City of Ann Arbor
Solid Waste Management
Plan Update

2002 - 2007

TABLE OF CONTENTS

I: EXECUTIVE SUMMARY 1

II: BACKGROUND 5

- A: HISTORY AND ORIGINAL FIVE-YEAR PLAN 5
- B: 2002 PLAN UPDATE PROCESS 7
- C: SURVEY AND SURVEY RESULTS 10

III: PLAN UPDATE STRATEGIES – OVERVIEW 12

IV: PLAN UPDATE STRATEGIES 16

- A: ORGANIZATION 16
- B: RECYCLING 22
- C: COMPOSTING 28
- D: REFUSE 33
- E: LANDFILL SITE MANAGEMENT 39

ATTACHMENTS

- A: GLOSSARY A-1
- B: COMPARABLE COMMUNITY PROFILES B-1
- C: ADVANCE APPROACHES SUMMARIES C-1
- D: SERVICE PROVIDER PROFILE SUMMARIES D-1

VOLUME II: BACKGROUND MATERIALS (BOUND SEPARATELY)

- A: ADVANCE APPROACHES DESCRIPTIONS
- B: SERVICE PROVIDER PROFILES
- C: SURVEY RESULTS/DETAILS (POWERPOINT PRESENTATION)
- D: SURVEY FORMATS (RESIDENTIAL AND BUSINESS)

City of Ann Arbor
Solid Waste Management Plan Update
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I: EXECUTIVE SUMMARY

Over the past year the Solid Waste Department has worked with a solid waste/recycling consulting firm (RRSI) to develop an updated five-year solid waste management plan for the City of Ann Arbor (2002-2007). Interviews have been conducted with a number of key constituencies, a workshop was held on pay-as-you-throw alternatives and a comprehensive survey of residents and businesses was completed. Following is a summary of the major recommendations that form the backbone of the updated plan.

1. Set a five-year residential waste diversion goal of 60%--31,000 tons/year (1999/2000 recovery is 50%--26,000 tons/year) and an overall diversion goal (including the entire commercial sector) of 60%--40,200 tons/year for both City serviced and non-City serviced commercial. In order to achieve these goals, a major push in commercial recycling is required - on a similar scale that put Ann Arbor's residential recycling programs where they are today.

COMMERCIAL RECYCLING INITIATIVE

This plan includes ten key building blocks necessary to reach this new commercial recycling goal.

- Capital funding for MRF/Transfer Station and recycling collection upgrades
- Increased recycling collection services to small businesses using curbcarts
- Additional recycling dumpsters to recover paper
- More recycling curbcarts for restaurants, bars and coffee-houses
- Expanded pilot program for food waste composting
- Recycling requirements for all businesses, whether serviced by the City or not
- Recycling at public recreational facilities, schools, institutions
- Technical support to businesses in reducing waste and maximizing recycling
- A ban on cardboard in solid waste
- Alliances with area governments to support regional commercial recycling

2. Enhance solid waste ordinance language and enforcement relating to separation requirements for both the residential and commercial sectors for easily recyclable (cardboard, newspaper, magazines) and potentially toxic items (household hazardous waste, computers, electronics and fluorescent tubes), with the goal of keeping these materials out of the landfill. In order to be effective, however, such "enforcement" will be carefully balanced with the provision of convenient recycling alternatives and outreach/education, so that the public's support can be reasonably anticipated.

3. Develop partnership opportunities, where practical, with area communities and agencies in order to improve services, reduce costs and achieve greater waste recovery, especially relating to drop-off station operations, collection services and material processing and disposal. Creation of an authority or intergovernmental agreement for operation of the City's regional drop-off station, and for expansion of commercial recycling are two examples of such an approach.

4. Expand the department's fee-for-service programs, including cross-jurisdiction equipment use, supplemental dumpster service, special "bulk" collections, community event services, etc. in order to more effectively serve the needs of the community and diversify the department's revenue sources. Further develop the solid waste department's pre-paid billing system in order to accommodate this growth.

5. In light of the recent solid waste survey results and key constituent concerns, for-fee "pay-as-you throw" options should not be pursued at this time. Initiate further evaluation of pay-as-you throw approaches if significant reductions in millage-funded programs become necessary or recovery levels fail to improve during the next three years.

6. A productivity analysis of the City's refuse, recycling and yard waste collection programs should be completed in order to consolidate routing/collections where feasible with the goals of reducing capital needs, operating costs and fuel consumption and/or achieving more production from those resources. One alternative, for example, would be the combined collection of refuse and yard waste with a single truck, with separate compartments for each of these two streams.

7. Continue to develop opportunities for the expanded collection and processing of pre-consumer vegetative waste in both the commercial and residential sectors in cooperation with the State of Michigan, Washtenaw County, Pittsfield Township, the Chamber of Commerce and the local hospitality/food service industry, in order to achieve the City's waste recovery goals and avoid the disposal of valuable resources.

8. Recognizing the success of both municipal and local non-profit collection services in the past, along with the growing lack of competition in the private, for-profit waste management sector, develop a *performance-based partnership* approach with the City's municipal collection crews (refuse and yard waste) and Recycle Ann Arbor (recycling collection and drop-off station services), negotiating accountability agreements for the provision of collection and drop-off services built on cost, efficiency and quality of service considerations, avoiding continuous re-bidding of these services if possible.

9. Increase code enforcement, litter management and the use of community volunteers where appropriate as part of the City's "clean community" efforts to enhance the community's pride and sense of responsibility in protecting and enhancing our public and private outdoor areas.

10. Evaluate the potential costs and benefits to the City of restoring the solid waste millage as a separate non-general fund account, with the goal of insuring the long-term viability and self-sufficiency of solid waste services to the public, while protecting the overall financial objectives of the City.

11. Develop capital financing to address capital replacement and expansion needs at the City's MRF/Transfer facility, building capacity to handle greater quantities of commercial recyclables.

Achieving these goals during the next five-years will position the City for cost effective, high quality waste management services for the next ten years and prepare the City to further reduce these costs and the environmental impact of our City's waste stream for decades to come.

As demonstrated in the five-year plan update that follows, the historical leadership that Ann Arbor has taken in environmentally responsible waste management has had a dramatic impact. In the late '80s the City recycled about 10% of its waste stream. Now the City recycles over 40% of its waste with a comparable budget when adjusted for inflation. The City's programs were ranked among the 15 finest waste management programs in a recent study completed by the U.S. Environmental Protection Agency.

To accomplish this task a broad base of community leadership and citizen participation was mobilized in many sectors including students, environmental organizations and elected officials as well as teachers, community groups and area businesses. Many of the most significant steps taken, including voter approval of the $28 million environmental bond and the City's development of its Material Recovery Facility (MRF) and Transfer Station, now form the foundation of a waste management effort that provides very strong performance in the residential sector.

Recycling performance in the commercial sector, however, lags behind. Simple visual inspection of commercial waste dumpsters throughout the community show large quantities of cardboard (the easiest of recyclables to divert) being landfilled. New waste composition studies aren't even necessary to demonstrate that commercial waste generated in Ann Arbor, which makes up approximately 60% of the total Ann Arbor waste stream, needs to be targeted for major waste reduction and recycling initiatives. Many of the same economic benefits now enjoyed by the City in lower waste management costs can become accessible to our businesses through very basic steps in recycling system development.

This plan carries forward and advances many of these same principals of success that have been such an important part of these last ten years of successful performance and cost effectiveness in Ann Arbor's waste management approach. These key principals include:

- **MRF/Transfer Station Upgrades – Investing Capital to Address Capacity Shortfall**s: *Strengthening and enhancing the City's existing system* through investment in the necessary capital improvements at the MRF and Transfer Station and for upgrades to the commercial recycling collection system to increase capacity and efficiency.

  These investments will allow the following to be achieved.

- **Capture Economic Benefits of Recycling**:

  - *from increased recycling through revenue sharing* generated by the MRF/Transfer Station public/private partnership and through reduced costs for transfer and disposal of these now recycled materials.

  - *from periodic downsizing of the solid waste collection system* as the recycling collection system grows.

  - *from lower pricing for waste disposal* resulting from competitive bidding and increased regional competition between landfill operators.

- **Control Collection Costs Through Performance-Based Contracting:**

  - to ensure that our future recycling collection programs represent best practice methods and costs, building on the successful partnership in place with the city's non-profit recycling contractor, Recycle Ann Arbor.

- to ensure that the refuse collection systems also represent best practice methods and costs, reducing these systems as the volume of trash reduces and recycling increases, building on the successful partnership in place with the city's own municipal collection crews.

- **Enhance Program Revenues Through Diversification of Funding/Revenue Sources, Lower Unit Costs and Reinforced Incentives to Reduce, Reuse, Recycle by:**

  - defining baseline service levels for recycling and refuse collection.

  - establishing an easy-to-use customer-friendly system for requesting and paying for additional services (e.g., additional dumpster tips each week or an additional curbcart for recyclables).

  - allowing additional services-for-fee to be offered by the City's contractors on a larger regional basis where economic benefits can be returned to the City.

- **Build Long-term Financial Stability to Ensure Sustainability and Self-funding by Adopting an Enterprise Fund Approach to Overall Program Financing Structure.**

These principals have been consistently applied throughout this plan, re-affirming a basic focus on resource recovery and economic efficiency. These principals will also guide plan implementation as the ever-challenging details of day-to-day operations are addressed.

Economic benefits are not the only reason to continue the strong emphasis on resource recovery in local waste management programs. There are numerous environmental benefits as well as noted in the following passage from the publication, *Towards a Waste-Free Washtenaw*, published by the Ecology Center and Recycle Ann Arbor in 2001.

> *The environmental benefits of mainstreaming recycling in Washtenaw County are profound. Recycling aluminum reduces energy use by 97%, air pollution by 95%, and water pollution by 97%. Recycling paper cuts energy consumption by 23-74%, air pollution by 74%, water pollution by 35% and water consumption by 58%. Recycling glass reduces air pollution by 20%, mining wastes by 80%, and water use by 50%. The U.S. Environmental Protection Agency estimates that if Americans increased the national recycling rate by seven percentage points – from the current 28% to 35% - the country's greenhouse gas emissions would be reduced as much as if nearly seven million cars were taken off the road for one year.*

Setting goals, as is done in this solid waste plan, is critical to achieving both economic and environmental benefits. Just as earlier solid waste plans laid the foundation for increasing residential recycling from 10% to 50% in our community, this plan outlines the steps needed to achieve similar growth in commercial recycling. These commercial recycling strategies, combined with further development of the many existing strengths of Ann Arbor's waste management programs, will build a foundation for continued growth in financial and environmental benefits for our community.

II: BACKGROUND

Solid waste plans have guided the development of Ann Arbor's recycling and waste management systems since the late 1980's. The 2001 Plan Update builds on this foundation. Following is background on the history of solid waste planning for the City, the successes and achievements to date, the 2001 Plan Update Process and the results of Citizen and Business Surveys that are an integral part of this most recent Plan Update process.

IIA: HISTORY AND ORIGINAL 5 YEAR PLAN

The State of Michigan {Public Act 451, Section 11531} authorizes local communities to oversee the collection and disposal of solid waste in a manner that protects public health and the environment. The City of Ann Arbor has provided waste collection and disposal services throughout the 20th century, first hauling garbage to pig farmers, then bringing mixed refuse to a locally run landfill in the 1940s. In the 1950s, the City purchased the existing landfill property on East Ellsworth and Platt Roads and began operating a municipal landfill. A drop-off site at the landfill entrance provided for-fee bulky waste collection, and the city also picked up bulky waste and appliances for a fee.

By the 1970s the City was collecting street leaves to compost on the City's airport property and Christmas trees were collected at area parks and chipped for mulch. In 1975, the City supported the Ecology Center's recycling drop-off station move to city-owned land on South Industrial. A municipal contract in 1982 with Recycle Ann Arbor (RAA) phased in the curbside monthly collection program (to cover the entire city by 1985), building upon RAA's original 1978 pilot initiative. The city also contracted with the Ecology Center to print and distribute recycling educational materials, provide waste presentations and coordinate a volunteer recycling block coordinator information network. In 1984 the City began operation of the Phase II sanitary landfill.

Ann Arbor's original Integrated Solid Waste Management Strategy (ISWMS) was accepted by City Council in 1988; the second plan update was adopted in 1994; the third update is slated for completion in 2002. These plans are developed within the overall Washtenaw County solid waste planning process, as required by state law.

HIGHLIGHTS OF PAST CITY WASTE PLANS – FIRST PLAN (1988)

In 1986 City Council formed a citizen-based Solid Waste Task Force to develop the city's first Integrated Solid Waste Management Strategy (ISWMS). The group was to address the City's Phase II landfill closure when it reached capacity in an estimated five-years. The group's specific charge was to develop a strategy that would be "economically and technologically feasible, publicly acceptable and environmentally sound." During the same time period the country was experiencing a nation-wide landfill crisis, epitomized by the stranded "garbage barge."

After 18 months of research and public review, the Ann Arbor's ISWMS plan was accepted by City Council in May 1988. The four main goals of this plan were:

1. to move away from a dependence on landfills or incineration;
2. to move towards waste reduction, re-use and material recovery as the primary means of waste management;
3. to develop a set of waste management options to support waste reduction, recycling, composting, processing and landfilling; and
4. to achieve specific waste reduction and recovery goals.

Broad public awareness of the waste issues facing the City and a coalition of supporters to champion a comprehensive waste reduction strategy resulted in voter passage of a $28 million Environmental Bond in 1990 to implement the plan.

Primary achievements of the first ISWMS plan: With the funding from the Environmental Bond, weekly recycling collection was provided to all single-family and multi-family residents by 1991. Other infrastructure steps were taken to build the compost center and an interim recycling processing facility; procure collection trucks and processing equipment, distribute recycling totes and carts, provide final closure of the City's landfills in 1992, and expand the landfill area groundwater monitoring tests. City staff was hired to handle the waste reduction directions outlined in the plan. Community educational waste reduction strategies were implemented and a commercial recycling collection program was started after a comprehensive pilot.

The Solid Waste Department raised an additional $800,000 in matching grants to extend the projects envisioned in the bond. A ban on landfilling yard waste passed in 1989. (A state-wide yard waste ban was passed a few years later.) A variable-can-rate fee financing strategy was explored and rejected by City Council. From 1989 to 1994, the City's waste recovery rate increased from 13% to 37.9% based on strong community participation with the new programs.

