Purchasing Office

- Adoption and implementation of Environmentally Preferable Purchasing policies.

Transportation Department

- Adoption and implementation of Environmentally Preferable Purchasing policies , including recycled content road construction safety equipment/signage

Watershed Protection

- Continuation and expansion of litter collection and recycling activities.
- Support of litter prevention and recycling education programs within the annual Earth Camp.
- Support of the Green Neighbor Program, a kid’s game to promote environmental awareness.
- Participation in an inter-departmental school and public education program, to include energy conservation, litter prevention, nature conservation, water conservation, sustainable/green

gardening, Zero Waste and resource conservation.

- Support Brownfield real-estate reuse by identifying properties, partnering to address mine-scarred lands from Pleasant Valley Rd. to lower Colorado River, apply for US EPA grants, providing technical reviews and assistance and support incentive opportunities.

All City Departments

- Increased visibility and support of Office Recycling.
- Document the diversion activities of each office and facility and share with the Solid Waste Services Department.
- Innovate new diversion opportunities.
- Explore and support Eco-Green Purchasing options.
- Engage the department's customer base in support of diversion activities.

Coordination through the Sustainability Office

These efforts will be further explored and coordinated by an interdepartmental Green Team that would meet regularly and track performance and provide leadership in Zero Waste. The City's Sustainability Officer has the primary responsibility for working with other City departments to implement green initiatives. The Solid Waste Services Department will provide support to the Sustainability Office in working with the other Departments on the implementation of Zero Waste policies and programs.

The Strategic Initiatives Division will undertake the following tasks.

- Assisting City facilities to comply with Universal Recycling and Composting Ordinance; and
- Coordinating with Sustainability Office to form an inter-departmental green team to provide leadership in Zero Waste.

19.2 Austin Climate Protection Plan

City Council adopted the Austin Climate Protection Plan (ACPP) in 2007 to build a more sustainable community. The Austin Climate Protection Plan was adopted to make Austin the leading city in the nation in the fight against climate change. The broad elements of the plan to reduce greenhouse gas emissions include:

- **Municipal Plan.** Make all City of Austin facilities, vehicles, and operations carbon-neutral by 2020.
- **Utility Plan.** Expand conservation, energy efficiency, and renewable energy programs to reduce Austin Energy's carbon footprint; cap carbon dioxide emissions from existing power plants; and make any new electricity generation carbon-neutral.
- **Homes and Buildings Plan.** Update building codes for new buildings to be the most energy-efficient in the nation, pursue energy efficiency upgrades for existing buildings, and enhance Austin Energy's Green Building program.
- **Community Plan.** Engage Austin citizens, community groups, and businesses to reduce greenhouse gas emissions throughout the community.
- **"Go Neutral" Plan.** Provide tools and resources for citizens, businesses, organizations, and visitors to measure and reduce their carbon footprint.

The Department's support of the implementation of the Climate Protection Plan includes the following:

- Utilize Austin Energy Green Power Options in all Solid Waste Services facilities.
- Purchase alternative energy vehicles through the use of non-petroleum fuels.
- Support the Climate Action Team to inventory greenhouse gas emissions from Solid Waste Services operations and support a comprehensive emission reduction plans.
- Support the community energy needs with renewable resources, including the construction of a solar power array at the City of Austin Landfill.
- Develop options to reduce the Department's carbon footprint through more efficient routing of the Department's collection vehicles.

19.3 Austin Comprehensive Plan & Imagine Austin

The Austin Comprehensive Plan provides broad-level guidance on how Austin will grow and develop into the future. According to the City Charter, the Comprehensive Plan contains "the Council's policies for growth, development and beautification of the land within the corporate limits and the extraterritorial jurisdiction of the city." The Imagine Austin Comprehensive Plan is a community's long-range guide for shaping future growth and development over ten, twenty, or more years. It creates a vision for what kind of place a city should be in the future and describes policy choices to become that city.

The Department's impact on the implementation of these growth and development objectives is noted within the language of the Austin Comprehensive Plan:

Objective 412.0 Pursue opportunities to support the Zero Waste plan for the City of Austin to include education outreach, community participation, and other programs that promote energy conservation, greenhouse gas reduction, renewable energy resources, and resource conservation.

Austin's Zero Waste Plan will take into consideration Austin's current and planned public and private solid waste infrastructure, as well as our city's Climate Protection Program. Recommendations developed through this process are integral to achieve the U.N. Urban Environmental Accord's goal to reduce by 20% the per capita solid waste disposal to landfills by 2012 and zero waste by 2040. Energy and greenhouse gas language is drawn from the Austin Climate Protection Plan which is supported by Resolution 20070215-023.

Policy 412.7 Continue to investigate the feasibility of alternatives for the disposal of solid waste and promote alternatives to landfilling solid waste. Help to educate the City of Austin on Zero Waste Policy initiative, continue use of green waste, and look for ways to enhance this market within the City and the Central Texas Region.

Source: [Austin Comprehensive Plan, Draft](#), 2008

19.4 Create Austin Community Cultural Plan

The Create Austin Cultural Master Plan is the result of a two year process of cultural assessment, research, and community engagement undertaken to chart a course for Austin's cultural development over the next 10 years. The Create Austin Leadership Council was appointed to develop and implement the Plan. Create Austin is a community cultural planning process that will identify

Austin's creative assets and challenges, define goals, and establish recommendations to invigorate Austin's "culture of creativity" to the year 2017. This public/private collaboration will define specific strategies for community-wide implementation in order to sustain Austin as a magnet for arts, culture, and creativity.

The Solid Waste Services Department impact on the implementation of the Community Cultural Plan is in support of the Arts, Culture and Creativity objective. The Department will support and enhance its participation in the Art in Public Places Program.

Source: [Create Austin Cultural Master Plan](#), 2009

19.5 Downtown Austin Plan

To address pressing issues – and prepare for long-term growth – the City of Austin commissioned the Downtown Austin Plan. After three years of detailed development, the Downtown Austin Plan is now ready for its final community review as it heads towards City Council adoption in 2011. The drafted plan establishes action priorities for the next 10 years, and the decades beyond. It recommends steps to help Downtown become even more economically vibrant, livable, walkable, mobile, inclusive, diverse, and culturally alive – while preserving authentic Austin character. The Plan offers seven Transformative Steps for the next 10 years. These positive steps are among those proposed in the Downtown Austin Plan to help realize the community's vision.

The Department's impact on the implementation of the Downtown Austin Plan is in support of the following objective.

5. Invest in Downtown infrastructure. Make utility and drainage improvements that address existing deficiencies and that support positive development in a sustainable way. Establish flexible funds and the leadership that can respond to development opportunities dynamically.

Source: [Downtown Austin Plan](#), 2011

The Department currently administers a downtown solid waste collection contract on behalf of the Downtown Austin Alliance. To support the Downtown Austin Plan, the Department will continue this activity, and include recyclable and compostable collections throughout the prescribed area.¹

19.6 Watershed Protection Master Plan

The mission of the Watershed Protection Department is to reduce the impact of flooding, erosion and water pollution on our community in order to protect lives, property and the environment. To accomplish this mission, WPD completed Phase I of a Watershed Protection Master Plan to better prioritize service needs and refine program direction. The Master Plan inventories existing watershed problems and gauges the impact of future urbanization in seventeen (17) watersheds - including all of the urban watersheds and five surrounding non-urban watersheds. The Watershed Protection Master Plan identifies opportunities for optimizing existing resources through improved prioritization, mission

¹ Add reference to the Central Business T-Bar district.

integration and a renewed commitment to the use of environmentally responsible, cost-effective and sustainable solutions.

To facilitate the solution development process, available watershed protection techniques were characterized along with their corresponding levels of effectiveness, cost and other implementation considerations. The complete inventory of watershed protection techniques contains over 130 different solution types. Watershed protection solutions, to reduce pollutant loads on local watersheds, that are supported by the Department include:

- Household Hazardous Material Collection and Water-Impact Avoidance
- Contaminated Site Cleanup, Remediation, and Redevelopment
- Litter Collection, Abatement and Prevention

Source: [Watershed Protection Master Plan, Phase 1 Watersheds Report](#), 2000

19.7 Cost and Diversion Estimates for Partnerships with City Departments

Initiative	Implementation Timeline	Annual Costs
Partnerships with other City departments	FY2012-2020	\$XX,000

Resources for Partnerships with other City Departments

Additional staff or contractor resources (0.5 full-time-equivalents) will be needed for conducting outreach and technical assistance to City departments, providing Zero Waste training, and facilitating the Inter-Departmental Green Team.