A few unexpected developments arose during the first waste plan period. The City's application to construct a new Phase III sanitary landfill was rejected by the State. The added expense of hauling waste 50 miles round trip to another landfill increased costs during the 1992-1995 time period. In 1992-93 routine groundwater sampling tests in the landfill area revealed the presence of vinyl chloride and 1,4 dioxane. The bond money that was slated to cover the landfill expansion was eventually re-directed to groundwater cleanup costs.

HIGHLIGHTS OF PAST CITY WASTE PLANS – SECOND PLAN (1994 UPDATE)

The Solid Waste Plan Update involved four task forces to assess the first plan and provide future recommendations. Four subcommittees of the Solid Waste Commission looked at the issues from a functional perspective of: Collection, Facilities, Finances and Waste Reduction. The Task Forces refined their draft reports at working sessions with the Solid Waste Commission, City Council, and public hearings. The Commission re-worked the task force recommendations into six sections: Compost, Recycling, Waste, Hazardous Waste, Financing and Education.

Primary achievements of the second five-year plan included the construction and operation of a state-of-the-art Materials Recovery Facility (MRF) in 1995, that increased the number of recyclable items accepted from home collection and included a transfer station component to compact and transport refuse for landfilling. A waste education room was included at the new MRF to provide visitor tours and workshop space year-round. A new Drop-Off Station opened in 1996 that consolidated two distinct drop-off sites into one combined and expanded facility with longer service hours. Recycle Ann Arbor stepped forward on its own initiative to open a ReUse Center in order to reduce construction material waste.

In addition, partnerships were secured to build and operate a landfill gas-to-energy operation at the closed landfill. In cooperation with the Parks Department, preferred directions for the long-term use of the closed landfill area were assembled through a two-year public process. A food composting pilot with the University of Michigan began at the Compost Center. New waste reduction and recycling initiatives were incorporated into local events, such as the Summer Art Fairs and various downtown festivals and during UM student turnover. The appearance and public health concerns of refuse storage in downtown alleys improved due to the department's provision of large trash and recycling carts. An annual Buy Recycled-Content Products grant program encouraged city departments to try new products in order to strengthen recycling markets.

The Solid Waste Department competitively bid against the private sector for recycling, trash, compost, street leaves and bulky item/appliance collection in 1996. A panel of citizens and public service representatives from other communities with privatization experience reviewed the bid contract and assessed the responses. The City of Ann Arbor's bid for all non-residential recycling collection was selected as the lowest most responsible bid. Recycle Ann Arbor was consistently selected for the recycling collection and Drop-Off Station operations.

II B: 2002 PLAN UPDATE PROCESS

The 2002 Plan Update process began with a systematic review of current and anticipated future waste issues, facilitated by Resource Recycling Systems with background research completed in the following areas.

- Benchmarking to Peer "University" Communities
- Research on Advanced Approaches
- Reviews/Interviews with Stakeholders and Key Service Providers
- Surveys, Focus Group and Public Input Process

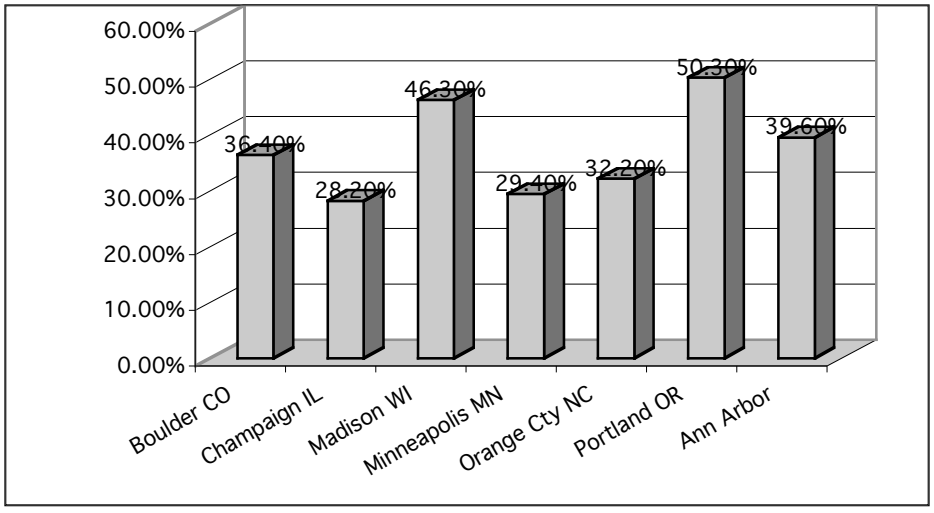
A glossary of relevant terms is contained in Appendix A to this Plan Update.

BENCHMARKING TO PEER "UNIVERSITY" COMMUNITIES

To better evaluate the cost effectiveness, performance and efficiencies of solid waste management in the City of Ann Arbor, a benchmark comparison of similar communities around the country was undertaken. Programs were reviewed based on similarities to Ann Arbor, including demographics, recovery performance and collection systems. Six peer communities were selected (Boulder, CO; Champaign, IL; Madison, WI; Minneapolis, MN; Orange County, NC; Portland, OR).

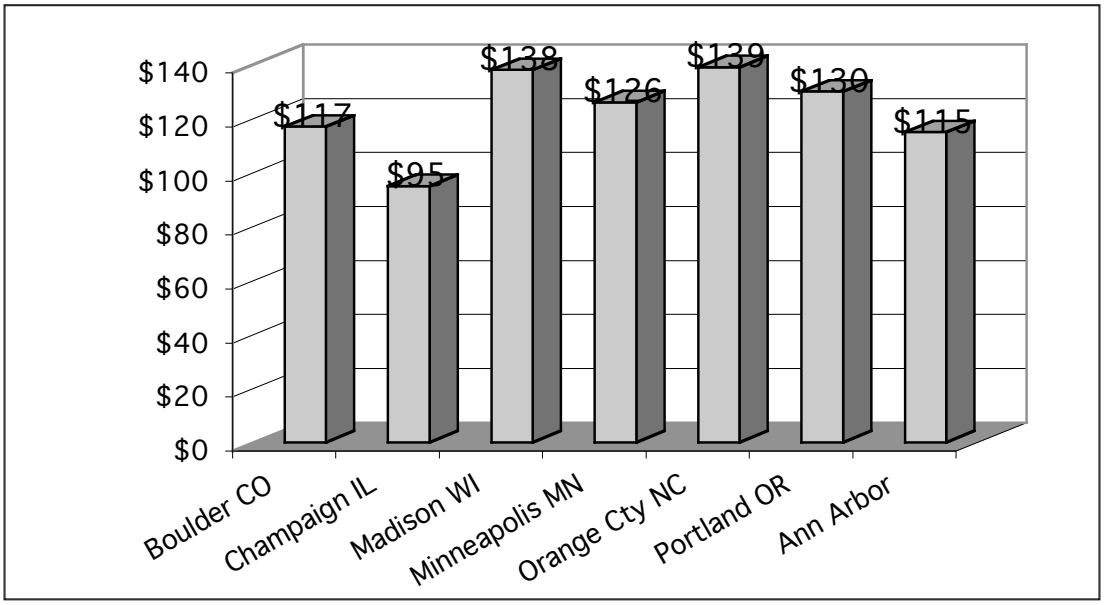
A sample of performance and cost benchmarks follows with detail information and background on each program provided in Appendix B of this Plan Update. The first chart provides comparable diversion rates for the communities, with Ann Arbor at 39.6% diversion and the others ranging from 28.2% (Champaign) to as high as 50.3% (Portland).

Table 1 – Diversion Rate for Comparable Communities (Year 2000)



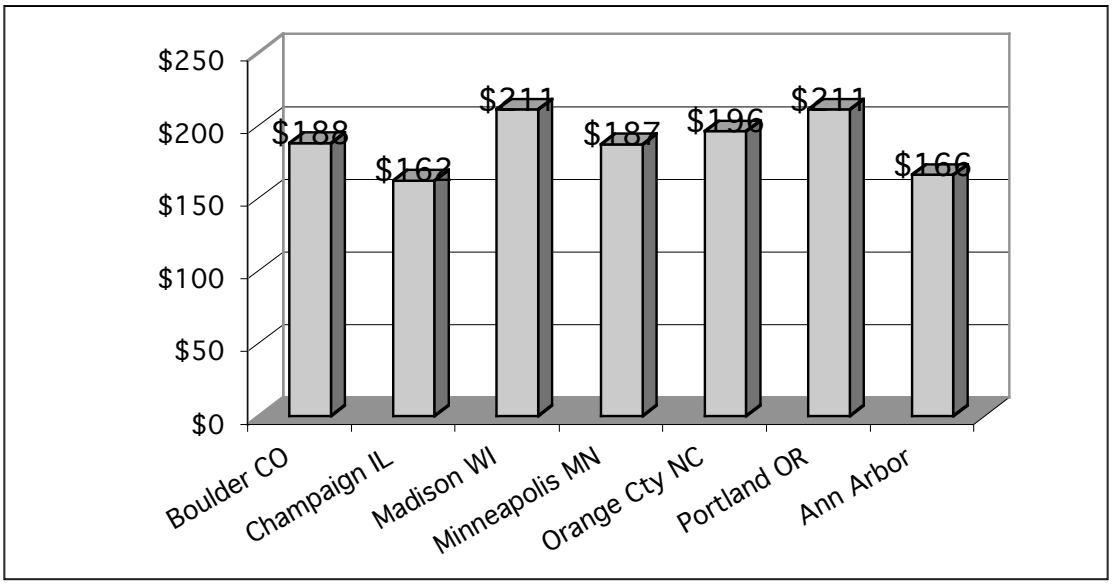
The next chart shows overall cost of each program on a per ton basis with Ann Arbor's per ton cost at $115 and the range from $95 (Champaign, IL) to $139 (Orange County, NC).

Table 2 – Average Cost per Ton for Comparable Communities (Year 2000)



The final chart shows overall cost on a per household basis with Ann Arbor's per household cost at $166 and the range from $161 (Champaign, IL) to $211 (Portland, OR & Madison, WI).

Table 3 – Average Cost per Household for Comparable Communities (Year 2000)



RESEARCH ON ADVANCED APPROACHES FOR RECOVERY AND SYSTEM OPERATION

Research papers were prepared on key Plan Update issues and various aspects of advanced approaches to recovery including:

- Advanced Comprehensive strategies for Commercial and Residential Recovery
- Alternative Bidding Approaches for Long-term Service Partners
- Capital Improvement Financing Approaches
- Carpet Recycling
- Comparative Analysis of Alternative Recycling Collection Systems
- Electronics and Electrical Equipment Recycling Programs
- Food Residuals Composting
- Markets for Additional Materials and Problem Markets for Current Materials
- Comparative Analysis of Options for implementing Pay-as-you-Throw Systems in the City of Ann Arbor Solid Waste System.

Summaries of these advance approaches are provided in Appendix C of this Plan Update.

REVIEW/INTERVIEWS WITH STAKEHOLDERS AND KEY SERVICE PROVIDERS

A systematic review was completed of potential waste reduction and cost-saving opportunities in the Department's program service areas including refuse handling; recycling; compost; collection; processing; and hazardous waste. This included a series of internal and external interviews with stakeholders and key service providers to identify strengths, weaknesses and opportunities in the city's current waste management programs for improvement in service levels or cost effectiveness. These interviews included:

- Ann Arbor Parks Department
- Ann Arbor Streets Division
- Ann Arbor Solid Waste Department Collection Supervisors
- Ann Arbor Utilities
- Calverts: a local processor for construction and demolition debris
- FCR: the operator of the City's Material Recovery Facility and Transfer Station
- Mister Rubbish/Waste Management, Inc.: the largest private hauler serving the area
- ONYX/Arbor Hills Sanitary Landfill: the landfill operator receiving the City's waste
- Recycle Ann Arbor: the non-profit recycling organization providing curbside and curbcart recycling services and operating the drop-off under contract to the City and also the developer/operator of the ReUse Center.
- Republic Waste Industries: operator of a landfill in Wayne County that is interested in bidding to handle the City's landfill services
- University of Michigan Waste Management Division
- Washtenaw County Department of Public Works

- Ypsilanti Department of Public Works
- Western Washtenaw Recycling Authority

Summaries of these background interviews are provided in Appendix D of this Plan Update.

SURVEYS, FOCUS GROUP AND REVIEW PROCESS

Concurrent with the above research, the city developed a public phone survey of 400 residents and 150 businesses to gather information on customer satisfaction with current programs and to gain insights on public support for potential areas of change. A summary of the results of this survey follow, with more detailed background on the survey presented in Appendix B and C of Volume 2 of the 2002 Plan Update.

A grant from the U.S. Environmental Protection Agency provided a two-day Pay-As-You-Throw workshop in August 2000 for representatives from City Council, neighborhood, business and apartment associations. Participants met with speakers from around the state and country to discuss various for-fee trash disposal options used successfully in other communities.

Throughout the late-winter and spring of 2001, the draft solid waste plan has been presented for comment at public meetings with neighborhood and business groups and placed on the City's web site for public review.

Public comments were incorporated into the final draft plan, which is to be reviewed by the city's Environmental Commission and presented to City Council in early 2002.

II C: SURVEY AND SURVEY RESULTS

During the Plan Update Process, the City of Ann Arbor's Solid Waste Department surveyed residents and businesses to gather information on customer satisfaction with current programs and to receive feedback regarding possible policy and service changes. These comments were used to help guide the development of this Plan Update.

Ten-minute phone interviews were conducted in October and November 2000 and involved 400 Ann Arbor residents—half from single-family homes and half from multi-family homes (*e.g.,* apartments, co-ops and condominiums). A separate phone survey polled 150 city-based businesses, split between locations in the Downtown Development Authority (DDA) area and businesses located outside the DDA. The surveys were conducted by the Ann Arbor-based company, Demand Research International.

Most Ann Arborites find time to recycle: 95 percent of the respondents in single-family homes and 82 percent of the residents in multi-family homes recycle materials at home. Two-thirds of the 150 queried businesses are also actively recycling.