New staff resources identified for this initiative will also support:

- Market Development and City Purchasing
- Zero Waste Training

Implementation Tasks for Partnerships with other City Departments

Task	Lead Responsibility	Participants	Schedule
1. Conduct community-based social marketing on City Facility reuse, recycling and composting programs; provide technical assistance to City Departments and City Facilities; ensure City Facility compliance with Universal Recycling and Composting Ordinance	Strategic Initiatives Division	All City Departments and City Facilities	FY2012 and on-going

Implementation Tasks for Partnerships with other City Departments

Task	Lead Responsibility	Participants	Schedule
2. Coordinate with Sustainability Office to form an Inter-Departmental Green Team; meet to identify opportunities for partnerships and provide leadership in Zero Waste	Strategic Initiatives Division	Sustainability Office, All City Departments	FY2012 and on-going
3. Establish a Zero Waste training program; conduct trainings every 6 months for new city hires	Strategic Initiatives Division	All City staff	FY2013 and on-going
4. Assess and refine City Department and Facilities Zero Waste programs	Strategic Initiatives Division	All City Departments and City Facilities	Annually

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Section 20 Educational Institution Partnerships

Planning for the future is a community value centered around our local higher education systems. It is a Departmental value to be supportive of the local educational institutions through various partnerships. Universities offer interns to engage in local implementation pilots, academic research to support new product designs and life cycle studies, and student engagement in community zero waste programs.

Enable, Engage, Encourage, and Exemplify¹

There is also an important role for a partnership between the university leaders, civic leaders and elected officials, to lead by example as exemplars of the new social norms. This requires clear and cooperative ventures and consistent messages through a unified public education effort. Strategies for changing the norms of behavior include:

- Performing a community waste assessment to determine the needs and weaknesses in local diversion efforts;
- Researching and redesigning product designs through life-cycle analysis to support waste reduction and recycling;
- Providing leadership to visibly encourage and reward successful innovation;
- Using incubator models for testing and piloting innovations; and
- Establishing institutions to link small scale enterprises to larger organizations such as business and legislative bodies.

To develop and implement these strategies, the Department desires to enter into inter-local agreements with area universities, educational institutions, and research facilities.

20.1 Material Stream Analysis

As a means toward better understanding the current waste disposal streams, the Department is interested in entering into agreement(s) with local educational institutions to perform various waste audits. A Zero Waste consultant and interns will be hired through a cooperative agreement to perform the following services:

- Assess the information gained from any previous waste audits performed in the region,
- Expand the scope of any previous audits to include 12 Market Categories of materials that comprise the entire stream of materials discarded.
- Submit detailed reports on the amounts, types and value of materials currently being discarded.
- Recommendations on how area educational institutions and other facilities can perform future studies in-house.
- Audit City of Austin trash flow to 12 Market Categories of materials.
- Audit City of Austin residual trash from its single-stream recycling program.

¹ *Achieving Culture Change: A Policy Framework*, David Knott with Stephen Muers and Stephen Aldridge, January 2008, http://webarchive.nationalarchives.gov.uk/20100125070726/http://cabinetoffice.gov.uk/media/cabinetoffice/strategy/assets/achieving_culture_change.pdf (accessed January 2, 2010)

- Submit a detailed report on the amounts, types, and value of materials identified in the City of Austin trash and recycling residual materials.

The approach of these research studies 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 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 with an analysis of waste streams that can be redirected from landfilling through new diversion programs. Waste stream analyses will be performed every five years to assist the Department in strategic planning in the development of new diversion implementation strategies.

20.2 Waste Generator Audits

To implement the Universal Recycling and Composting Ordinance and increase material diversion, the Department will pursue inter-local agreements with Capital Area Council of Governments and one or more local educational institutions to inventory the material disposal and diversion streams of the top 100 waste generators in the City. A more 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 USEPA WasteWise Program and the WasteWise Re-TRAC data management and reporting system.

20.3 Zero Waste Training

Zero Waste concepts are not widely known, and often misinterpreted as advanced recycling programs. The systems approach to Zero Waste is similar in nature to the complexity of Clean Manufacturing and ISO Environmental systems that are integrated in the production environment, both requiring extensive certification training. Zero Waste systems certification training is necessary to fully integrate Zero Waste practices throughout the community. The Department will engage the educational community in the development of local administered Zero Waste Certification Training, targeted toward the private service providers, Department staff, and local community organizations.

The Department, in collaboration with educational institutions, will undertake the following tasks to implement Zero Waste training in the local community:

- Contracting with a Zero Waste consultant to design and present a Zero Waste Certification Training Program;
- Enter into an inter-local agreement with local colleges and universities to offer Zero Waste certification training programs on a periodic basis;

- Engage in a strategic planning process to evaluate training needs.

20.4 Innovation and Technologies

It is the City of Austin's goal to pursue sustainable practices and reduce the effects of climate change. The Department manages its disposal stream through traditional landfilling. As landfills are a major source of greenhouse gases (particularly methane), it is in the best interest of the Department to explore alternative measures of disposal that reduce its impact on climate change.

Disposal Technologies R&D

Implementing Zero Waste means the reduction of the generation of discarded materials at the source and the maximization of diversion methods from landfills and incinerators. (See Section 3 for Zero Waste definition). The overall goal is to strive for Zero Waste burned or buried. Neither landfills nor incinerators are an appropriate response to the challenge of implementing Zero Waste strategies. Thus, as the Department explores alternative disposal technologies, incineration is not an option. Instead, the principles of Zero Waste require the reduction of greenhouse gas emissions as well as reducing other environmental impacts.

The Department is a participant in a life-cycle analysis study through the Department of Civil Engineering, Center for Sustainable Infrastructure Systems at the University of Colorado Denver. This study will provide an environmental and economic comparison of conventional landfilling with alternative energy conversion technologies. The major measuring stick is greenhouse gas reductions from traditional landfilling. The study will also offer additional means to measure environmental impacts, through a systems analysis of each disposal method.

Diversion Technologies R&D

Implementing Zero Waste also means being innovative in turning wasted discards into wanted resources. Providing a second life to wasted materials can be challenging due to the large variety of products and packaging in our waste streams. Research is needed to provide product longevity through redesign and toxic reduction techniques.

The Department will engage in inter-local agreements with area research institutions to engage in innovative product redesign and new packaging technologies that support the City Zero Waste goals. These R&D efforts will be designed through cooperative efforts with organizations that share the City's Zero Waste goals. The Department's affiliation with area research facilities will leverage the following resources:

- Access to university/college resources including research collaboration opportunities, student interns, MBA student support teams, etc.
- Business planning and milestone tracking
- Product, marketing and manufacturing strategy support
- Government agency navigation and grant support
- Seed Funds for milestone specific projects
- Entrepreneurs in Residence
- Networking opportunities with venture capitalists and other emerging businesses

Resources for Solid Waste Services Personnel Policies

Staffing support for these initiatives will involve 0.5 FTE for Zero Waste training efforts, and an additional 0.5 FTE for research and development advocacy and research collaboration.

Implementation Tasks for Solid Waste Services Personnel Policies

Task	Lead Responsibility	Participants	Schedule
1. Develop and sign an agreement(s) with area educational institutions for a Material Stream Analysis	Strategic Initiatives Division	Educational Institutions and Zero Waste Consultant(s)	Fall 2011
2. Contract with a consultant to provide Material Stream Analysis through inter-local agreement	Strategic Initiatives Division	Educational Institutions and Zero Waste Consultant(s)	Fall 2011
3. Develop and sign an agreement with area educational institutions for Waste Generator Audits	Strategic Initiatives Division	Educational Institutions and Zero Waste Consultant(s)	2012
4. Work with local colleges and universities to develop a Zero Waste Certification Training Program	Strategic Initiatives Division	Academic partners	2012
5. Work with local colleges and universities to develop diversion and disposal alternative technologies	Strategic Initiatives Division	Academic partners	2013 and ongoing
6. Reassess waste stream analysis and zero waste training every 5 years	Employee Services Division	Academic partners	2016 and every 5 years

Section 21 Pilots and Demonstration Projects

To reach Zero Waste, the City of Austin (City) will need to undertake new programs that have not been implemented locally or nationally. Investing in research and development is a key element of the Solid Waste Services Master Plan (Master Plan).

21.1 Research & Development

Zero Waste research and development is essential to developing the City's future Zero Waste system. Currently many products and packaging are designed for the dump and cannot be recycled or composted. Designing products and packaging with their end-of-life in mind will help the City work toward Zero Waste. Serious Zero Waste practitioners around the world¹ are focusing on these materials that cannot be recycled and composted, also known as legacy discards. They are striving to develop new designs in products and packaging that can be reduced, recycled and composted, as well as new policy solutions such as fees or bans of problem products.

The Solid Waste Services Department (Department) will develop pilot programs related to its own operations to test new collection methods and approaches to providing collection services to its customers. The following pilot programs have been identified for implementation.

- **Household Organics** - Providing a wheeled cart for yard trimmings and adding food scraps and compostable paper to the yard trimmings collection program. This pilot program is described in Section 10 Composting Organics.
- **On-Call Bulk Item Reuse and Recycling** – Providing enhanced recycling and reuse options for materials collected through the Bulk Item collection program. Piloting on-call collection to augment or replace the semi-annual clean-up program. This pilot program is described in Section 13 Other Core Services.

However, to research new ways of keeping discarded materials from being wasted, the Department will need the support of other resources in the community. To develop research projects, pilot programs, and demonstration projects, the Department will form partnerships with research institutions and universities, community-based non-profits, and private sector service providers. The Department's plans for working with universities are described in Section 20 University Partnerships. This section discusses:

- Pilot programs to address specific generator types;
- Pilot programs to address specific material types; and
- Demonstration projects.

¹ AmbienteFuturo, Lucca, Italy <http://ambientefuturo.org/> (accessed January 16, 2011)

21.2 Pilot Programs to Address Specific Generator Types

The Department's collection programs serve all single-family customers and some multi-family and commercial customers. However, pilot programs are needed to address those affected by future implementation of the City's Universal Recycling and Composting Ordinance.

Food Services Recycling Pilot – The Department has solicited bids for Food Services Recycling Pilot Program to test operational approaches, training and outreach methods, and diversion levels for restaurants and food service establishments. Restaurant stakeholders had expressed concerns about how organics diversion could be accomplished in Austin. The pilot will test the unique features and requirements of local restaurant generators.

Organics Collection Pilot – Additional organics collection pilots are needed to test collection programs for different types of generators, including those that may not have access to convenient and affordable organics collection programs. The pilots could test organics drop-off programs, neighborhood composting at community gardens, and other collection approaches for hard-to-service generators (such as those in multi-tenant office buildings).

Multi-Family Collection Pilot – Additional collection pilots are needed to address the needs of different types of multi-family settings. Multi-family recycling and organics collection is challenging. Some properties experience high tenant turn-over rates. Others have not been designed for recycling and may have barriers to recycling, such as garbage chutes and small garbage rooms. The pilots could test alternative methods for diverting materials from multi-family complexes including, single-stream and/or organics collection in carts and dumpsters, valet services, reconfiguration of trash enclosures, and Zero Waste building challenges.

21.3 Pilot Programs to Address Specific Material Types

The Department's single-stream collection program and household organics pilot will address nearly 85 percent of materials generated at households. However, some hard-to-handle materials may require investment in alternative collection programs.

Household Hazardous Waste (HHW) Pilot – HHW materials such as batteries and paint pose significant environmental safety concerns if disposed improperly. However, many citizens are unaware of safe disposal options or find existing safe disposal options inconvenient. To increase participation in proper HHW disposal programs, the Department will conduct a pilot program to assess whether door-to-door HHW collection is financially feasible for citywide application.

Textiles Collection Pilot – Textiles are challenging to divert at the household level. Some communities have added textiles to their single-stream collection programs. However, these materials provide challenges at the material recovery facility and this method of collection could degrade the textiles and render them unusable. Textiles can also be diverted through thrift store and other reuse outlets. Unsold or un reusable items can be marketed for carpet pad and mechanic wiping cloths. However, not all textiles are suitable for these markets. The pilots could test alternatives for textile drop-off, reuse and recycling.

Mattress Collection Pilot – Mattresses are currently collected through the Bulk Item program and are disposed in landfills. There are many operations across the country for mattress reuse, refurbishment, and deconstruction. The pilots could test methods of collection that preserve the reusability of the mattresses, including separate vehicle collection and drop-off alternatives. The pilots could also test local options for refurbishment and deconstruction. The Department is a contributing sponsor to the Product Stewardship Institute’s Mattress Recovery Research Project. Austin has committed to being a pilot test for a new national model for mattress recovery.

21.4 Demonstration Projects

In addition to pilots to test methods of operation for full-scale implementation, there is a need to develop demonstration projects to enrich and inspire the community and provide a model for private sector and non-profit development of Zero Waste demonstration project. The Department seeks to provide the inspiration for Austin to become a magnet for Zero Waste entrepreneurs and innovators. While the City can provide some seed funding, the Department seeks to inspire others to obtain on-going funding for continued sustainable implementation.

Regional Recycling Drop-Offs – In partnership with community-based non-profit organizations and private sector service providers, the Department would like to implement multiple Regional Recycling Drop-Offs and Zero Waste demonstration sites. In addition to the Department’s plans for Eco-Depots and Resource Recovery Centers, the Regional Recycling Drop-Offs will provide collaboration within a designated community. These drop-offs can be co-located with community gardens, in shopping and strip malls, in multi-family complexes, at schools and churches, or at the planned Eco-Depots and Resource Recovery Centers.

Recycled Art Projects – Artist in Residence – The Department desires to sponsor an annual artist in residence program in collaboration with the Parks and Recreation Department.. The artists would be provided with access to the materials delivered to various diversion facilities for the creation of fine art. The Department would work with the landfill and recycling facility operators to provide working material for the artists to utilize in their art projects. Should funding be needed, the Department could provide a modest stipend to the artists. Semi-annual “Recycled Art” receptions would be co-sponsored by the Department.

Designed for Recyclability - The Department will engage in inter-local agreements with area research institutions to engage in innovative product redesign and new packaging technologies that support the City Zero Waste goals. These R&D efforts will be designed through cooperative efforts with area companies to assist in redesigning products so that their end-of-life may be designed for recycling or composting diversion. Possible research projects may involve non-recyclable plastics, single-use disposable products, and packaging wraps.

Cost Estimate for Pilots and Demonstration Projects

Initiative	Initial Year at Full Implementation (FY) ¹	Annual Costs
Pilots and Demonstration Projects	FY13	\$100,000

Resources for Pilots and Demonstration Projects

Existing staff resources will be used to manage the service contracts. \$100,000 per year will be allocated for funding for the pilots and demonstration projects.

Implementation Tasks for Pilots and Demonstration Projects

Task	Lead Responsibility	Participants	Schedule
1. Implement the Food Services Collection Pilot	Strategic Initiatives Division		FY11-FY12
2. Conduct stakeholder meetings with community-based non-profits and private sector service providers to prioritize the potential pilots and demonstration projects. Adjust implementation schedule, as appropriate.	Strategic Initiatives Division	Community-based non-profits Private sector service providers	FY12
3. Design an annual program to solicit competitive proposals for priority pilots and demonstration projects	Strategic Initiatives Division		FY12
4. Implement the Organics Collection Pilot	Strategic Initiatives Division		FY12
5. Implement the Multi-family Collection Pilot	Strategic Initiatives Division		FY13
6. Implement Textiles Collection Pilot	Strategic Initiatives Division		FY14
7. Implement Mattress Collection	Strategic Initiatives Division		FY13

Implementation Tasks for Pilots and Demonstration Projects

Task	Lead Responsibility	Participants	Schedule
Pilot			
8. Implement Regional Recycling Drop-offs	Strategic Initiatives Division		FY15
9. Implement Recycled Art Projects	Strategic Initiatives Division		FY13
10. Assess and refine annual pilot program	Strategic Initiatives Division		FY20 and every 5 years on-going

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Section 22 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.