The most commonly recycled materials are newspapers, corrugated cardboard and plastic milk jugs. City staff were also interested to find that there was broad public support in collecting separated carpeting for recycling if this potential market is developed in the future. There was low (<4% overall) interest in trying to find markets for new, difficult-to-recycle materials such as plastic bags or yogurt tubs.

Residents and businesses most commonly find their waste information from the Solid Waste Department's *Waste Watcher* newsletter and direct mailings. Combined mass media sources rank second for sources of information. The internet was identified as the third highest-ranked source of information with 17% of residents and 7% of businesses stating that they often check the web.

Most respondents in both the residential and commercial sector supported banning specific, easily recycled or highly toxic materials from standard refuse collection. These items would include such items as newspapers, magazines and corrugated cardboard in the easily recycled category. Computers, televisions and fluorescent light bulbs were identified as possible items for bans in the hazardous waste arena, pending the availability of responsible, low-cost recycling options.

Ann Arbor residential satisfaction was high for all Solid Waste Department services, especially for trash and recycling collection. Businesses were also favorably supportive of the city's commercial programs (all respondents ranked waste and recycling services in the 4-5 range on a 1-5 scale (1 = very unsatisfied, 5 = very satisfied).

NEW PROGRAM INSIGHTS

Three key issues were built into the survey to determine public opinion on possible program directions for reducing waste—rolling back taxes with a for-fee trash collection system, anti-litter campaigns, and food waste composting pilots.

Several questions explored a "Pay As You Throw" (PAYT) system of financing municipal waste services for the residential and business sectors. Under a PAYT system, the financing for trash collection would be directly paid by the consumer, with a partial roll-back in taxes, while recycling, composting and other waste services would continue to be covered at no extra charge. Residents and businesses would have a financial incentive for reducing trash by separating out recyclables and reducing waste in general. The majority of those interviewed (61% residential; 79% business) felt that the existing system of "tax-paid full service" was preferable to a PAYT mechanism. Most also expressed support for the city to explore other ways of increasing recycling levels first (77% residential; 79% business). The phone survey confirmed earlier feedback from a two-day PAYT workshop with community representatives conducted last summer with a grant from the U.S. Environmental Protection Agency.

Ann Arbor residents strongly believe in the importance of litter management (90%) and also support the City in taking a role in coordinating volunteers to clean up litter (79%).

Almost half of the single-family residents surveyed (48%) were supportive of adding vegetative food waste (such as banana peels and corn cobs) to their weekly yard waste collection service. Currently, about 20% of Ann Arbor's single-family residents have a home compost pile, with a majority of these home compost bins also including food scraps. Almost four out of ten businesses, primarily in the DDA area, expressed a willingness to separate food waste for composting.

The survey provides a good reference point for the Solid Waste Department to develop the city's next 2002 Plan Update. A copy of the survey report summary is contained in Volume 2, Background Materials for the Plan Update.

III: PLAN UPDATE STRATEGIES - OVERVIEW

Plan strategies were developed for five activity areas:

- Organization
- Recycling
- Composting
- Refuse
- Landfill Site Management

In this section, highlights are provided for each of the five areas. An implementation chart is then provided for each area, showing a five-year timeframe for proceeding with each strategy in all five activity areas.

ORGANIZATION

Plan strategies are proposed for organization, administration and finance for the solid waste and recycling system for the City of Ann Arbor as part of the 2001 City of Ann Arbor Solid Waste Management Plan Update. Specific new initiatives are highlighted below, followed by the implementation chart that shows each specific strategy for this activity area.

HIGHLIGHTED NEW INITIATIVES FOR ORGANIZATION

1. Target a 60% residential waste diversion goal and a 60% overall waste diversion goal through waste reduction, reuse, recycling, and composting for the five-year plan period with a major emphasis on a commercial recycling initiative targeting increased recycling in both city-serviced and non-city serviced commercial establishments.
2. Amend the solid waste ordinance to ban certain easily recyclable items as well as certain toxic materials from residential and commercial trash with cardboard, newspapers, magazines, aluminum cans, batteries, computers and fluorescent lights being likely candidates for that list.
3. Continue development of education/outreach initiatives for waste reduction, reuse and recycling as the primary strategy to encourage further landfill diversion, waste reduction activities and use of the recycling systems. In light of the recent solid waste survey results and key constituent concerns, for-fee "pay-as-you throw" options will not be pursued at this time, although the City will re-evaluate pay-as-you throw approaches over the next three years if significant reductions in millage-funded programs become necessary or recovery levels fail to improve.
4. Use a performance-based partnership approach with the City's municipal waste collection crews and Recycle Ann Arbor's operations to negotiate and manage the service specifications and budgets for these services with competitive on-going open-market bidding only used should these approaches fall below documented expectations.

> *Performance-based contracting* is an effective way to build on service arrangements that are already performing successfully, yet push them to continuously improve performance and cost effectiveness. This is made possible by first tracking key performance measures and unit costs, then benchmarking those to comparable programs in other communities, looking for "best practice" levels of performance in both service and cost effectiveness. These best practice benchmarks are then used in the budgeting process to allocate and limit resources (trucks, staff, etc.) and to establish specifications for the targeted performance (# of stops, etc.) for those resources. The City's "contract" with its own municipal crews, as well as its contract with Recycle Ann Arbor are both good targets for performance-based contracting.

5. Where practical, take steps to partner with other area communities and agencies (e.g., adjacent communities, Washtenaw County, U of M) in order to improve services and reduce costs, up to and including participation in a regional authority.
6. Expand and upgrade the existing pre-payment system to increase customer acceptance of fee-for-service arrangements for supplemental solid waste and recycling pickups.
7. Evaluate setting up the solid waste and recycling system as a public sector "enterprise fund" using available funds from annual revenue sources as well as an accumulated reserve fund.
8. Investigate opportunities on how to increase the productivity of each truck operating in the City's refuse, recycling and yard waste collection programs in order to reduce costs, fuel consumption and use of other natural resources including targeting alternative fuels for a minimum of 10% of the fleet as part of an overall "green fleet" strategy.

RECYCLING SERVICES

Plan strategies are proposed for design and operation of the City of Ann Arbor's Recycling Services as part of the 2001 City of Ann Arbor Solid Waste Management Plan Update. Specific new initiatives are highlighted below, followed by the implementation chart that shows each specific strategy for this activity area.

HIGHLIGHTED NEW INITIATIVES FOR RECYCLING SERVICES

1. Maximize utilization of the curbside and curbcart recycling systems by expanding the number of customers serviced (i.e., single family homes, multi-family complexes, businesses, institutions and non-governmental organizations).
2. Explore incentives for high performing curbside and curbcart recycling customers (i.e., "super recyclers") to further increase recycling participation, overall diversion and cost effectiveness – while also targeting non-participants to encourage their initial involvement in recycling.
3. Move from a bid system to a Performance Based partnership approach for establishing an ongoing contract with the City's primary recycling service contractor, Recycle Ann Arbor
4. Expand dumpster-based recycling services for larger generators of recyclable cardboard and paper.
5. Collect waste electronics and pilot the collection of nylon carpeting at the Drop-off Station for reuse and recycling.
6. Identify and consider funding of appropriate property, plant and equipment improvements to the Drop-off Station to allow more materials to be collected.
7. Place more emphasis on recovery for reuse and recycling in the City's bulky goods collection programs.
8. Encourage development of a more coordinated area-wide "Reuse Network", in collaboration with Washtenaw County, to help divert more reusable materials out of the waste stream.
9. Initiate a coordinated effort with other agencies to make recycling opportunities available at local parks and recreational facilities as well as major sports, cultural and special events.
10. Identify and develop public and/or private funding approaches for plant and equipment improvements to the City's MRF to increase the capacity for receiving and storing loads of commercial corrugated cardboard, mixed paper and other recyclable materials.

COMPOSTING SERVICES

Plan strategies are proposed for design and operation of the City of Ann Arbor's Composting Services as part of the 2001 City of Ann Arbor Solid Waste Management Plan Update. Specific new initiatives are highlighted below, followed by the implementation chart that shows each specific strategy for this activity area.

HIGHLIGHTED NEW INITIATIVES FOR COMPOSTING SERVICES

1. Continue development (in collaboration with the University of Michigan, Washtenaw County, Pittsfield Township, the local hospitality industry, and the Chamber of Commerce) of the successful pilot of food waste composting underway with the University of Michigan by demonstrating collecting and composting of vegetative waste from commercial and institutional sources within the City.
2. Pilot an expanded yard waste collection program (in test residential demonstration areas) to include pre-consumer vegetative waste.
3. Develop and implement the appropriate property, plant and equipment improvements as needed to expand operations at the City's compost processing site for receiving and composting vegetative waste as part of the commercial/institutional vegetative waste collection pilot.
4. Expand marketing of the City's compost products through certification (e.g., from US Composting Council) and offering of bagged compost and mulch products through the Drop-off Station and other locations throughout the city.
5. Encourage the City's Utilities Department in their evaluation of biosolids management approaches to make sure that the analysis explores, to the fullest extent possible, the use of composting and other related processes to manage the waste water treatment plant sludge and return it to a productive role in the regional biomass system.

REFUSE SERVICES

Plan strategies are proposed for design and operation of the City of Ann Arbor's Refuse Services as part of the 2001 City of Ann Arbor Solid Waste Management Plan Update. Specific new initiatives are highlighted below, followed by the implementation chart that shows each specific strategy for this activity area.

HIGHLIGHTED NEW INITIATIVES FOR REFUSE SERVICES

1. Continue emphasis on providing refuse services to all sectors of the City as part of an overall "clean community" campaign.
2. Expand capacity to guarantee, on a pre-paid basis only, more frequent supplemental service to interested commercial customers of the City's rear-load and front-load refuse collection routes.
3. Continue efforts to move commercial customers to the most efficient collection system suitable for their needs (e.g., moving rear-load customers to carts or front-load service and high-generation sites to on-site single or multi-user refuse compaction systems).
4. Investigate the benefits of coordinating with a third party service contractor to provide, lease and maintain (e.g., paint) dumpsters for existing and new customers of the City's commercial refuse and recycling services or for providing single or multiple user on-site compaction systems for high generation sites.
5. Increase emphasis on regional partnerships for continued provision of drop-off opportunities for small quantities of refuse from residential and commercial sources at the Drop-off Station operated under contract for the City by Recycle Ann Arbor.
6. Continue increasing the emphasis on reuse and recycling as an integral part of the City's bulky waste collection system and coordination of those services with the University and off-campus housing managers as part of student move-in and move-out.
7. Step up code and litter enforcement and help initiate a Clean Community Network in Ann Arbor and Washtenaw ("CLEAN COMMUNITY NOW") through a partnership effort with area agencies and service organizations (e.g., Downtown Development Authority, Huron River Watershed Council, County Road Commission, Washtenaw County Community Partners for Clean Streams, Rotaries, VFW, Kiwanis, etc.)

8. Use Market-Based Contracting approaches to seek competitive proposals and select a long-term (e.g., 3 to 5 yrs) service contractor for refuse disposal at a regional landfill when the current service provider contract with Onyx at the Arbor Hills Sanitary Landfill in Salem Township expires in 2002.

LANDFILL SITE MANAGEMENT SERVICES

Plan strategies are proposed for Site Management Services for the City of Ann Arbor's Closed Landfill as part of the 2002-2007 City of Ann Arbor Solid Waste Plan Update. New initiatives are highlighted below, followed by the implementation chart that shows each specific strategy for this activity area.

HIGHLIGHTED NEW INITIATIVES FOR LANDFILL SITE MANAGEMENT SERVICES

1. Management of long-term closure, cleanup and methane gas recovery operations
2. Completion of the landfill site plan
3. Relocation of the Maintenance Garage

IV: PLAN UPDATE STRATEGIES –DESCRIPTIONS

In this section, each strategy for the five activity areas is described in more detail, providing a summary and customer focus, a goal statement and key objectives.

IV.A: STRATEGIES FOR SOLID WASTE/RECYCLING SYSTEM ORGANIZATION

The following Plan strategies have been developed for organization, administration and finance for the solid waste and recycling system for the City of Ann Arbor as part of the 2002-2007 City of Ann Arbor Solid Waste Plan Update.

1. Landfill Diversion and Performance Based Management
2. Incentives for Recycling and Clean Community
3. Performance-Based Service Partnerships
4. Market-Based Contracting for Commodity Services
5. Regional Partnerships
6. Funding of Operations
7. Capitalization of Equipment/Facilities
8. Explore Operation as an Enterprise Fund
9. Environmental Sustainability

ORGANIZATION-1: LANDFILL DIVERSION & PERFORMANCE-BASED MANAGEMENT

A. ***Strategy Summary and Customer Focus****:* The Department will provide the means for City residents and businesses to maintain a clean community and divert waste from landfill disposal through cost-effective and high quality solid waste management services.

B. Goal Statement: *Use* quantitative performance measures (e.g., cost effectiveness, customer satisfaction, landfill diversion) to guide management decisions for operating a cost-effective, high customer satisfaction and waste reduction oriented solid waste management system.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Establish, define and measure progress towards a 60% residential waste diversion goal of 31,000 tons per year (1999/2000 recovery is 50% @ 26,000 tons per year) and an overall diversion goal (including all of the commercial sector) of 60%, or 40,200 tons per year (1999/2000 recovery is 40% at 27,000 tons) through waste reduction, reuse, recycling, and composting for the five-year plan period.

2. Translate diversion goals into individual service program goals, showing current and projected material flows for diverted tons and the remaining tons that still remain to be landfilled.

3. Define and measure, for each service program based on current and projected material flows, a) *key performance factors* (e.g., total stops and total lbs per shift for residential waste collection), b) *key cost factors* (e.g., total cost per household per month), and c) *key service quality and customer satisfaction factors (*e.g., # of vehicle accidents per 1,000 service miles and # of complaints per 1,000 stops). Evaluate possible use of computerized performance tracking and route management systems designed for public works operations, and purchase/implement use of such a system if feasible.

4. Monitor progress toward these goals and implement response systems when goals are not being met.

ORGANIZATION-2: INCENTIVES FOR RECYCLING & CLEAN COMMUNITY

A. ***Strategy Summary and Customer Focus****:* Motivation by residents and businesses to support a clean community and strong waste diversion would be enhanced and reinforced by a well-organized system of education, outreach and incentives.

B. Goal Statement: Strengthen the incentive structure for households and businesses to reduce, reuse and recycle valuable material in the waste stream and safely and cleanly dispose of the remainder.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Emphasize maintaining a "clean community" through public education, outreach and ordinance enforcement.

2. Provide extensive outreach, education, promotion and technical assistance on waste reduction and reuse, recycling and composting, and home toxics reduction including how to use these programs and why they are important, building on the success of many of the mechanisms already in place. Build on extensive resource material available through County solid waste program (4R's resource materials, household hazardous waste service, backyard composting bin distribution, commercial waste reduction awards program and SE Michigan Sustainable Business Forum), State of Michigan (RETAP program for waste reduction in businesses as well as other technical assistance materials) and local universities (U of M technical assistance programs in commercial waste reduction and environmental sustainability). Additional expansion areas include increased use of the internet (including placing 5 year plan on web), as well as school outreach and community involvement efforts.

3. Provide a recycling service to all targeted sectors (single family, multi-family, commercial, etc.) with frequency and location that is as convenient as refuse service – with strong focus on increased recycling services in the commercial sector for both city serviced and non-city serviced locations.

4. Collect a wide range of materials in the recycling stream including additions to the current list of materials whenever practical, allowing commingling of those materials wherever practical in order to minimize inconvenience.

5. "Renew" the mandatory participation ordinance already in place through adoption of an ordinance amendment banning certain easily recyclable items as well as certain toxic materials from the trash with cardboard, newspapers, magazines, aluminum cans, selected household hazardous waste, computers and florescent lights being likely candidates for that list.

6. Upgrade the level of "soft" reminders for residents and businesses regarding both the older mandatory recycling requirements as well as the proposed trash ban provisions using more frequent mention in outreach literature, education tags, and similar approaches. Integrate waste reduction and reuse messages into all related outreach.

ORGANIZATION-3: PERFORMANCE-BASED SERVICE PARTNERSHIPS

A. ***Strategy Summary and Customer Focus****:* A performance-based partnership approach will be used with the City's municipal waste collection crews and Recycle Ann Arbor's operations to negotiate and manage the service specifications and budgets for these services with competitive open-market bidding only used should these approaches fall below documented expectations.

B. Goal Statement: Use performance based partnership contracting with benchmarking and cost plus budgeting as the guiding management strategy for most services that come into direct contact with the City's households and businesses, with good examples being recycling, compost and refuse collection services.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Define current and targeted performance, cost, service quality and customer satisfaction factors for the following service programs.

   – residential refuse collection
   – commercial refuse collection
   – yard waste collection
   – curbside recycling collection
   – curbcart recycling collection
   – compost processing facility
   – drop-off facility
   – long-term landfill maintenance

2. Develop, through joint planning with each service partner manager (e.g., City waste collection supervisors or Recycle Ann Arbor managers), target levels of achievement for each year for each key factor (see #1 above), based on the expected material flow.

3. Develop and utilize, through contractual agreements with each service partner, full-cost accounting and cost-plus budgeting/fee for service arrangements that reflect expected achievement of the targeted levels of performance for each factor.

4. Integrate incentive systems into the agreements, to secure commitment to and motivation for achieving the targeted goals.

5. Maintain periodic third party auditing procedures, on an as-needed basis, as a check on the effectiveness of this Performance-Based Service Partnership Approach for all customer-based service programs, with follow-up use of alternate competitive bidding approach if necessary.

ORGANIZATION-4: MARKET-BASED CONTRACTING FOR COMMODITY SERVICES

A. ***Strategy Summary and Customer Focus****:* Competitive bidding would be used to contract for the balance of procurement of the solid waste management system services.

B. Goal Statement: Continue use of competitive bidding under long-term contracts as the guiding management strategy for the balance of solid waste management system operations, especially commodity-type services that have no direct contact with the City's households and businesses (e.g.: solid waste transfer and disposal).

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Define current and targeted specifications for performance, cost, service quality and customer satisfaction factors for the balance of solid waste system operations.

2. Develop and utilize competitive procurement procedures in combination with long-term contracts as appropriate to establish service arrangements and costs that meet the targeted service specifications.

3. Maintain periodic third-party auditing procedures, on an as-needed basis, as a check on the effectiveness of this Market-Based Contracting process.

ORGANIZATION-5: REGIONAL PARTNERSHIPS

A. ***Strategy Summary and Customer Focus****:* Where practical, the Department will take steps to partner with other area communities and agencies in order to improve services and reduce costs.

B. Goal Statement: Develop informal and formal partnership alliances with area municipalities (governments at local and county levels) and agencies (such as U of M) to achieve higher performance levels and lower costs, where appropriate, in all service areas.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Evaluate economy of scale opportunities as a routine part of all Performance-Based Service Partnerships and Market-Based Contracting for Commodity Services as described above.

2. Cooperate with area municipalities and agencies to gain a mutual understanding of their own baseline services and costs compared to economy of scale opportunities available in collaboration with the City of Ann Arbor.

3. Develop, where appropriate, economy of scale service opportunities when they surface, which may include intergovernmental agreements, joint contracts, and/or a multi-governmental authority.

4. Maintain periodic third party auditing procedures, on an-as needed basis, as a check on the effectiveness of these Regional Partnerships, should they be utilized.

ORGANIZATION-6: FUNDING OF OPERATIONS

A. ***Strategy Summary and Customer Focus*** Continue Millage System and expand Use of Variable Funding Mechanisms.

B. Goal Statement: Continue to fund a base level of solid waste and recycling services through the City's property tax millage while increasing the use of non-tax based funding mechanisms to provide enhanced services where appropriate (e.g., revenue from sale of recyclable materials and methane-based power, tipping fees for use of facilities, pre-paid user fees for additional collection services, etc.).

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Establish the base level of solid waste and recycling services across applicable service sectors (residential, commercial, etc.) and fundable through all or a portion of the current level of the solid waste millage, taking into account the voter approved millage for the solid waste bond.

2. Consider refinements to the base services during the plan period, taking into account financial realities of the City.

3. Establish, define and implement a plan to maximize the financial benefits derived from all non-tax funding sources (e.g., revenue from sale of recyclable materials).

4. Develop an effective billing and budgeting system as necessary for expanded use of pre-paid fee-for-service arrangements for any additional solid waste and recycling services, in demand by area households and businesses, that are above and beyond the base services described above.

5. Phase in expanded use of the fee-for-service arrangements over the plan period, as dictated by customer demand.

ORGANIZATION-7: CAPITALIZATION OF EQUIPMENT/FACILITIES

A. ***Strategy Summary and Customer Focus****:* The Department will be able to fund acquisition of all equipment and facility improvements required for the planned solid waste and recycling system.

B. ***Goal Statement****:* Improve the capacity to capitalize equipment and facility improvements on a timely basis as needed to accomplish program objectives.

C. ***Key Objectives:*** During the five-year plan period, the following key objectives are achievable:

1. Integrate capital requirements from programs (e.g., appropriate property, plant and equipment renewal, replacement and upgrades) from this plan update into the Capital Improvement Budget as part of the City's annual budget cycle.

2. Define the level of capital investment that can be maintained through millage funding sources and those that will require other means of financing including potential use of an enterprise fund approach.

3. Establish a capital replacement program for equipment and facilities consistent with the millage and non-millage financing structure and implement capital financing mechanisms for this equipment and facility improvements using appropriate arrangements.

ORGANIZATION-8: EXPLORE OPERATION AS AN ENTERPRISE FUND

A. ***Strategy Summary and Customer Focus****:* There are ways to secure revenues from solid waste and recycling services (such as the sale of recyclables processed at the MRF and the provision of supplemental "fee-for-services" commercial trash pickups) that might be better managed if the City's solid waste and recycling system were set up as an "enterprise fund" similar to that of the Water Utilities operation.

B. ***Goal Statement:*** Investigate and consider structuring the City's solid waste and recycling system as a public sector "enterprise fund" charged with responsibility for cost-effective service provision using available funds from the millage, other annual revenue sources as well as its own accumulated reserve fund.

C. ***Key Objectives:*** During the five-year plan period, the following key objectives are achievable:

1. Identify and evaluate the key procedural, policy and performance parameters needed for an Enterprise Fund approach to work successfully within the fiscal management system of the City of Ann Arbor.

2. If appropriate, develop and implement a plan for transition to such an Enterprise Fund.

3. If implemented, effectively use the Enterprise Fund approach to improve the City's ability to achieve related administrative goals in operational and capital funding as detailed elsewhere in this plan update.

4. Maintain periodic third party auditing procedures as needed, to serve as a check on the effectiveness of the Enterprise Fund approach.

ORGANIZATION-9: ENVIRONMENTAL SUSTAINABILITY

A. ***Strategy Summary and Customer Focus****:* The Department will strive to build environmental sustainability practices into its operations and related operations in other departments.

B. Goal Statement: Provide a solid waste and recycling service that contributes to a more environmentally and economically sustainable life cycle for goods and services used by households and businesses in our community.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable.

1. Adopt a "green fleet" strategy targeting conversion of a minimum of 10% of the City's solid waste and recycling collection vehicles to alternative fuels such as compressed natural gas, hybrid electric, and other approaches as they become commercially proven.

2. Encourage and support waste reduction, reuse, recycling and buy-recycled programs in all other City of Ann Arbor municipal departments.

3. Explore opportunities to increase the productivity of each truck operating in the City's refuse, recycling and yard waste collection programs in order to reduce costs, fuel consumption and use of other natural resources.

4. Continue to provide educational tours and public programs at the Resource Recovery Center and use this popular outreach to students, general public and business interests as an outreach platform for waste reduction promotion and information dissemination.

5. Establish stronger links with the community through participation in the "eyes and ears" training for all department personnel.

6. Cooperate with the City in the Washtenaw County Sustainability Initiative and any other parallel initiatives within the City.

IV.B: PROPOSED STRATEGIES FOR RECYCLING SERVICES

The following Plan strategies have been developed for recycling services for the City of Ann Arbor as part of the 2002-2007 City of Ann Arbor Solid Waste Plan Update.

A. Curbside Recycling Collection
B. Curbcart Recycling Collection
C. Dumpster-Based Recycling Collection
D. Drop-off Recycling Collection
E. Bulky/Special Materials Recycling and Reuse
F. The Reuse Network
G. Parks/Recreation Recycling
H. Special Event Recycling
I. Recycling Processing Capacity/MRF Upgrade

RECYCLING-1: CURBSIDE RECYCLING COLLECTION

A. ***Strategy Summary and Customer Focus****:* Most single family homes as well as smaller multi-family complexes and small businesses, institutions and non-governmental organizations will receive curbside recycling collection service using tote containers for their commingled papers and commingled containers.

B. Goal Statement: Provide, through a service partnership with Recycle Ann Arbor, a cost effective and efficient curbside recycling collection service to all sectors of the City (single family, multi-family, business, institution and non-governmental organizations) that are expected to divert up to approximately 2,500 lbs of recyclables each year (weight calculation based on approximately two full tote containers of paper a week).

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Establish, maintain and revise as needed a standard definition of and a computerized information system for the target curbside recycling customer (example - any generator in the city that expects to divert no more than approximately 2,500 lbs of recyclables each year).

2. Use Performance-Based partnership approach and management tools for establishing and maintaining the contract for curbside recycling services with Recycle Ann Arbor as a not-for-profit community-based service partner.

3. Consider incentives (e.g., extra containers, recognition, discounts, etc.) for high performing curbside recycling customers (so called “super recyclers”) to further reinforce participation in the curbside recycling system.

4. Upgrade the fleet of curbside recycling trucks owned by the City, working with Recycle Ann Arbor to pilot and purchase, if justified, any new collection vehicles that are able to achieve greater worker safety, higher performance and improved cost effectiveness (e.g., incorporating compaction for commingled papers).

5. Track and test, where applicable, any potential changes to the curbside recycling system that could improve service or efficiency.

RECYCLING-2: CURBCART RECYCLING COLLECTION

A. ***Strategy Summary and Customer Focus****:* Most multi-family complexes and medium sized businesses, institutions and non-governmental organizations receive curbcart recycling collection service using rollable and tippable carts for their commingled papers and commingled containers.

B. Goal Statement: Provide, through a service partnership with Recycle Ann Arbor, a cost effective and efficient curbcart recycling collection service to all sectors of the City (multi-family, business, institution and non-governmental organizations) that expect to divert quantities of recyclables each year that exceed the limits of the curbside recycling service yet are not large enough to justify dumpster-based recycling service.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Establish, maintain and revise as needed a standard definition of and a computerized information system for the target curbcart recycling customer (example - any generator in the city that expects to divert between approximately 2,500 lbs and 7,500 lbs of recyclables each year).

2. Use Performance-Based partnership approach and management tools for establishing and maintaining the contract for curbcart recycling services with Recycle Ann Arbor as a not-for-profit community-based service partner.

3. Develop and maintain, as part of the curbcart recycling collection service, a targeted strategy for use of curbcarts (or other containers) for recycling in the Downtown Development Authority area including piloting of sidewalk recycling collection bins.

4. Provide incentives (e.g., extra containers, recognition, discounts, etc.) for high performing curbcart recycling customers (so called "super recyclers") to further reinforce participation in the curbcart recycling system.

5. Upgrade the fleet of curbcart recycling trucks owned by the City throughout the plan period, working with Recycle Ann Arbor to pilot and purchase, if justified, any new collection vehicles that are able to achieve greater worker safety, higher performance and improved cost effectiveness.

6. Track and test, where applicable, any potential changes to the curbcart recycling system that could improve the service or efficiency.

RECYCLING-3: DUMPSTER BASED RECYCLING COLLECTION

A. ***Strategy Summary and Customer Focus****:* Larger multi-family complexes (e.g., high rise apartment buildings) and large businesses, institutions and non-governmental organizations with large quantities of cardboard and other paper will receive dumpster-based recycling collection service.

B. Goal Statement: Provide a cost effective and efficient dumpster-based recycling collection service for cardboard and commingled paper to all sectors of the City (multi-family, business, institution and non-governmental organizations) that expect to divert quantities of recyclables each year that exceed the targets for curbside and curbcart recycling service.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Establish, maintain and revise as needed a standard definition of and a computerized information system for the target dumpster-based recycling customer (example - any generator in the city that expects to divert more than 7,500 lbs of recyclables each year or generates large quantities of cardboard or other recyclable paper).