22.1 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 were evaluated in the Needs Assessment Technical Memorandum included in Appendix C and selected for implementation by the stakeholders.

- 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)

The Department's Strategic Initiatives Division will have primary responsibility for developing the new ordinances and facilitating their implementation.

Policy Cost and Diversion Estimates

Initiative ¹	Date of Initiation (FY) ²	Initial Year of Full Implementation (FY) ²	Initial First Year Implementation Costs	Annual Costs ³
Universal recycling and composting ordinance – 3 phases	FY11-FY12	FY16		
Single-use products and packaging ordinance ⁴	FY12-FY14	FY13-FY14		
Hauler Registration Ordinance	FY12	FY13		
Take-back ordinance ⁵	FY14	FY15		
Refundable Deposit (Bottle Bill)	FY15	FY16		

Initiative ¹	Date of Initiation (FY) ²	Initial Year of Full Implementation (FY) ²	Initial First Year Implementation Costs	Annual Costs ³
Extended producer responsibility initiatives	FY17	FY18		

¹Listed based on priorities identified in the *Needs Assessment Technical Memorandum* and discussed by the stakeholders at the November 2010 workshops.

²Calendar dates refer to the City's Fiscal Year (FY) October 1 through September 30 of each year.

²Based on first year of full implementation; figures rounded and thus calculations for Costs per Ton may not calculate exactly.

³Staffing costs included in Universal Recycling and Composting Ordinance.

⁴Diversion estimate and staffing costs included in Extended Producer Responsibility initiatives.

The Strategic Initiatives Division is responsible for:

- Zero Waste policy development;
- Zero Waste program development;
- Marketing, including media outreach, community-based social marketing, producing print publications; and
- Business outreach and economic development, including commercial technical assistance, ordinance implementation, and oversight.

The Strategic Initiatives Division will play a key role in assisting the operations divisions in planning and implementing the new Zero Waste programs and will provide marketing support and community-based social marketing for new Zero Waste programs. In addition, the Strategic Initiatives Division will manage incentive-based programs, such as the compost incentive program.

22.2 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. The Department is also conducting stakeholder meetings throughout 2011 to discuss implementation of URO Phase 2 which will apply to food and beverage service establishments, retail, hospitality, manufacturing and industrial generators.

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. Organics disposed in landfills create methane which is a powerful greenhouse gas, at least 21 times more

powerful than carbon dioxide. 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.

To ensure broad support of the URCO, the Department will release community-based social marketing campaign, which could include:

- Co-hosting regional workshops with the Capital Area Council of Governments (CAPCOG);
- Piloting food scrap collection at restaurants and other commercial businesses;
- Leading by example and establishing comprehensive recycling and composting at all City facilities;
- Providing technical assistance to businesses to reduce waste, streamline processes that create unnecessary waste products, such as shipping containers, and increase diversion; and
- Educating businesses about the waste management industry and service options, including publishing the rates that service providers charge for service based on volume and frequency.

The Department provides commercial technical assistance through its Waste Reduction Assistance Program (WRAP), 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 through the Commercial Technical Assistance Program coinciding with the implementation of the URCO.

A component of this initiative is the Commercial Technical Assistance Program. The City will conduct outreach to every business in Austin over a five year period. The program will initially focus on businesses with more than 100,000 square feet, as the first phase of implementing the new URCO. Then the program will be phased in to include all businesses within four years. The Department will explain the elements of the URCO and help businesses right-size their garbage service, reduce waste and expand reuse, recycling and composting services with the goal of reducing their overall garbage and recycling bills. The program will include:

- Technical assistance to commercial businesses in support of the Universal Recycling and Composting ordinance;
- 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.

To monitor the effectiveness of the URCO, the Department will collaborate with non-profit and private sector service providers. The Department will register non-profit and private sector services providers. Registered haulers will report diversion and disposal tonnages and service levels by customer. The Department will ensure that the business needs of the non-profit and private sector service providers are balanced with the needs of the generators and the City.

Cost and Diversion Estimates for Universal Recycling and Composting Ordinance Implementation

Initiative ¹	Date of Initiation (FY) ²	Initial Year of Full Implementation (FY) ²	Initial First Year Implementation Costs	Annual Costs ³
Universal recycling and composting ordinance – First Phase	FY11	FY16		
Universal recycling and composting ordinance – Second Phase	FY12	FY16		
Universal recycling and composting ordinance – Third Phase	FY13	FY16		

Resources for Universal Recycling and Composting Ordinance Implementation

New staff members or contractor resources are needed for:

- Ordinance and Rules development
- Commercial recycling technical assistance
- Media outreach and social marketing
- Contract development and contract management

New staff resources identified for this initiative will also support:

- Rate Structure incentives
- Zero Waste research
- Regional cooperation

Implementation Tasks for Universal Recycling and Composting Ordinance

Task	Lead Responsibility	Participants	Schedule (FY)
1. Conduct public workshops on New Rules for Phase 1 of the ordinance	Strategic Initiatives Division	Commercial generators, property managers, non-	FY11

Implementation Tasks for Universal Recycling and Composting Ordinance

Task	Lead Responsibility	Participants	Schedule (FY)
		profit and private sector service providers	
2. Undertake pilot program for food scrap collection at restaurants	Strategic Initiatives Division	Targeted restaurants, non-profit and private sector service providers	FY11
3. Conduct stakeholder meetings on Phase 2 of the ordinance	Strategic Initiatives Division	Commercial generators, property managers, non-profit and private sector service providers	FY11 – FY12
4. Conduct outreach to property managers to inform them of the ordinance requirements and timing; provide training	Strategic Initiatives Division	Building owners and managers	FY12 - ongoing
5. Co-host regional workshop on best practices in food scrap diversion; invite local and national experts	Strategic Initiatives Division	CAPCOG, non-profit and private sectors service providers	FY12, annually
6. Present Phase 2 of ordinance to City Council	Strategic Initiatives Division		FY12
7. Hire and train Austin Recycling Ambassadors to provide on-going technical assistance to commercial businesses; increasing staff over five-year rollout	Strategic Initiatives Division		FY13

Implementation Tasks for Universal Recycling and Composting Ordinance

Task	Lead Responsibility	Participants	Schedule (FY)
8. Provide community-based social marketing to residential and commercial generators; provide support to operations divisions	Strategic Initiatives Division	Disposal Facilities Division, Litter Abatement Division, Collection Services Division	FY13
9. Conduct public workshops on New Rules for Phase 2 of the ordinance	Strategic Initiatives Division	Commercial generators, property managers, non-profit and private sector service providers	FY13
10. Provide commercial technical assistance and marketing to commercial generators	Strategic Initiatives Division	Commercial generators	FY12-ongoing
11. Conduct stakeholder meetings on Phase 3 of the ordinance	Strategic Initiatives Division	Residential generators, non-profit and private sector service providers	FY13
12. Present Phase 3 of ordinance to City Council	Strategic Initiatives Division		FY14
13. Conduct public workshops on New Rules for Phase 3 of the ordinance	Strategic Initiatives Division	Residential generators, non-profit and private sector service providers	FY15
14. Provide technical assistance and education to	Strategic Initiatives Division	Residential generators	FY15-ongoing

Implementation Tasks for Universal Recycling and Composting Ordinance

Task	Lead Responsibility	Participants	Schedule (FY)
residential generators			
15. Assess and refine Universal Recycling and Composting Ordinance	Strategic Initiatives Division	All stakeholders	Every 5 years ongoing

22.3 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.

Resources for Product and Packaging Policy Implementation

Diversion and cost estimates for this initiative are included in the Extended Producer Responsibility (EPR) initiative.