2. Use Performance-Based partnership approach and management tools for establishing and maintaining comprehensive dumpster-based recycling services with the Department's collection staff as a municipal service partner.

3. Develop and implement a targeted strategy for use of dumpsters and compacting roll-off containers for collection of cardboard and mixed paper in commercial areas.

4. Investigate the benefits of coordinating with a third party service contractor to provide, lease and maintain (e.g., paint) dumpsters for existing and new customers of the City's commercial recycling services or for providing single or multiple user on-site compaction systems for high generation sites.

5. Upgrade the fleet of rear and/or front load compacting recycling trucks owned by the City throughout the plan period, working with Department collection staff to pilot and purchase, if justified, collection vehicles that are able to achieve greater worker safety, higher performance and improved cost effectiveness.

6. Track and test, where applicable, any potential changes to the dumpster-based recycling system that could improve the service or efficiency.

RECYCLING-4: DROP-OFF RECYCLING COLLECTION

A. ***Strategy Summary and Customer Focus****:* Residents, businesses, institutions and non-governmental organizations will be able to take a broader range of recyclables to one or more drop-off recycling collection sites located in or around the City.

B. Goal Statement: Provide, through a service partnership with Recycle Ann Arbor, and in collaboration with surrounding communities and the County, a cost effective and efficient drop-off recycling collection service to all sectors of the City (residential, business, institution and non-governmental organizations) that expect to divert unusually large quantities of recyclables from time to time and need a readily available place to take those materials.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Use Regional Partnership approach to establish service expectations and funding system with the County and/or individual local units surrounding Ann Arbor that expect their citizens to use these facilities.

2. Use Performance-Based partnership approach and management tools for establishing and maintaining the contract for drop-off recycling collection services with Recycle Ann Arbor as a not-for-profit community based service partner.

3. Pilot in partnership with Recycle Ann Arbor, the county, area universities and area communities, a collection service, based at the drop-off, for waste electronics and electrical equipment and for used nylon carpeting, relying on Recycle Ann Arbor to contract for recycling, reuse and disposal of the collected materials.

4. Prepare for and complete all necessary capital improvements in recycling drop-off facilities to be owned by the City throughout the plan period, working with Recycle Ann Arbor to design and implement modifications, expansions or relocation of drop-off services to achieve greater worker safety, higher performance and improved cost effectiveness (e.g., expanded tipping areas, or relocation of the existing site and/or addition of a second west side site).

5. Continuously improve the overall utilization of the drop-off site infrastructure by incorporating any related drop-off based collection service (such as bulky goods, yard waste, trash, etc.) and piloting, in cooperation with Recycle Ann Arbor, the expansion of the site to handle newly targeted materials for diversion (e.g., reusable items, waste electronics and electrical equipment, carpeting, etc.).

RECYCLING-5: BULKY/SPECIAL MATERIALS RECYCLING AND REUSE

A. ***Strategy Summary and Customer Focus****:* Recyclable and reusable bulky and special materials collection will be provided to area residents.

B. Goal Statement: Provide a cost effective and efficient collection system for recyclable and reusable bulky and special materials that can be diverted in coordination with the City's collection system for bulky waste.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Use Performance-Based partnership approach and management tools for establishing and maintaining a system for collection of reusable and recyclable bulky and special materials.

2. Continue to pilot and build on the "Green Move-Out" initiatives with Recycle Ann Arbor, the University of Michigan and off-campus student housing property managers to target the student population for recycling and reuse of bulky items, especially during student move-in and move out.

3. Continuously evaluate, through analysis and piloting, potential changes to the City's approach to bulky waste collection that would improve the service while increasing recovery opportunities through recycling and reuse.

RECYCLING-6: THE REUSE NETWORK

A. ***Strategy Summary and Customer Focus****:* Residents, businesses, institutions and non-governmental organizations will be able to take reusable goods to reuse organizations in the area.

B. Goal Statement: Encourage and promote convenient outlets for reusable goods generated by residents, businesses, institutions and non-governmental organizations.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Convene and help kick-off, in conjunction with Washtenaw County, a Reuse Network in a Washtenaw ("ReNew") partnership with area reuse organizations (e.g., RAA Reuse Center, Kiwanis, Salvation Army, Purple Heart, St. Vincents, Thrift Store, PTO Thrift Shop, etc.).

2. Identify shared goals that would benefit from coordination between the ReNew partners.

3. Provide assistance in establishing a recognition program and in promoting reuse outlets.

RECYCLING-7: PARKS/RECREATION RECYCLING

A. ***Strategy Summary and Customer Focus****:* Users and operators of Ann Arbor Parks and Recreational Facilities will be able to recycle cardboard, commingled papers, and commingled bottles/cans.

B. Goal Statement: Provide a consistent set of recycling opportunities for operators and users at local parks and recreational facilities.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Develop, through collaboration with the Parks and Recreation Department, the University of Michigan, Ann Arbor Public Schools, Community Recreation and Education and Recycle Ann Arbor, a shared set of expectations regarding consistent recycling opportunities for operators, users and attendees at local parks and recreational facilities – including use of these services and events as a focal point for outreach and education on waste reduction, material reuse and general recycling.

2. Develop pilot programs for identified recycling services and work with partners to document expected material flows, service efficiency levels, and costs.

3. Define necessary fee systems to recover costs and contracting approaches for providing services.

4. Continuously evaluate, through analysis and further piloting, potential improvements to the recycling systems.

RECYCLING-8: SPECIAL EVENTS RECYCLING

A. ***Strategy Summary and Customer Focus****:* Organizers, operators and participants in major sports, recreational and cultural events in the City (such as the Summer Festival and Art Fairs) will be able to recycle cardboard, commingled papers, and commingled bottles/cans.

B. Goal Statement: Provide a consistent set of recycling opportunities for organizers, operators, and participants in major sports, recreational and cultural events.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Develop, through collaboration with local cultural event organizers, local sports groups and Recycle Ann Arbor, a shared set of expectations regarding consistent recycling opportunities for operators, users and attendees at major sports, recreation and cultural events.

2. Develop pilot programs for identified recycling services and work with partners to document expected material flows, service efficiency levels, and costs.

3. Define necessary fee systems to recover costs from event organizers and contracting approaches for providing services.

4. Continuously evaluate, through analysis and further piloting, potential improvements to the recycling systems.

RECYCLING-9: RECYCLING PROCESSING CAPACITY/MRF UPGRADE

A. ***Strategy Summary and Customer Focus****:* Recycling collection programs provided to residents, businesses, institutions and non-governmental organizations in the City of Ann Arbor will be able to deliver collected recyclables to the recycling processing facility owned by the City and developed and operated in conjunction with their recycling processing service provider, under long-term contract to the City.

B. Goal Statement: Provide, through a service partnership with FCR, Inc., a cost effective and efficient recycling processing system for all grades of recyclable material targeted with the recycling collection programs planned for the City.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Develop, in conjunction with FCR, Inc., a capital improvements plan (with funding package) for the MRF to address expected upgrades to the facility for receiving and storing loads of commercial corrugated cardboard and mixed office paper and to increase tipping area as needed for all other materials.

2. Use Regional Partnership approach to establish service expectations and address any public aspects of the required funding system possibly with the involvement of the County and/or individual local units surrounding Ann Arbor that currently use the facility.

3. Use Performance-Based approach and management tools for establishing and maintaining any required changes to the long-term contract for development and operation of the MRF with FCR as the contracted service partner.

4. Upgrade the required investment in the MRF throughout the plan period, working with FCR to design and implement any additional modifications or expansions to achieve greater worker safety, higher performance and improved cost effectiveness including assessments and pilots to test the long-term potential for single stream recycling.

IV.C: STRATEGIES FOR COMPOSTING SERVICES

The following Plan strategies have been developed for composting services for the City of Ann Arbor as part of the 2002-2007 City of Ann Arbor Solid Waste Plan Update.

1. Curbside Yard Waste Collection
2. Fall Street Leaf Collection
3. Christmas Tree Curbside Collection
4. Vegetative Waste Collection
5. Drop-off Collection
6. Processing Capacity/Compost Site
7. Marketing of Finished Product
8. Utilities Biosolids

COMPOST-1: CURBSIDE YARD WASTE COLLECTION

A. ***Strategy Summary and Customer Focus****:* Single family homes will receive weekly curbside yard waste collection service from April 1 through November 30 of each year using either paper bags or bulk containers for collecting grass clippings, leaves, small diameter branches and other green vegetative waste.

B. Goal Statement: Provide, through a service partnership with the Department's collection staff, a cost effective and efficient curbside yard waste collection service to all households receiving curbside refuse collection from April 1 through November 30 of each year.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Establish, maintain and revise as needed a standard definition for the target curbside yard waste customer.

2. Use Performance-Based partnership approach and management tools for establishing and maintaining an agreement for curbside yard waste services with the Department's collection staff as the municipally based service partner.

3. Pilot, in collaboration with the commercial/institutional vegetative waste composting project (see Composting-4 below), an expansion of the definition of yard waste in test residential demonstration areas to include pre-consumer vegetative waste.

4. Upgrade the fleet of curbside yard waste collection trucks owned by the City throughout the plan period, working with the Department's collection staff to pilot and purchase, if justified, any new collection vehicles that are able to achieve greater worker safety, higher performance and improved cost effectiveness.

5. Track and test, where applicable, any potential changes to the curbside recycling system that could improve the service or efficiency including possible collection with solid waste using special dual-compartment collection truck.

COMPOST-2: FALL STREET LEAF COLLECTION

A. ***Strategy Summary and Customer Focus****:* City streets fronted by residential areas will receive street bulk leaf collection service twice each fall.

B. Goal Statement: Provide, through a service partnership with the Public Services Department, a cost effective and efficient Fall street leaf collection service to all public streets in the City fronted by single family housing, smaller multi-family housing and other single-family residential type structures.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Establish, maintain and revise as needed a standard definition of the target fall street leaf collection customer.

2. Use Performance-Based partnership approach for establishing and maintaining the agreement for fall street leaf collection services with the Public Services Department as the municipally based service partner.

3. Work with all participating departments to help upgrade the fleet of equipment (rear-load compactors, front-load buckets, etc.) required for fall leaf collection.

4. Continuously evaluate, through analysis and piloting, any potential changes to the fall street leaf collection system that could improve the service and reduce environmental impacts.

COMPOST-3: CHRISTMAS TREE CURBSIDE COLLECTION

A. ***Strategy Summary and Customer Focus****:* Single and multi-family homes will receive Christmas Tree curbside collection service twice each January.

B. Goal Statement: Provide, through a service partnership with the Department's collection staff, a cost effective and efficient Christmas Tree collection service to all residential sectors of the City during two weeks of January each year.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Use Performance-Based partnership approach and management tools for establishing and maintaining the agreement for Christmas Tree curbside collection services with the Department's collection staff as the municipally based service partner.

COMPOST-4: VEGETATIVE WASTE COLLECTION

A. ***Strategy Summary and Customer Focus****:* Selected commercial and institutional generators of large quantities of food waste will have the opportunity to participate in a pilot program for the collection and composting of vegetative waste with long-term implementation if feasible.

B. Goal Statement: Build on the successful pilot of food waste composting underway with the University of Michigan by further developing, through a service partnership with the Department's collection staff and the Department's compost processing site, a cost effective and efficient demonstration pilot and, if successful, ongoing service for collecting and composting vegetative waste from selected commercial and institutional sources within the City.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Develop, through collaboration with the University of Michigan, Washtenaw County, Pittsfield Township, the State of Michigan Department of Environmental Quality, the local hospitality industry, and the Chamber of Commerce a shared set of expectations regarding possible expansion of the vegetative waste composting pilot on the City's compost site or an alternate site.

2. Document, with selected partners, expected material flows, service efficiency levels, and costs for the pilot.

3. Define any fee systems required and determine contracting approaches for providing services.

4. Maintain access to the necessary collection truck capacity owned by the City throughout the plan period, working with the Department's collection staff to pilot and adapt the best collection system for the service.

5. Based on the expected material flows, complete all arrangements necessary for expansion of the pilot vegetative waste composting operation at the compost site (See Composting-6) to process the projected volume.

COMPOST-5: DROP-OFF COLLECTION

A. ***Strategy Summary and Customer Focus****:* Residents, businesses, institutions and non-governmental organizations will be able to take yard waste and Christmas Trees to the City's Drop-off Station.

B. Goal Statement: Provide, through a service partnership with Recycle Ann Arbor, and in collaboration with surrounding communities and the County a cost effective and efficient drop-off yard waste collection service available to all sectors of the City that expect to divert unusually large quantities of yard waste from time to time and need a readily available place to take those materials.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Use Regional Partnership approach to establish service expectations and funding system with the County and/or individual local units surrounding Ann Arbor that expect their citizens to use these facilities.

2. Use Performance-Based partnership approach and management tools for establishing and maintaining the contract for drop-off yard waste collection services with Recycle Ann Arbor as a not-for-profit community based service partner already operating the recycling and refuse drop-off facilities.

3. Prepare for and complete all necessary capital improvements in yard waste drop-off capacity at the recycling and refuse drop-off facility owned by the City throughout the plan period, working with Recycle Ann Arbor to design and implement any modifications, expansions or relocation required to achieve greater worker safety, higher performance and improved cost effectiveness.

4. Develop contingency plan for receiving larger loads of yard debris right at the City's compost processing site in order to prevent overflow conditions at the drop-off facility.

COMPOST-6: PROCESSING CAPACITY/COMPOST SITE

A. ***Strategy Summary and Customer Focus****:* Yard and vegetative waste collection programs provided to the residents, businesses, institutions and non-governmental organizations in the City of Ann Arbor will be able to deliver collected organic waste material to the compost processing facility owned and operated by the City.

B. Goal Statement: Provide, through a service partnership with the Department's operations staff, and in collaboration with surrounding communities and the County a cost effective and efficient compost processing system for all yard and vegetative waste targeted with the compost collection programs planned for the City in compliance with all applicable rules and regulations.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Develop, in conjunction with the operations staff at the Compost Facility, a capital improvements plan (with funding package) for the Facility to address expected upgrades to the operation for receiving and processing larger quantities of yard and vegetative waste, including evaluation of the regulatory and equipment requirements for composting vegetative waste.

2. Use Regional Partnership approach to establish compost processing service expectations and address any public aspects of the required funding system possibly with the involvement of the County and/or individual local units surrounding Ann Arbor that may want to use the Compost Facility.

3. Develop and implement the necessary pilot program operations (following MDEQ pilot program rules) for receiving and composting vegetative waste as part of the commercial/institutional vegetative waste collection pilot.

4. Use Performance-Based partnership approach and management tools for establishing and maintaining an agreement for operation of the Compost Facility with the Department's operations staff as the municipal service partner.

5. Upgrade the required investment in the Compost Facility throughout the plan period to achieve greater worker safety, higher performance and improved cost effectiveness.

COMPOST-7: MARKETING OF FINISHED PRODUCT

A. ***Strategy Summary and Customer Focus****:* Residents, businesses, institutions and non-governmental organizations will be able to purchase, at various locations in or around the City, finished mulches and compost products made from the City's organic waste streams.

B. Goal Statement: Provide a distribution system for the sale of mulches and compost products made from the City's organic waste streams to interested area residents, businesses, institutions and non-governmental organizations, including a bagging/packaging system if feasible.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Use Performance-Based partnership approach and management tools for establishing and maintaining agreements for packaging (bagging) and distribution of mulches and compost products through the Drop-off Site operated by Recycle Ann Arbor and/or at other outlet sites in the area (e.g., nurseries).

2. Use Performance-Based partnership approach and management tools for establishing and maintaining agreements for sale of large bulk quantities of mulches and compost products distributed directly from the Compost Facility.

3. Work with the US Composting Council or other similar agency to secure a Certification status for the finished compost products to support consumer confidence in product quality.

4. Work with the Michigan Department of Environmental Quality to assure continued compliance of the finished compost products with any regulatory requirements that may be developed during the plan period.

5. Support the marketing efforts for compost products through advertising, promotions and demonstration garden plots coordinated through the Department's overall solid waste outreach efforts.

6. Explore establishing third party arrangements for compost delivery while protecting the City from liability.

COMPOST-8: UTILITIES BIOSOLIDS

A. ***Strategy Summary and Customer Focus****:* Sludge from the City's wastewater treatment plant (aka: biosolids) will be handled using environmentally responsible management approaches consistent with state and federal regulatory requirements.

B. Goal Statement: Support development of a biosolids management approach for sludge generated by the wastewater treatment plant that recycles the organic material back into the earth in a manner consistent with regulatory requirements and cost containment goals.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Provide support as needed to the City's Utilities Department in their evaluation of biosolids management approaches to make sure that the analysis explores, to the fullest extent possible, the use of composting and other related processes to manage the waste water treatment plant sludge and return it to a productive role in the regional biomass system.

2. To the extent necessary, make the operational resources of the Solid Waste Department available to the City's Utilities Department as they implement a biosolids management system for the City's wastewater treatment plant sludge.

IV.D: STRATEGIES FOR REFUSE SERVICES

The following Plan strategies have been developed for refuse services for the City of Ann Arbor as part of the 2002-2007 City of Ann Arbor Solid Waste Plan Update.

1. Residential Refuse Collection
2. Rear-Load Commercial Refuse Collection
3. Front-Load Commercial Refuse Collection
4. Drop- Curbside Refuse Collection
5. Bulky Waste Collection and Reuse
6. Parks and Special Events Refuse Collection
7. Litter Cans and Clean Community Initiative
8. Transfer Capacity/MRF
9. Refuse Transfer and Disposal Capacity

REFUSE-1: RESIDENTIAL REFUSE COLLECTION

A. ***Strategy Summary and Customer Focus****:* Most single family homes as well as smaller multi-family complexes and the smaller businesses, institutions and non-governmental organizations will receive curbside refuse collection service using their own containers for their non-recyclable and non-compostable refuse.

B. Goal Statement: Provide, through a service partnership with the Department's collection staff, a cost effective and efficient curbside refuse collection service to all sectors of the City (single family, multi-family, business, institution and non-governmental organizations) that expect to divert smaller quantities of refuse each year.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Establish, maintain and revise as needed a standard definition of and a computerized information system for the target curbside refuse customer (e.g., any generator in the city that expects to generate no more than approximately four cubic yards of non-recyclable and non-compostable refuse each week).

2. Use Performance-Based partnership approach and management tools for establishing and maintaining the agreement for curbside refuse services with the Department's collection staff as a municipal service partner.

3. Upgrade the fleet of curbside refuse trucks owned by the City throughout the plan period, working with the Department's collection staff to pilot and purchase, if justified, any new collection vehicles that are able to achieve greater worker safety, higher performance and improved cost effectiveness (e.g., use pilots to evaluate increased use of rolling curbcarts for smaller multi-family households on the residential route that generate large quantities of refuse).

4. Continuously evaluate, through analysis and piloting, potential changes to the curbside refuse system that could improve the service including shifting to possible combined collection of refuse with yard waste in special dual compartment compacting collection trucks.

REFUSE-2: REAR-LOAD COMMERCIAL REFUSE COLLECTION

A. ***Strategy Summary and Customer Focus****:* Businesses, institutions and non-governmental organizations in congested and difficult to service areas will receive rear-load can, curbcart and dumpster collection service for their non-recyclable and non-compostable refuse.

B. Goal Statement: Provide, through a service partnership with the Department's collection staff, a cost effective and efficient rear-load commercial refuse collection service to all sectors of the City (single family, multi-family, business, institution and non-governmental organizations) that expect to dispose of larger quantities of non-recyclable and non-compostable refuse each year yet have congested and/or difficult to service set-out areas (alleys, narrow access areas, etc.).

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Establish, maintain and revise as needed a standard definition of and a computerized information system for the target rear-load commercial refuse collection customer (e.g., any generator in the city that expects to generate more than approximately 4 cubic yards of non-recyclable and non-compostable refuse each week with a location in an area not easily serviced by more cost effective front-load commercial refuse collection).

2. Use Performance-Based partnership approach and management tools for establishing and maintaining the agreement for rear-load commercial refuse services with the Department's collection staff as a municipal service partner.

3. Investigate the benefits of coordinating with a third party service contractor to provide, lease and maintain (e.g., paint) dumpsters for existing customers of the City's rear load refuse services.

4. Guarantee, on a pre-paid basis only, provision of additional rear-load container services (e.g., special one-time requests for an additional container lift or requests for longer-term additions to the basic one lift per week basic service level for a normal business).

5. Upgrade the fleet of rear-load compacting trucks owned by the City throughout the plan period, working with the Department's collection staff to pilot and purchase, if justified, any new collection vehicles that are able to achieve greater worker safety, higher performance and improved cost effectiveness.

6. Continuously evaluate, through analysis and piloting, potential changes to the rear-load refuse collection system that could improve the service including evaluating options to phase out rear-load service and move customers to higher efficiency and lower cost curbcart and/or front-load collection.

REFUSE-3: FRONT-LOAD COMMERCIAL REFUSE COLLECTION

A. ***Strategy Summary and Customer Focus****:* Multi-family complexes, businesses, institutions and non-governmental organizations will receive front-load dumpster service for their non-recyclable and non-compostable refuse.

B. Goal Statement: Provide, through a service partnership with the Department's collection staff, a cost effective and efficient front-load commercial refuse collection service to all sectors of the City (multi-family, business, institution and non-governmental organizations) that expect to dispose of larger quantities of non-recyclable and non-compostable refuse each year.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Establish, maintain and revise as needed a standard definition of and a computerized information system for the target front-load commercial refuse collection customer (e.g., any generator in the city that expects to generate more than approximately 4 cubic yards. of non-recyclable and non-compostable refuse each week and not using the rear-load refuse service).

2. Use Performance-Based partnership approach and management tools for establishing and maintaining the agreement for front-load commercial refuse services with the Department's collection staff as a municipal service partner.

3. Investigate the benefits of coordinating with a third party service contractor to provide, lease and maintain (e.g., paint) dumpsters for existing and new customers of the City's front-load refuse service or providing single or multiple user on-site compaction systems for high generation sites.

4. Guarantee, on a pre-paid basis only, provision of additional front-load container services (e.g., special one-time requests for an additional container lift or requests for longer term additions to the basic one lift per week basic service level for a normal business).

5. Upgrade the fleet of front-load compacting trucks owned by the City throughout the plan period, working with the Department's collection staff to pilot and purchase, if justified, any new collection vehicles that are able to achieve greater worker safety, higher performance and improved cost effectiveness.

6. Continuously evaluate, through analysis and piloting, potential changes to the front-load refuse collection system that could improve the service including continued evaluation of options to move customers to on-site compaction systems.

REFUSE-4: DROP-OFF REFUSE COLLECTION

A. ***Strategy Summary and Customer Focus****:* Residents, businesses, institutions and non-governmental organizations will be able to take refuse to one or more drop-off collection sites located in or around the City.

B. Goal Statement: Provide, through a service partnership with Recycle Ann Arbor, and in collaboration with surrounding communities and the County, a cost effective and efficient drop-off refuse collection service to all sectors of the City (residential, business, institution and non-governmental organizations) that expect to generate unusually large quantities of non-recyclable or non-compostable refuse from time to time and need a readily available place to take those materials.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Use Regional Partnership approach to establish service expectations and funding system with the County and/or individual local units surrounding Ann Arbor that expect their citizens to use these facilities.

2. Use Performance-Based partnership approach and management tools for establishing and maintaining the contract for drop-off refuse collection services with Recycle Ann Arbor as a not-for-profit community based service partner.

3. Prepare for and complete all necessary capital improvements in refuse drop-off facilities to be owned by the City throughout the plan period, working with Recycle Ann Arbor to design and implement any modifications, expansions or relocation of drop-off services to achieve greater worker safety, higher performance and improved cost effectiveness (e.g., expanded tipping areas, or relocation of the existing site and/or addition of a second west side site).

4. Continuously improve the overall utilization of the drop-off site infrastructure by incorporating any related drop-off based collection service that are part of the drop-off collection services targeted for reuse, recycling and composting.

REFUSE-5: BULKY WASTE COLLECTION AND REUSE

A. ***Strategy Summary and Customer Focus****:* Residents, businesses, institutions and non-governmental organizations will have access to bulky waste collection services through the City.

B. Goal Statement: Provide, through a service partnership with the Department's collection crews, and in conjunction with a recycling oriented service partnership with Recycle Ann Arbor (See Recycling Section), a cost effective and efficient collection system for bulky refuse generated by the City's residents, businesses, institutions and non-governmental organizations.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Establish, maintain and revise as needed a system of identification and tracking of bulky waste collection customers using database and geographic information system software applications, including establishing for-fee billing systems for additional services beyond any specified base levels of service.

2. Use Performance-Based partnership approach and management tools for establishing and maintaining an agreement for bulky waste collection with the Department's collection staff as a municipal service partner.

3. Pilot and then maintain, special initiatives with Recycle Ann Arbor and other service organizations, the University of Michigan and the off-campus student housing property managers to target the student population for removal of refuse and bulky waste as well as recycling and reuse of bulky items, especially during student move-in and move out.

4. Further development of the pre-pay system for guaranteeing provision of special on-call and one-time bulky-waste collection services.

5. Continuously evaluate, through analysis and piloting, potential changes to the City's approach to bulky waste collection that would improve the service while increasing recovery opportunities through recycling and reuse.

REFUSE-6: PARKS AND SPECIAL EVENTS REFUSE COLLECTION

A. ***Strategy Summary and Customer Focus****:* Users and operators of Ann Arbor Parks and Recreational Facilities as well as attendees and organizers of major sports, recreational and cultural events in the City (such as the Summer Festival and Art Fairs) will be able to access refuse collection services from the Department either as a base service or on a for-fee basis.

B. Goal Statement: Provide in collaboration with the Parks Department, refuse collection services for operators, users and attendees at local sports, recreation and cultural events.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. As part of the recycling service development process for parks and special events, (See Recycling Strategy Recycle-7) explore service partnerships to improve the capacity to service litter cans and dumpsters at large volume park sites.

2. Use Performance-Based partnership approach and management tools for establishing and maintaining an ongoing agreement for these refuse services at Park sites, consistent with the Park and Recreation Departments own refuse collection service and at special events with the Solid Waste Department's collection staff as a municipal service partner.

3. Define baseline services and any necessary fee systems to recover costs from event organizers for additional services where appropriate.

4. Continuously evaluate potential improvements to the techniques used for providing refuse service options for operators, users and attendees at local sports, recreation and cultural sites and events.

REFUSE-7: LITTER CANS AND CLEAN COMMUNITY INITIATIVE

A. ***Strategy Summary and Customer Focus****:* The general public, while using the public right-of-way areas of the City (streets, sidewalks, etc.) in high pedestrian traffic business districts will have access to convenient litter cans for refuse disposal with support from clean-community initiatives to foster their use and prevent litter accumulation.

B. Goal Statement: Provide, through a service partnership with the Department's collection crews, and in conjunction with a area volunteer-based service organizations, for litter disposal opportunities in general public rights-of-way and for litter cleanup.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Initiate a Clean Community Network in Ann Arbor and Washtenaw ("CLEAN COMMUNITY NOW") through a partnership effort with area agencies and service organizations (e.g., Downtown Development Authority, Huron River Watershed Council, County Road Commission, Washtenaw County Community Partners for Clean Streams, Rotaries, VFW, Kiwanis, etc.).

2. Identify shared goals and areas that would benefit from coordination between the CLEAN COMMUNITY NOW partners including further development of the Downtown Pride program already in place with the Ann Arbor Downtown Development Authority (a partnership between DDA and the Department to provide staff and equipment) and further extension of the "Adopt a *street/block/alley/creek, etc.*" program approach.

3. Provide assistance in establishing, support services, a recognition program, and promotion assistance for CLEAN COMMUNITY NOW initiatives.

4. Use Performance-Based partnership approach and management tools for establishing and maintaining an agreement for street litter can and clean community litter pickup service with the Department's collection staff as a municipal service partner.

REFUSE-8: TRANSFER CAPACITY/MRF

A. ***Strategy Summary and Customer Focus****:* Refuse collection programs provided to the residents, businesses, institutions and non-governmental organizations in the City of Ann Arbor will be able to deliver collected refuse to the solid waste transfer station owned by the City and developed and operated in conjunction with the City's Material Recovery Facility/Transfer Station (MRF/TS) service provider, under long-term contract to the City.