Implementation Tasks for Product and Packaging Policy Implementation

Task	Lead Responsibility	Participants	Schedule (FY)
1. Present plastic bag research to City Council	Strategic Initiatives Division		FY11
2. Conduct stakeholder workshops on the Plastic Bag Ordinance	Strategic Initiatives Division	Retail establishments and customers	FY12
3. Present Plastic Bag	Strategic		FY12

Implementation Tasks for Product and Packaging Policy Implementation

Task	Lead Responsibility	Participants	Schedule (FY)
Ordinance to City Council	Initiatives Division		
4. Provide technical assistance and community-based social marketing to retail establishments and customers	Strategic Initiatives Division	Retail establishments and customers	FY12-ongoing
5. Present take-out container research to City Council	Strategic Initiatives Division		FY13
6. Conduct stakeholder workshops on the Take-Out Container Ordinance	Strategic Initiatives Division	Restaurant stakeholders and customers	FY13
7. Present Take-Out Container Ordinance to City Council	Strategic Initiatives Division		FY13
8. Provide technical assistance and community-based social marketing to retail establishments and customers	Strategic Initiatives Division	Restaurant stakeholders and customers	FY13-ongoing
9. Present single-use beverage container research to City Council	Strategic Initiatives Division		FY14
10. Conduct stakeholder workshops on the Single-Use Beverage Container Ordinance	Strategic Initiatives Division	Building community	FY14
11. Present Single-Use Beverage Container Ordinance to City Council	Strategic Initiatives Division		FY14

Implementation Tasks for Product and Packaging Policy Implementation

Task	Lead Responsibility	Participants	Schedule (FY)
12. Provide technical assistance and community-based social marketing to building community	Strategic Initiatives Division	Building community	FY14-ongoing
13. Assess and refine Single-Use Product Ordinances	Strategic Initiatives Division	All stakeholders	Every 5 years ongoing

22.4 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).

Resources for Take-Back Ordinance Implementation

Diversion and cost estimates for this initiative are included in the EPR initiative.

Implementation Tasks for Take-Back Ordinance Implementation

Task	Lead Responsibility	Participants	Schedule (FY)
1. Present producer take-back research to City Council	Strategic Initiatives Division		FY13
2. Conduct stakeholder workshops on the Take-Back Ordinance	Strategic Initiatives Division	Brand owners, retailers, and customers	FY13-FY14

Task	Lead Responsibility	Participants	Schedule (FY)
3. Present Take-Back Ordinance to City Council	Strategic Initiatives Division		FY14
4. Provide technical assistance and community-based social marketing to brand owners, retailers, and customers	Strategic Initiatives Division	Brand owners, retailers, and customers	FY15-ongoing
5. Assess and refine Take-Back Ordinance	Strategic Initiatives Division	All stakeholders	Every 5 years - ongoing

22.5 Hauler Registration Ordinance

To monitor the effectiveness of the URCO, the City will establish an annual registration of non-profit and private sector service providers that collect and haul trash, recyclables and compostables within the city limits. Registered haulers will report diversion and disposal tonnages and service levels. The City will ensure that the proprietary business needs of the service providers are balanced with the Department's need to track diversion activity and progress toward the Zero Waste goals established by the City Council.

The current Hauler Ordinance requires all haulers that collect waste within the City to acquire an annual hauler license. The haulers are required to submit information on the number of trucks utilized and the number of containers deployed within the City. The hauler is assessed an annual per truck fee and an annual per container fee for doing business within the City.

The Department should evaluate an ordinance amendment that will eliminate the container fee and maintain the registration of hauling vehicles utilized within the City. In return for the reduced fees, the City should adopt reporting requirements in support of URCO. Annually, beginning in FY2013, each hauler could then be required to register their fleet of vehicles, pay a per vehicle fee, and submit diversion and disposal tonnages and service levels by customer. The fees collected could be utilized to support the personnel cost to process the annual license and analyze the data received. The Department should continue to ensure that the business needs of the non-profit and private sector service providers are balanced with the needs of the generators and the City.

Implementation Tasks for Hauler Registration Ordinance

Task	Lead Responsibility	Participants	Schedule (FY)
1. Conduct stakeholder	Solid Waste Advisory	Haulers and other Service	FY10-FY11

Task	Lead Responsibility	Participants	Schedule (FY)
meetings on the Hauler Registration Ordinance	Commission	Providers	
2. Develop reporting requirements and information safeguards	Strategic Initiatives Division	Haulers and other Service Providers	FY10-FY11
3. Present Hauler Registration Ordinance to City Council	Solid Waste Services Department	City Law Office	Early FY12
4. Provide registration forms and technical assistance to haulers	Strategic Initiatives Division	Haulers and other Service Providers	FY12-FY13
5. Initiate Hauler Registration Process and Requirements	Finance Division	Haulers and other Service Providers	FY13
6. Assess and refine Hauler Registration Ordinance	Strategic Initiatives Division	All stakeholders	Every 5 years – on going

22.6 Service Pricing Strategies

Research conducted for the *Master Plan* identified some pricing strategies employed by private sector service providers that create a disincentive to recycling and composting. These practices include: charging a monthly fee to customers irrespective of the level of services provided; long-term contracts that do not allow customers to obtain recycling or composting collection services; the lack of right-sizing trash service when recycling is introduced; and rate structures that do not provide an incentive to waste reduction. The Department will carefully monitor these practices and provide commercial technical assistance to commercial generators to assist them in making informed choices. If appropriate, the City may undertake the development of a Commercial Rate Ordinance.

Commercial Rates Offered by Service Providers

The goal of a Commercial Rate Ordinance would be to establish sufficient customer rate incentives for commercial and multifamily customers to increase recycling and decrease trash service. This ordinance could help minimize a common industry practice of offering price incentives based on volume discounts to customers that subscribe for higher levels of trash service, thereby creating pricing incentives for customers to shift to increased recycling services. It could also require full disclosure of the cost components of rates charged and eliminate the use of flat fees for trash service. Some businesses in Austin are currently charged a flat fee for trash service, and they are not able to decrease that flat fee no matter how much they reduce waste and recycle more. The following sections describe the customer

rate modifications for trash and recycling services, which the haulers could be required to implement under this policy:

Trash rate component:

Commercial customer rates could be modified by the hauler to reflect a uniform per cubic yard rate for the whole range of bin or container sizes and collection frequency the hauler offers to its customers. The amount of the cubic yard (unit) rate could be established by the hauler to ensure that sufficient revenues are generated to cover the hauler's costs and still compete for customers. Thus, if a hauler charges a rate of \$100 for a one cubic-yard bin collected once per week, the rate could be \$200 for the one cubic-yard bin collected two times per week, \$400 for a four cubic-yard bin collected once per week, or \$1,200 for a six cubic yard bin collected two times per week.

Recycling rate component:

Since the commercial haulers are already assumed to be offering recycling service to their customers, they could be required to offer a discount for the recycling rates compared to the trash rates. For example, the recycling rate set by the hauler under this ordinance could be no higher than 75 percent of the trash rate for service, as measured by the uniform per cubic yard rate for trash service. If a hauler charges their customer \$100 for a one cubic yard bin of trash, the hauler could charge no more than \$75 for a one cubic yard bin of commingled or source separated recyclables. A similar provision could apply towards collection of compostable materials.

In addition, as recycling and composting services are introduced, trash service should be reduced. This right-sizing is required to encourage diversion activities. When trash service is not right-sized, the commercial generator is essentially over-charged for trash capacity that is no longer needed. Lowering the service frequency or reducing the bin service to match the lower trash output achieves the goal of right-sizing the service.

The trash and recycling rate modifications intended by this policy would be established through City adoption of an ordinance that would also describe the parameters of the rate modifications needed by haulers to maintain their permits for serving customers within the City of Austin. This policy would rely on the City's right to set hauler permit conditions, and would not require the City to implement exclusive or non-exclusive franchises for commercial collection.

Resources for Commercial Rate Ordinance

Staffing costs included in Universal Recycling and Composting Ordinance.

Implementation Tasks for Commercial Rate Ordinance

Task	Lead Responsibility	Participants	Schedule (FY)
I. Conduct stakeholder workshops on the	Strategic Initiatives Division	Commercial generators,	FY18

Implementation Tasks for Commercial Rate Ordinance

Task	Lead Responsibility	Participants	Schedule (FY)
Commercial Rate Ordinance		non-profit and private sector service providers	
2. Present Commercial Rate Ordinance to City Council	Strategic Initiatives Division	Finance Division	FY19
3. Develop memoranda of understanding or non-exclusive franchise agreements with registered service providers	Strategic Initiatives Division	Non-profit and private sector services providers	FY19
4. Conduct stakeholder workshops on New Rules for the Commercial Rate Ordinance	Strategic Initiatives Division	Commercial generators, private sector service providers	FY19
5. Provide technical assistance and community-based social marketing to commercial generators	Strategic Initiatives Division	Commercial generators	FY19-on-going
6. Assess and refine Commercial Rate Ordinance	Strategic Initiatives Division	All stakeholders	Every 5 years on-going

22.6 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 should be 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.