B. Goal Statement: **Pr**ovide, through a service partnership with FCR, Inc., a cost effective and efficient solid waste transfer system for all refuse collected by the City.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Use Performance-Based partnership approach and management tools for maintaining the long-term (20 year, ends in 2015) contract for continued development and operation of the Transfer Station with FCR as the contracted service partner.

2. Upgrade the required investment in the Transfer Station throughout the plan period, working with FCR to design and implement any additional modifications or expansions to achieve greater worker safety, higher performance and improved cost effectiveness.

REFUSE-9: REFUSE TRANSFER AND DISPOSAL CAPACITY

A. ***Strategy Summary and Customer Focus****:* Refuse delivered to the Transfer Station will be hauled in high-density compaction transfer trailers to a regional landfill for final disposal in compliance with local, state and federal regulations.

B. Goal Statement: Provide, through long-term service contracts, for cost effective and efficient transportation of compacted refuse tipped at the transfer station and disposal of that refuse in a sanitary landfill operated in compliance with local, state and federal regulations.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Use Market-Based Contracting approaches to seek competitive proposals and select a long-term (e.g., 3 to 5 yrs) service contractor for refuse disposal at a regional landfill when the current service provider contract with Onyx at the Arbor Hills Sanitary Landfill in Salem Township expires in 2002.

2. If the disposal facility location may change from the current one, use the same Market-Based Contracting process to seek competitive proposals and select a third party hauler to provide transfer trailers and transportation of those trailers under a long-term (e.g., 5 yrs) commodity services contract, amending the current service contract with FCR as necessary to reflect the change in disposal facility location and any changes in arrangements for transportation of transfer trailers.

3. If the disposal facility location may change from the current one, factor into the decision the impact on the disposal fee surcharge currently paid to the Washtenaw County Solid Waste Management Program through use of the Arbor Hills Sanitary Landfill in Salem Township.

IV.E: STRATEGIES FOR LANDFILL SITE MANAGEMENT

The following Plan strategies have been developed for landfill site management for the City of Ann Arbor as part of the 2002-2007 City of Ann Arbor Solid Waste Plan Update.

1. Landfill Cleanup
2. Closure Plan/Maintenance
3. Methane Gas Management
4. Maintenance Garage Relocation

LANDFILL SITE-1: LANDFILL CLEANUP

A. ***Strategy Summary and Customer Focus****:* The City will actively manage the on-going cleanup of contaminated groundwater at the closed City of Ann Arbor Sanitary Landfill operated until June of 1992, closed and in the process of remediation in compliance with requirements of the Michigan Department of Environmental Quality.

B. Goal Statement: Continue operation of the on-going long-term remediation plan for groundwater contamination at the landfill site in compliance with requirements of the Michigan Department of Environmental Quality.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Use Performance-Based management tools to establish current and expected service efficiency levels and performance standards for the remediation activity ongoing at the landfill site.

2. Use Market-Based Contracting approach to address any contract issues required for the operation and maintenance of the remediation process at the landfill including associated testing and compliance verification.

3. Assist the Environmental Commission, as appropriate, in evaluation of the groundwater remediation project including provision of 1) quarterly/periodic test well data showing traces/levels of chemical compounds; 2) quarterly compilation of purge well data showing quantities pumped/discharged from site; and 3) communications between DEQ and City.

LANDFILL SITE-2: CLOSURE PLAN/MAINTENANCE

A. ***Strategy Summary and Customer Focus****:* The City will actively manage the Landfill Site.

B. Goal Statement: Manage the land resources that make up the former landfill site in order to maximize opportunities for resource recovery and reuse, required support facilities and programs, open space conservation, wildlife habitat and ecological development.

C. ***Key Objectives:*** During the five-year plan period, the following key objectives are achievable:

1. Continue efforts to develop a master plan for the entire site, taking into consideration current and potential future uses of the site consistent with the need to guarantee the integrity of the landfill cap and in order to maximize opportunities for resource recovery and reuse, development of required support facilities and programs, and conservation of open space, wildlife habitat and ecological development.

2. Pilot and track low/no cost habitat management programs with Natural Areas Program to encourage native species diversity on the site as appropriate.

3. Develop, in conjunction with the Parks Department and all current users of the site, a capital improvements plan (with funding package) to address expected improvements required to implement the site master plan.

4. Use Performance-Based Service partnership approach for establishing and completing closure maintenance steps with the Department's operation staff as the municipal service partner.

LANDFILL SITE-3: METHANE GAS MANAGEMENT

A. ***Strategy Summary and Customer Focus****:* The City will actively monitor the methane gas management system currently in place at the landfill, including the methane-gas-to-energy facility already in operation.

B. Goal Statement: Oversee ongoing operation of the methane gas management system in compliance with state and federal regulatory requirements to the fullest extent required to protect the health and safety of Ann Arbor residents.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Use Performance-Based management tools to establish current and expected service efficiency levels and performance standards for the methane gas management operation ongoing at the landfill site.

2. Use Performance-Based Service partnership approach for establishing and maintaining agreement for operation of the methane gas management system with the service partner that has developed and is operating the methane-gas-to-energy facility.

3. Work with Energy Commission to promote the public awareness of alternative energy from the on-site demonstration project.

4. Explore the potential for on-site application of surplus heat from the generator such as in a greenhouse, piping to MRF, etc.

5. Work with Energy Commission to develop long-term options for using the gas after the energy recovery contract expires.

LANDFILL SITE-4: MAINTENANCE GARAGE RELOCATION

A. ***Strategy Summary and Customer Focus****:* The City's maintenance and vehicle storage facilities located on North Main and West Washington are scheduled to be relocated sometime in the next 3 to 5 years, most likely to a site on the western portion of the landfill site acreage, in cooperation with Washtenaw County.

B. Goal Statement: Continue the site development process for relocating the Department's maintenance and vehicle storage facility in conjunction with the maintenance and vehicle storage requirements of other City and departments and or related agencies.

C. Key Objectives: During the five-year plan period, the following key objectives are achievable:

1. Negotiate arrangements to allow for development of the Department's maintenance and vehicle storage needs into those of a larger City/County facility.

2. Incorporate the development of the new maintenance and vehicle storage facility into the landfill site master plan, if appropriate.

3. Work with the project design team to define the Department's program plan for the facility, taking into account all required Department operations planned for the facility.

4. Work with the project design team and the City to incorporating environmentally friendly "green" design considerations in the project to the maximum extent possible.

City of Ann Arbor
Solid Waste Management
Plan Update

2002 - 2007

ATTACHMENTS

A: GLOSSARY OF TERMS

B: COMPARABLE COMMUNITY PROFILES

C: SUMMARIES OF ADVANCE APPROACHES

D: SERVICE PROVIDER SHORT PROFILES

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ATTACHMENT A

GLOSSARY OF TERMS

The following is adapted from a glossary provided with the 1998 Seattle Solid Waste Management Plan

Biosolids: Municipal sewage sludge resulting from the wastewater treatment process.

Bulky Waste: Large size waste materials (like furniture, carpeting, appliances) that typically require different handling methods in order to collect, transport and recycle or dispose.

Construction and Demolition (C&D) Debris: Solid waste from the construction or demolition of buildings, roads, and other structures including concrete, brick, asphalt, wood, masonry, composition roofing, roofing paper, shakes, shingles, linoleum, glass, dirt, gravel, steel, aluminum, copper, galvanized or plastic piping, or plaster. Certain components of the construction waste stream are considered to be inert and other non-inert.

Commercial Waste: Solid waste from wholesale, retail, institutional, or service establishments, such as office buildings, stores, markets, theaters, hotels and warehouses.

Commingle: To intermix different waste materials such as commingling yard waste with vegetative food waste.

Commingled Collection: To collect more than one waste material in a single compartment container, such as collecting yard waste and vegetative food waste in a single collection vehicle.

Compost: The stabilized and sanitized product of composting which is beneficial to plant growth.

Compostables or Compostable Materials: Solid wastes that are separated for composting that are identified as organic material and able to be composted.

Composting: The controlled aerobic decomposition of organic material yielding a product for use as a soil conditioner.

Cost Effective: A good value for the money spent.

Curbcart: A lightweight plastic container in sizes that range from 30 to 120 gallons with wheels to allow it to be easily rolled to the curb, used for collection of refuse or recyclables, and able to be mechanically lifted into the collection hopper of a refuse or recycling truck.

Dumpster: A metal or plastic container in sizes that range from 1 cubic yard to 12 cubic yards, equipped with fixtures that allow the container to be dumped by a rear-loading or front-loading refuse or recycling truck.

Enterprise Fund: A program accounting and budget management approach in which the fund balance each year is retained for the next year's operation, allowing the program more flexibility to handle variations in revenue and expenditures and address fluctuations in demand for services.

Food Waste: Residual food from residences, institutions, or commercial facilities, or unusable portions of fruit, animal, or vegetable material, including compostable paper resulting from food production.

Garbage: Solid waste that remains after recyclables and compostables have been removed.

General Fund: The municipal budget funded by tax based revenue not encumbered for other specified purposes.

Groundwater: Water that occupies the free space in soil, sand, gravel or rock.

Household Hazardous Waste: Hazardous waste generated by households including pesticides, herbicides, solvents, batteries, fuels, cleaners and non-latex paints.

Landfill: A disposal method, following state and federal environmental protection regulations, in which solid waste is deposited in engineered cells lined with synthetic membranes, clay and other materials, and then encapsulated when the cell is full by covering with additional layers of synthetic and natural materials as well as systems for extracting leachate and methane gas that are released by the waste over time.

Market-based Contracting: Establishing the performance specifications for a program's operation in the form of a request for bids or request for proposals and then procuring the services through a solicitation where sufficient numbers of companies will respond to provide market competition on price and service quality.

Material Recovery Facility (MRF): A facility where commingled recyclables are sorted and processed.

Methane Gas Management: A system of wells, pipelines, and mechanical devices designed to collect, clean, discharge and or combust methane gas released by solid waste contained in a landfill.

Millage: A tax-based source of funding for municipal programs that is calculated based on the assessed value of property.

Natural Area Preservation: Use of various land management techniques to preserve open land in an undeveloped state to allow full operation of natural ecological systems for recharging groundwater, providing habitat for wildlife, and supporting plant growth.

Organic Waste or Organics: Waste material containing carbon-to-carbon bonds and being biodegradable. The organic fraction of mixed municipal solid waste includes paper, wood, food wastes, and yard wastes.

Pay-As-You-Throw (PAYT): A variable rate fee system for solid waste services in which each additional unit of waste (bag, can, etc.) requires payment of additional fees.

Performance-based Contracting and Performance-based Partnerships: Establishing the performance specifications for a program's operation (either through internal operations or contracting) through negotiation on specific program metrics, comparative benchmarking and cost plus budgeting.

Post-consumer Food or Vegetative Waste: Food or vegetative materials or products that have served their intended use and have been discarded for disposal after passing through the hands of a final user.

Pre-consumer Food or Vegetative Waste: Food or vegetative materials or products that are being discarded for disposal but have not been consumed, such as food items thrown away by grocery stores.

Prepay Systems: The fee collection system for prepaying for various refuse collection and recycling services ahead of the time of actual service delivery.

Processing: An operation to convert a solid waste into a useful product or to prepare it for disposal.

Recyclables Processing Facility: A facility where recyclables are sorted, packaged, converted to feedstocks, and/or revised in manufacturing.

Recyclables or Recyclable Materials: Solid wastes that are separated for recycling or reuse, such as papers, metals, and glass, that are identified as recyclable material pursuant to a local comprehensive solid waste plan.

Recycling: Transforming or remanufacturing waste materials into usable or marketable materials for use other than landfill or incineration.

Refuse: Solid waste from residential or commercial sources.

Regional Partnership: An intergovernmental agreement, in which two or more public agencies (counties, local units of government, other institutions) collaborate to provide services.

Self-haul: Materials hauled to transfer or disposal site by a generator rather than by contracted hauler.

Sludge: A semisolid substance consisting of settled solids combined with varying amounts of water and dissolved materials generated from a wastewater treatment plant or other source.

Static Compost Pile: A compost pile that is not turned or agitated during the composting process.

Transfer Station: A building where the transfer of solid waste from either self-hauled vehicles or commercial vehicles to transfer trailers occurs.

Transfer Trailers: Detachable containers used to haul solid waste from transfer stations to disposal facilities. Transfer trailers can be transported either by semi-tractor or railroad car.

Vegetative Food Waste: Plant-based food waste excluding such items as meats, fish, and eggs.

Waste Diversion: Diverting solid waste from disposal through waste reuse, reduction, recycling or composting.

Waste Reduction: Reducing the amount or toxicity of waste generated or reusing materials.

White goods: Used major appliances such as washers, dryers, and refrigerators, freezers, air conditions, stove, and water heaters.

Windrow: Elongated piles of compostable material, aerated naturally by a chimney effect, by mechanically turning the piles with a machine such as a front-end loader or specially designed equipment, and/or by forced aeration.

Wood Waste: Solid waste consisting of wood pieces or particles generated as a by-product or waste from the manufacturing and/or use of wood products, handling and storage of raw materials and trees and stumps. This includes, but is not limited to, dimensional lumber, sawdust, chips, shavings, bark, pulp, and hog fuel but does not include wood pieces or particles containing chemical preservatives such as creosote, pentachlorophenol or copper-chrome arsenate.

Yard waste: Grass clippings, leaves and weeds, and prunings from residences or businesses.

ATTACHMENT B

COMPARABLE COMMUNITY PROFILES

OVERVIEW

To better evaluate the cost effectiveness, performance and efficiencies of solid waste management in City of Ann Arbor, a benchmark comparison of similar communities around the country was undertaken. Programs were reviewed based on similarities to Ann Arbor, including demographics, recovery performance and collection systems.

A sample of program recycling performance benchmarks follows. The first chart provides performance benchmarks for recycling and composting.