There are 11 bottle bill states in the U.S., the first originating in 1971, another 10 states currently have deposit/refund legislation pending. The Department will support a national bottle bill when one is proposed. To promote the City's support of container deposit legislation, the Department will become an ongoing supporting member of the Container Recycling Institute (CRI). The CRI is a non-profit organization that studies and promotes policies and programs that increase recovery and recycling of beverage containers. Founded in 1991, CRI has become recognized as the expert source for information on container recycling and container deposit systems, and plays a vital role in educating policymakers, government officials, and the general public regarding the social and environmental impacts of the production and disposal of one-way beverage containers. CRI also works to debunk myths about container recycling promoted by the beverage, retail, and container manufacturing industries. CRI focuses on programs that shift the social and environmental costs associated with manufacturing, recycling, and disposal of container and packaging waste from government and taxpayers to producers and consumers.

Implementation Tasks for State-wide Refundable Deposit Ordinance

Task	Lead Responsibility	Participants	Schedule (FY)
1. Conduct stakeholder meetings on Statewide Refundable Deposit Legislation	Solid Waste Advisory Commission	Department staff	FY12-FY13
2. Support Container Recycling Institute and the Texas Bottle Bill organization	Solid Waste Services Department	Department staff	FY12 ongoing
3. Support Statewide Refundable Deposit Committee	Strategic Initiatives Division	Statewide Committee	FY13 (when established)
4. Present Resolution of Support to City Council	Solid Waste Services Department	City Law Office	FY13-FY15 (when needed)
5. Support state legislation	City of Austin	Governmental	FY13-FY15

Task	Lead Responsibility	Participants	Schedule (FY)
		Affairs Office	(When proposed)
6. Assist in establishment of bottle collection convenience centers	Strategic Initiatives Division	Service Providers	FY14-FY16 (after bill passage)

22.7 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.

Resources for Extended Producer Responsibility Initiatives

Additional staff or contractor resources (1.5 full-time-equivalents) will be needed for:

- Policy and ordinance development
- Support to the TxPSC
- Staff support to the Product Bans initiative and Take-Back Ordinance initiative

Implementation Tasks for Extended Producer Responsibility Initiatives

Task	Lead Responsibility	Participants	Schedule (FY)
1. Provide staff support to Texas Product Stewardship Council	Strategic Initiatives Division	Texas Product Stewardship Council	FY12 and on-going
2. Participate in national and international EPR policy development	Strategic Initiatives Division		FY12 and on-going
3. Present EPR policy to City Council	Strategic Initiatives Division		FY15
4. Present local producer responsibility research to City Council	Strategic Initiatives Division		FY16
5. Conduct stakeholder workshops on the Local Producer Responsibility Ordinance	Strategic Initiatives Division	Retail establishments, manufacturers, distributors, and customers	FY16
6. Present Local Producer Responsibility Ordinance to City Council	Strategic Initiatives Division		FY17
7. Provide technical assistance and community-based social marketing to retail establishments, manufacturers, distributors, and customers	Strategic Initiatives Division	Retail establishments, manufacturers, distributors, and customers	FY18-ongoing
8. Assess and refine EPR initiatives	Strategic Initiatives Division	All stakeholders	Every 5 years – ongoing

Section 24 Incentives and Rewards

Achieving the City of Austin's (City) Zero Waste goals will require all Austin generators to step up and change the culture from one based on a throw-away mindset to one based on resource management and conservation. Ultimately, the Zero Waste mindset will increase our quality of life and allow us to treasure the resources that we have and share them with the generations to come.

Section 27 Communications Plan describes the Solid Waste Services Department's (Department) plans to reach out to all residential and commercial generators in the City to inform and engage them in the Zero Waste message. Section 22 Policies describes the new ordinances and City policies that will require generators to participate in new programs. To be most successful in reaching all sectors of the City, the Department will need to utilize a carrot and sticks approach through incentives and penalties.

24.1 Business Technical Assistance and Recognition

The Department currently provides a business technical assistance and recognition program through its Waste Reduction Assistance Program (WRAP) and its WasteSMART Program.

Waste Reduction Assistance Program

The WRAP is a free program to help businesses in Austin reduce trash and increase recycling. The City of Austin provides an on-site assessment to help businesses expand recycling, reduce waste sent to the landfill, and improve the environment. The service is voluntary, confidential and free-of-charge. The program provides two major services:

1. Conducts assessment for property owners seeking information and options to reduce and recycle discards;
2. Monitors recycling ordinance compliance and responds to inquiries or complaints from residents who inform the City when a property may not be compliant.

The Department has developed waste reduction tip sheets that correspond to different types of businesses and material types. These tip sheets include helpful pointers on how to reduce waste. For example, hotels are urged to offer "no clean" cards for guests to indicate whether linens required changing.

WasteSMART

WasteSMART is a program that recognizes local businesses that reduce waste, recycle and buy recycled products. Several local businesses are reducing and recycling and the City of Austin provides summaries of the green and sustainable techniques these businesses have implemented. Twenty-seven local businesses are listed as WasteSMART partners. The case studies are available at:

http://www.ci.austin.tx.us/sws/commercial_wastesmart.htm

The Department is undertaking the following steps to update and enhance the WRAP and WasteSMART programs.

- Fully staff the WRAP and WasteSMART programs and provide training to ensure that all staff members are fully capable of providing commercial technical assistance for all institutional, commercial, and industrial generators in the City, including construction and demolition debris generators.
- Partner with the Capital Area Planning Council of Governments, Austin Energy, and other related organizations to provide reuse, recycling, composting and construction and demolition diversion resources and publish an on-line commercial recycling guide listing service providers, acceptable materials and rates.
- Increase public awareness of the programs and what profiled businesses are doing to recycle and reduce.
- Provide more specific information in each case study about the costs and benefits of implementing recycling and reduction programs.
- Provide specific information about how businesses solved problems of space, potential labor costs/savings, procuring collection services, and working with building owners.
- Develop a right-sizing calculator to demonstrate how reducing trash and increasing recycling and composting can save money.
- Develop a greenhouse gas calculator to demonstrate how increasing recycling can reduce greenhouse gas emissions.
- Publish rates that businesses are paying for trash collection, recycling and composting services and service providers. Document size of containers, frequency of pickup and monthly rates. This information can be gathered during the site visits.
- Provide links to resources for businesses, including: internal collection containers (sources, sizes and costs), compostable service-ware (certification, appropriate composter service, costs), recyclable service-ware (appropriate recycler service, costs), and recycled office products.
- Actively target businesses to provide comprehensive technical assistance. Beginning with the Central Business District, develop a database of business contacts and track the status of each business; prioritize businesses by size and type. Set goals of conducting site visits and providing technical assistance to, for example, 100 commercial businesses per year per staff member. Measure progress against these goals. Celebrate accomplishments and publish results.
- Follow-up with each business regularly (at least once per year) to provide additional technical assistance and ensure businesses are following through with recycling plans.
- Establish a rating system based on reduction and recycling practices to identify how green a business is. For example, LEED buildings are given a rating (bronze, silver, gold, platinum) based on a point scale. Implement a similar recognition program for Zero Waste businesses.

- Sponsor an annual Zero Waste business seminar to profile local and nationally recognized Zero Waste businesses.
- Sponsor an annual Zero Waste business awards program recognizing local Zero Waste businesses.
- Make presentations on the City's technical assistance program to business meetings including, chambers of commerce, Rotary Clubs, restaurant association, and other business associations.

24.2 Universal Recycling and Composting Ordinance Support

As part of the implementation of the Universal Recycling and Composting Ordinance (URCO) described in Section 22 Policies, Department staff will work with individual businesses to explain the elements of the Universal Recycling and Composting Ordinance and help businesses right-size their trash service, reduce waste and expand reuse, recycling and composting services. The program will include:

- Technical assistance to commercial businesses in support of the Universal Recycling and Composting ordinance;
- 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.

To monitor the effectiveness of the URCO, the City will collaborate with non-profit and private sector service providers. The City will register non-profit and private sector services providers. Registered collectors will report diversion and disposal tonnages and service levels by customer. The City will ensure that the business needs of the non-profit and private sector service providers are balanced with the needs of the generators and the City.

24.3 Rate Structure Support

The Department will also support commercial generators by carefully monitoring the pricing strategies employed by private sector service providers that create a disincentive to recycling and composting. These practices include: charging a monthly fee to customers irrespective of the level of services provided; long-term contracts that do not allow customers to obtain recycling or composting collection services; the lack of right-sizing trash service when recycling is introduced; and rate structures that do not provide an incentive to waste reduction.

In addition, as recycling and composting services are introduced, trash service should be reduced. This right-sizing is required to encourage diversion activities. When trash service is not right-sized, the commercial generator is essentially over-charged for trash capacity that is no longer needed. Lowering the service frequency or reducing the bin service to match the lower trash output achieves the goal of right-sizing the service.

The Department will monitor commercial generator service needs and provide commercial technical assistance to commercial generators to assist them in making informed choices. If appropriate, the City may undertake the development of a Commercial Rate Ordinance, as described in Section 17 Public-Private Partnerships.

24.4 Zero Waste Awards

The Department's Strategic Initiative Division produced a ground-breaking reality TV series, Dare to Go Zero. The show profiled five average Austin families and followed them on their Zero Waste journey. The purpose of the reality show was to demonstrate that daring to Go Zero is not something that just extraordinary people can do. It is something that everyone can do. In order for the City to be truly successful, Zero Waste needs to be what everyone can achieve. The Communication Plan described in Section 27 describes the steps that the Department will take to make Zero Waste the "new normal" in the City. These steps include:

- Producing future episodes of Dare to Go Zero, but broaden participant base.
- Profiling average families in different neighborhoods and different demographics who are striving for Zero Waste including single-family, multifamily (large and small buildings), mobile homes, and large institutions (including retirement facilities).
- Developing Best Practices, Frequently Asked Questions, resource lists, and solutions to common problems.
- Profiling average businesses from across the City who Zero Waste businesses.
- Identifying common barriers (space constraints, labor issues, shared collection services) and solutions.
- Profiling City departments and employees that are striving for Zero Waste and providing recognition at City Council meetings.
- Presenting annual Zero Waste Awards to local families and local businesses that have achieved a 90%+ diversion rate in their work or home lives.

Section 27 Communications Plan

Austin is part of a regional waste management system that continues to grow, outpacing other Texas communities. The region faces a need to expand existing landfills, open new landfills, or divert a drastic amount of waste from current landfills to properly dispose of waste and ensure health and safety of its residents. In 2009, Austin City Council adopted a Zero Waste goal to reduce the amount of waste sent to area landfills by 90 percent by 2040.

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).

27.1 Situation Analysis

In an effort to streamline messages, improve communication and build better relationships, SWS developed a Departmental communication policy. This policy tasks the Public Information/Marketing Team with developing and managing departmental communications activities. This team is responsible for developing and disseminating consistent messaging and measuring effectiveness. It is important that this team is aware of Departmental issues in advance to proactively prepare for and respond to situations. This team is responsible for developing communications strategies that align with the City of Austin and the Department's mission and vision.

27.2 Comprehensive Communication Plan

The Department shall develop a comprehensive communications plan that corresponds with the Department's 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.

The plan shall use a social marketing approach. According to the International Association of Social Marketing, social marketing increases socially beneficial behaviors within communities. Community-based social marketing is based on social psychology, "which indicates that initiatives to promote behavior change are often most effective when they are carried out at the community level and involve direct contact with people."¹

Introduction to Community-Based Social Marketing

¹ Doug McKenzie-Mohr, Ph.D. *Fostering Sustainable Behavior: An Introduction to Community-Based Social Marketing*, 2011

Numerous studies document that education alone does not alter behavior. Conventional marketing, which often relies heavily on media advertising, can be effective in creating public awareness and understanding of issues, but is limited in its ability to foster behavior change.

Community-based social marketing is based upon research in the social sciences that demonstrates that behavior change is most effectively achieved through initiatives delivered at the community level which focus on removing barriers to an activity while simultaneously enhancing the activities benefits. To be effective, programs must be carried out at the community level and involve direct contact with people.

Community-based social marketing involves four steps:²

1. Identifying the barriers and benefits to an activity,
2. Developing a strategy that utilizes "tools" shown to be effective in changing behavior,
3. Piloting the strategy, and
4. Evaluating the strategy once it has been implemented across a community.

The communications plan shall be reviewed and revised annually. The annual analysis will be incorporated into a Department annual report. It will also identify:

- Desired Outcomes
- Measurable objectives
- Target audiences
- Key messages and persuasive strategies
- Communications tactics
- Implementation plan
- Timeline
- Staffing needs
- Budget

27.3 Communications Approach

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.

Key Messages

Key messages should permeate all communications throughout implementation of the Master Plan and will be crafted for each objective and target audience. Several tactics should be employed to develop these messages, including listening sessions that consider public input on messaging and approach.

Communications Strategies and Tactics

² www.bearsmart.com

Communications tactics must be chosen strategically to achieve each communications objective. An integrated approach to disseminating key messages will be important to ensure frequency and reinforce concepts. SWS should strive for two-way communication throughout implementation of the communications plan. By listening to target audiences on an ongoing basis, SWS will have the opportunity to address issues before they occur, revise messages to make them more meaningful, and get input and ideas from target audiences. Staff should evaluate communications methods throughout implementation of the Master Plan to include new media and technologies. Communications strategies and tactics may include:

- Direct mail
- Email
- Media relations
- Advertising (newspaper, TV, radio, online, out-of-home, etc.)
- Public Service Announcements
- Videos
- Newsletters
- Brochures
- Fact sheets
- Utility bill inserts
- Website
- Social media (Facebook, Twitter, YouTube, etc.)
- Message boards
- Face-to-face/one-on-one meetings
- Group presentations, classes and workshops
- Public information and input meetings
- Outreach to schoolchildren
- Special event booths
- Memos and letters
- Annual progress report

Target Audiences

With several staff locations and many employees who work in the field, Department employees interact with multiple stakeholders on a daily basis, both internally and externally. As programs and services evolve over time, conveying consistent messages to the public, as well as to City employees, is crucial in order to avoid confusion, maintain trust and build brand recognition.

To effectively reach the Zero Waste goal, the Department must effectively communicate with and influence the behavior of many audiences. Demographic and psychographic traits impact behavior change and will inform the way messages are developed and communicated. The market research studies described above should seek to answer the following questions about the Department's diverse target audiences:

- Who are they?
- Where are they?
- How do they obtain daily information?
- Who are their opinion leaders?

- What are their current perceptions, knowledge, needs, wants, preferences and behavior in relation to Zero Waste initiatives?
- What prevents them from adopting the alternative behavior promoted by Zero Waste initiatives?
- What would motivate them to adopt the promoted behavior?

To further analyze customer profiles, the PIO/Marketing team shall work with the Department's demographers and cartographers to collect geo-specific information based on established performance measures, such as the City's diversion rate, customer set-out rates, participation in various initiatives, and subscription services (cart sizes).

Internal audiences include:

- Department Employees
Employees are the face of any organization. An "Employees First" mentality is key to driving employee morale and performance, and thus the department's reputation, retention and results. Employers who recognize this concept use effective communication, training, recognition and knowledge sharing. This results in a workforce that understands where the organization is going, how they fit in and that they are important to the organization's future. Communications strategies must take into account the needs and communications preferences of staff in separate geographic office locations, as well as a large number of field employees.
- Interdepartmental/Mayor and Council
Interdepartmental communication is the process through which various departments send and receive messages between themselves. For communication to be effective, one department must send a clear and comprehensive message to another department, and the message must be clearly and completely understood. Ineffective communication can lead to confusion, lack of morale and frustration among employees and departments.

The Department shall continue working with the City's Office of Sustainability and other environmental programs to streamline communications and discover new opportunities for partnership. For example, waste reduction is part of the Watershed Protection Department's Green Neighbor and Green City Challenge in which individuals, households and/or neighborhoods adopt earth-friendly practices and receive prizes and recognition. The Department should continue to find ways to collaborate with other City departments to efficiently and effectively communicate with internal and external audiences about environmental and Zero Waste-related issues.

External audiences include, but are not limited to:

- SWS customers
- Multifamily community management and residents
- Opinion leaders
- Neighborhood leadership
- Minority community leadership

- Business community
- Environmental community
- Schoolchildren and youth
- University leadership and students
- Local governments and elected officials
- Industry analysts
- News media
- Social media influencers and other online audiences

Measurement and Evaluation

Developing measures for success are important in monitoring progress toward reaching the City's Zero Waste goal. These measurements should be staged throughout the duration of the Master Plan to allow for corrective actions if the communications activities are not getting the desired results. Measurable communications objectives should be established based on benchmarked market research results, along with a timeframe for meeting objectives. Evaluation criteria should also be established before the communications plan is implemented. Staff shall work with City data analysts to define methods of relating communications activities to diversion of waste from the landfills. Ultimately, the success of the communications plan should be evaluated by the City's diversion rate, in realizable increments.

27.4 Community Engagement

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 engagement will be achieved through the many strategies and tactics outlined in section 24.3 keeping in mind that to engage with citizens, it is important for the Department to communicate in new ways, keep the message clear and make information easy to attain. The Department must view citizens as consumers and allow citizens to become contributors in the development of Department programs and policies. The Department must ensure that communication can be translated into improved services, completion of transactions and increased satisfaction. Effective community engagement should include five elements:

1. Increase citizens' knowledge about the City's Zero Waste initiative
2. Encourage citizens to apply that knowledge
3. Use that knowledge to improve the Austin community
4. Create opportunities for citizens to engage each other
5. Ensure that these opportunities are regular and on-going

Community engagement programs will be developed to be in line with the Department's communication plan and will include, but not be limited to:

- Charrettes – meetings to engage stakeholders in resolving issues with useful solutions

- Community theatre and arts projects – using multi-media outlets to present information and initiate discussion about the Department and how it could improve
- Dialogues and public forums – regular, ongoing forums for conversation between the Department and stakeholders
- Volunteer programs – encourage neighborhood champions through the Block Leaders program and inspire citizens to volunteer as zero waste ambassadors

27.5 Public Education

According to the Environmental Protection Agency, “A successful solid waste management program requires wide-spread public participation. Such participation can best be obtained through early and effective public education programs, which must continue even after the program is in full swing.”³ Well planned education and outreach programs will generate understanding and support for the City’s Zero Waste initiatives.

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.

Youth Education

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. The new scope of work will consider the following:

- Expand opportunities from 2nd and 3rd grade only to other grade levels, targeting students in all levels – elementary, middle and high school
- Expand content from recycling only to a larger message of zero waste and sustainability
- Ensure that content is curriculum-based and that the message is cohesive throughout the various grade levels
- Partner with other City departments that have a message of sustainability to develop a unified voice from the City
- Include an “on-call” option to fulfill youth education requests that come from non-school groups or for large presentations
- Consider including private and charter schools

³ Source: *Decision Maker’s Guide to Solid Waste Management – Vol. II*, EPA.

- Collaborate with other surrounding school districts through inter-local agreements having them cover the cost

Speakers' Bureaus

SWS provides a wide range of services to Austin residents, businesses and visitors. To better understand the City's Zero Waste programs and initiatives, SWS will develop a speakers' bureau, comprised of representatives from throughout the City to provide presentations on a wide range of topics free of charge.

Annual Report

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.

27.5 Research

The Department shall conduct market research to inform the development of the communications plan. To understand what target audiences want, need or believe, the Department should use both primary and secondary research methods. Once this is established, the Department can more effectively market its programs and educate the community about Zero Waste. During the annual communications planning process, SWS shall determine whether additional or alternative research methods are needed.

Communications Audit

A communications audit is a systematic appraisal of all the communications between an organization and those who deal with it or who could affect it in some way. The PIO/Marketing team shall conduct a communications audit to evaluate how the Department's target audiences perceive the organization, to assess the communications tools currently used to convey key messages and provide recommendations for improving communications strategy. Specifically, the communications audit shall determine strengths and weaknesses and should answer the following questions:

- Do the communications support the City's Zero Waste goal?
- Do they add value? Are they effective?
- Are messages clear, consistent and reinforced?
- How are communications perceived among target audiences?

- What communications processes, support, tools and/or training does the department's staff need to be more effective?

The audit should include a review and assessment of communications tools used by the Department to include, but not be limited to:

- Collateral
- Advertising
- Media relations materials
- Social media
- Website
- Internal documents

In addition, the audit should include interviews with Department leadership and key staff members, as well as focus groups of both internal and external audiences to assess overall perceptions.

Phone Survey

The Department should conduct a telephone survey to gather qualitative data that is representative of Austin residents. The initial survey results should be used as a benchmark to gauge current levels of awareness and participation, as well as interest in potential future programs. The survey should be repeated during the implementation of the Master Plan and results will be compared to the benchmark survey results to assess the effectiveness of the public outreach and education program, as well as customer satisfaction.

Operational Data Analysis

To assist with the development of communications strategies and tactics, the Department shall use operational data gathered as part of the Department's performance measures, as well as additional data collected in the field or via customer service communications. Data should include the City's diversion rate, customer set-out rates, improper set outs, requests for smaller cart sizes, etc. Geo-specific data should assist with determining target audiences for various initiatives. The PIO/Marketing should be made apprised of customer issues on an ongoing basis. This will require ongoing interaction between the PIO/Marketing team and operations staff who interact directly with customers, such as field employees and customer service employees. This information will not only help inform messages, but will also help identify opportunities for operational improvements and specific neighborhoods and areas of the City that require particular attention.

Meetings with Division Managers and Key Staff

The Public Information/Marketing team shall meet with each Division Manager and key staff members to discuss objectives and key messages as part of the annual communications planning process.

Best Practices Research

As new programs are developed or existing programs are modified, the Department should conduct best practices research to learn from other cities and organizations.

Implementation

Cost and Diversion Estimates for Community-Based Social Marketing

Initiative	Initial Year at Full Implementation	Annual Costs
Community-based social marketing	2020	\$2,415,000

Resources

Program costs for this initiative are based on \$0.75 per household per month or about \$2.4 million per year at full implementation. Funding will be needed for media campaigns, printed materials and other outreach expenses. Some of these funds could be used for new staff or contractor resources. These allocations will be determined based on media and marketing strategies to be outlined in the comprehensive communication plan.

Implementation Tasks for Community-Based Social Marketing

Task	Lead Responsibility	Participants	Schedule
1. Prepare media and marketing strategy; design Social Marketing Campaigns to reach targeted populations.	Strategic Initiatives Division		Fall 2011
2. Support operations divisions in social marketing tasks (as listed within each program description and provided below)	Strategic Initiatives Division	Collection Services Division Litter Abatement Division Disposal Facilities Division	Fall 2011 and ongoing
3. Conduct community-based social marketing on adding food scraps and compostable paper to yard trimmings collection program; identify neighborhoods for pilot program	Collection Services Division	Strategic Initiatives Division	Winter 2012 – Fall 2012
4. Conduct community-based social marketing on transition to on-call bulk item and brush collection; identify neighborhoods for pilot program	Litter Abatement Division	Strategic Initiatives Division	Winter 2012 – Fall 2012

Implementation Tasks for Community-Based Social Marketing

Task	Lead Responsibility	Participants	Schedule
5. Contract Youth Education program	Strategic initiatives Division	Austin area schools	Spring 2012
6. Develop and present Departmental annual report	Strategic Initiatives Division		Spring 2012 and ongoing
7. Conduct community-based social marketing on weekly recycling collection and biweekly trash collection; identify neighborhoods for pilot program	Collection Services Division	Strategic Initiatives Division	Winter 2013 – Fall 2015
8. Undertake Social Marketing Campaigns	Strategic Initiatives Division		Winter 2013 and ongoing
9. Undertake Route-Based Incentives	Strategic Initiatives Division		Winter 2014 and ongoing
10. Undertake Green Barter events to reach targeted populations	Strategic Initiatives Division		Winter 2014 and ongoing
11. Assess and refine community-based social marketing program	Strategic Initiatives Division	Collection Services Division Litter Abatement Division Disposal Facilities Division	2015 and every 2-3 years