Table 1
Comparable Communities Overview
(Year 2000)

	Boulder CO	Champaign IL	Madison WI	Minneapolis MN	Orange Cty NC	Portland OR	Ann Arbor MI
Population	110,700	64,280	200,800	358,785	107,000	505,000	112,000
# HH served	37,500	24,500	59,200	114,000	48,200	132,000	46,000
SW Generated (lbs/per/day)	3.00	3.00[1]	2.53	2.46	3.79	2.75	2.70[1]
SW diverted	36.4%	28.2%	46.3%	29.4%	32.2%[3]	50.3%	39.6%
% recycled	30.4%	5.90%	19.1%	16.6%	25.0%	27.4%	21.6%
% composted	6%	22.3%	27.2%	12.7%	7.2%	22.9%	18.0%
Curb recycle (lbs/hhld/yr)	513	155	501	384	479	661	727
Total recycle (lbs/hhld/yr	983	203	567	471	345[4]	889[2]	511
Yard waste collection (lbs/hhld/yr)	193	771	809	360	401[5]	742	521

[1] *estimate only from plans*
[2] *not including multi-family housing units which would bring average down*
[3] *includes residential/commercial/institutional for whole county*
[4] *includes single family and multi-family only without drop-off or rural curbside*
[5] *leave collection only applied to single family homes*

BENCHMARK COST COMPARISONS

An additional aspect of the benchmark effort compared the costs of current service. To the extent possible, actual costs were calculated for each benchmark community. This is often difficult due to differences in collection systems, arrangements with service providers, and the way in which costs for various programs are sometimes bundled together. This means that the numbers below do not reflect actual processing operating and capital costs, but rather, the actual direct costs to the participating community or as allocated by household. Administrative, education and overhead costs are not always available for every community and may impact cost per ton estimates (this is true in particular for Portland).

Costs are also highly variable for certain programs such as yard waste collection. Some communities offer seasonal, or weekly pickup throughout the growing season, while others only offer fall bulk leaf and some one-time spring collections. Boulder, for example, offers only a drop-off option for yard waste. Also, highly variable tree cover and housing density in these cities results in varying yard waste generation data.

The chart below provides comparisons of cost of service. To the extent possible, actual costs were calculated for each benchmark community. There are many differences in service and level of cost data that should be considered in reviewing these cost figures. Program details are available in the Appendix.

Table 2
Cost Comparison – Program Cost per Ton
(Year 2000)

Program ($/ton)	Boulder CO	Champaign IL	Madison WI	Minneapolis MN	Orange Cty NC	Portland OR	Ann Arbor MI
Solid Waste							
Collection	$152[1]	$126[2]	$192	$81	$87	$63	$112
Disposal	[2]	[2]	[2]	$42	$43	$51	[2]
Recycling							
Collection	$40		$146	$111	$157[1]	$78[1]	$139
Processing	$7		[1]	$37	[1]	[1]	$9
Revenue Share	($3)		($8)	($37)	n.a.	($4)	($18)
Yard Waste							
Collect/Process	$22	$14	n.a.	$114	$91	$34	$85[4]
Total[3]	$117	$95	$138	$126	$139	$130	$115

[1]*Collection and Processing/Disposal aggregated.*
[2]*Includes some recycling costs*
[3]*Does not include fall leaf collection cost*
[4]*Blends the "per ton" costs above proportionate to weight and includes other program/administrative/education costs*

Table 3 below compares costs per household for the benchmark communities. Again, differences in program types and level of cost detail may account for variation in the results.

Table 3
Solid Waste Program Costs per Household - $/hhld/yr
(Year 2000)

	Boulder CO	Champaign IL	Madison WI	Minneapolis MN	Orange Cty NC	Portland OR	Ann Arbor MI
Recycling	$24		$29[4]	$31	$33	$35	$46
Solid Waste	$188	$156[1]	$137[4]	$109	$136	$91[2]	$98[6]
Yard waste	$2	$5	$45	$46[3]	$16	$13	$22
TOTAL	$188	$162	$211	$187	$196	$211	$166[6]

[1]*Includes some recycling*
[2]*Not including franchise fees, operating margin and other administrative expenses to haulers*
[3] *Includes extensive brush and tree chipping*
[4] *Includes curbside, multi-family, drop-off and commercial glass/food waste collection*
[5] *Budget based on Chapel Hill changeover to once week/curb from twice week/back yard @ $154/ hh/yr*
[6] *Includes some commercial solid waste services*

To a large extent, these costs reflect program costs paid by the household or by the municipalities, rather than actual operating costs. The exceptions here are Madison and the City of Ann Arbor, both of which provided comprehensive total program data, including labor, administration and other costs for its programs that are largely operated in-house. Note that not all communities provided accurate administrative and overhead cost information and this results in some difficulty in comparing cost data side-by-side.

Table 4
Comparable Programs – Service Provider Profile
(Year 2000)

	Boulder	Champaign	Orange Cty	Madison	Minneapolis	Portland	Ann Arbor
Solid Waste collection service provider	by subscription (private haulers)	8 private haulers	Contracts with haulers in cities, subscription in rural areas	City crews	City crews	Franchise arrange-ment with multiple private haulers	City crews
Recycling Collection Service provider	Private - Western Disposal	8 private haulers (required to provide recycling)	Contract with local firm, Orange Community Recyclers	City crews	City crew does 1/2 of city/ MRI does 1/2	Multiple private haulers	Non-profit Recycle Ann Arbor under Contract to City
Recycling Processing arrangement	Non-profit - Ecocycle	Bundled into solid waste collection services	Bundled into recycling collection contract	City pays processing fee at County MRF (avg. $41.57/ton)	Waste Management	Haulers bring materials to their own facilities	Delivered to City owned MRF operated under contract by FCR, Inc.
Revenue Share Arrangement	information not available	None	Revenue from Drop-off and Commercial Collection Only	City gets 80% of revenue; avg. $41.68 in '99	information not available	$0.15 credit per household	Processor keeps first $45; the City get 35% of remaining

[1] *Collection and Processing aggregated.

Following are more detailed profiles of each of the comparable communities.

BOULDER, COLORADO

Solid waste management in the City of Boulder, CO reflects a mostly private approach to provision of services, with the City generally serving as contract coordinator. The City employs one full time staff person, Kara Dinhoffer, who works in the City of Boulder's Environmental Affairs Department. The rest of the labor is contracted out.

SOLID WASTE SERVICES

Trash collection in Boulder is a private, subscription-based service. Residents choose their own trash hauler and subscribe to trash collection services directly with their chosen hauler. Four trash haulers service residents in Boulder, with Western Disposal provides 90 percent of Boulder households with trash hauling services. Residents pay $13 per month for one can and $14 for two cans.

RECYCLING PROGRAMS

The City oversees a curbside recycling collection program, which provides curbside service to 25,500 single family homes and 12,000 multifamily units. Western Disposal has the current contract to provide collection and EcoCycle, a non-profit, is under contract to provide processing services.

During 1988 and 1989, the first years of Boulder's curbside recycling program, only 50 to 60 percent of the households participated in the curbside recycling program. Today, approximately 80 percent of the households set recyclables at the curb at least once per month.

The curbside program features a three-sort system for curbside collection of (1) opened mail and office paper, (2) newspapers, and (3) commingled glass, cans, & plastic bottles. In addition, the city also sponsors the following waste reduction and recycling programs:

Year-round Yard Waste Drop Off Center

Spring Clean Up

Fall Leaf Drop Off

Public drop-off site and in some city parks and ballfields

Waste reduction and composting education programs

Administration of the city Environmental Purchasing Policy

City Office Recycling education and collection

Pilot On-Farm Composting project

Participation in these programs has been very high. There was a 14 percent increase in the number of vehicles using the Yard Waste Drop Off Center between 1998 and 1999. Residents dropped off more leaves during one day of the 1999 Fall Leaf drop off than in all five weeks of 1998 combined. Staff estimates between 10,000 and 12,000 households participate in Spring Clean Up on an annual basis.

With these high levels of participation, city residents are diverting between 34 and 40 percent of the residential waste stream. When commercial recycling rates are factored in, the overall diversion for the city is approximately 25 percent.

TRASH TAX

Trash haulers in Boulder set their own rates and rate structures for providing trash collection services, but are required to pay an occupation tax. This Trash Hauler's Occupation Tax is based on the level of trash service their customers subscribe to. Current Trash Tax Rates follow:

Current rates (initiated in 1997):

Per residential customer-one can service	$0.85/month
Per residential customer-two can service	$2.00/month
Per residential customer-unlimited service (except dumpster service)	$3.40/month
Per residential customer-bag service	$0.15/bag
Per residential dumpster customer or account	$0.70/cubic yard
Per commercial customer or account	$0.45/cubic yard

The trash tax is generally passed on to the customers, and identified as a separate line item on their trash bills. The revenue from the Trash tax funds the waste reduction and recycling programs. The city contracts with the Boulder Energy Conservation Center to provide waste reduction education services, including staffing the Recycle Boulder Hotline and coordinating recycling bin sales. The City of Boulder currently provides no recycling collection services to businesses – all commercial collection is provided on a free market basis.

Beginning in 1990, revenues from the Trash Tax have been used to fund the city's curbside recycling program. Currently, Trash Tax revenues also pay for the Yard Waste Drop Off Center, Spring Clean Up, the Fall Leaf drop-off, Parks and Pearl Street Mall recycling, education programs, City Office recycling, and the Recycling Coordinator personnel costs.

Trash Tax revenues have generally grown by about one percent per year. Expenses have grown by three to four percent, based on cost-of-living adjustments, plus one-time increases when new services have been brought on line. From 1995 to 1997, annual revenues exceed annual expenditures, resulting in a fund balance surplus. As service levels have increased and programs added, the fund balance surplus has been decreasing. In 1999, Trash Tax revenues were $1.1 million, and expenditures were $1.2 million. Continuation of the current waste reduction and recycling programs will leave no fund balance remaining after this year.

RECYCLING PROGRAM COSTS

Throughout the past decade, the costs of the curbside recycling program have risen steadily, from $162,250 in 1989 to $929,000 in 1999. Part of these costs are currently offset by revenue from the sale of the recyclable materials; $55,000 in 1999, expected to rise to approximately $85,000 in 2000. Costs grow by an automatic cost-of-living adjustment each year (recently, this has been between 2.5 and 3.5 percent). In addition, cost increases have occurred when new multiple-family complexes or new materials have been added to the collection program.

The Yard Waste Drop Off Center cost was $65,000 in 1999, a sharp increase from the prior year's expenses of $45,000. This is due entirely to increased usage. The Fall Leaf Drop Off program costs rose from $10,000 in 1998 to $14,000 in 1999, again due to increased usage. Spring Clean Up costs have been decreasing, down from $154,000 in 1998 to $129,000 in 1999. All other waste reduction programs have increased annually by a cost of living adjustment.

Collection	$738,000
Processing	$138,000
Hotline & Curbside Bin Sales	$45,000
Replacement bins	$5,000
Advertising/Outreach	$3,000
TOTAL 1999 Expenses	***$929,000***

Local recycling diversion target is 50% diversion – this is an informal goal and has not been mandated. There are no state mandated recycling diversion goals in Colorado. Landfilling in Colorado is still very cheap, and does not provide incentive to recycle.

Ecocycle currently operates a recycling processing facility which handles approximately 40,000 tons per year. In addition, a new facility is under construction, which will be owned by the Boulder County Recycling and Composting Authority. This facility is designed for 75,000 tons per year and scheduled to be complete in July of 2001.

PROPOSED CHANGES

In April of 2000, the City of Boulder Staff proposed a restructuring of the Recycle Boulder Programs. There were five different scenarios presented:

Option 1 No Change to Current Program

Option 1A Expansion of Current Curbside Recycling Program

Option 2 City Trash and Recycling Service – City Crews

Option 2A City Trash and Recycling Service – Private Contracts for Service

Option 3 Private, Subscription trash and recycling service – with regulatory controls

The City has ruled out Options 1 and 1A because they don't help meet the 50% waste diversion goal, and there are no additional revenues generated. They City plans to make a decision on this in June 2000.

BOULDER COUNTY

Boulder County operates a Household Hazardous Waste Collection Facility, which is open 3 days a week, and is located at the Western Disposal Transfer Station. Each of the municipalities in the county contributes toward this program. The City of Boulder contributes $140,000 per year through the City's wastewater treatment plant. The facility also has a HHW reuse program, where the facility is open one day a week for pickup of paints and other HHW for reuse by other residents.

The Boulder County Recycling and Composting Authority (BCRCA) is an inter-governmental authority which is made up of all the incorporated cities and townships within Boulder County. The Authority is funded through the countywide recycling sales tax, which is set to sunset in December 2001. The tax is 1/10 of a cent on each dollar spent on all goods sold in the county. The tax was passed by the voters with a slim 51% approval margin.

The Authority has been responsible for the procurement of the new Boulder County Recyclables Processing Center (RPC). It is estimated that over half the money raised by the recycling tax, some $13 million, will be spent on the design and construction of the new facility. The BCRCA has voted for dissolution of the Authority when the tax sunsets, and the BCRCA's assets to be transferred to the Boulder County Commissioners. The BCRCA and the County Commissioners have begun developing a transition plan to address such issues as the administration of the new RPC, management of ongoing BCRCA programs and fiscal oversight over the remaining tax funds.

CONSTRUCTION AND DEMOLITION RECYCLING

An extensive construction & demolition waste recycling program has been set up by the Boulder Energy Conservation Center, a non-profit organization. This program is called Resource 2000 and they work with contractors who are demolishing buildings – the building owner donates the materials to Resource 2000 as a tax write-off, and the demolition contractor is paid through the material revenues. Resource 2000 acts as a broker of the construction materials, selling materials to other builders/owners. Resource 2000 maintains a lumberyard near the Western Disposal transfer station in which they store and sell used construction materials to residents and businesses.

Resource 2000 began operating in 1996. They accept wood, flooring, doors, windows, electrical materials, ducting, fencing, hardware, plumbing materials, insulation, cabinetry, and landscaping materials. All items must be in good condition. They DO NOT accept painted wood, carped, hollow core doors, single-pane windows, furnaces, porcelain fixtures, and fiberglass or cellulose insulation.

ReSource 2000 has a fax distribution list for large quantities or hard to find items. They also have a quarterly newsletter in which they advertise valuable materials in inventory as well as upcoming deconstruction projects and materials to be available.

MADISON, WISCONSIN

The range of solid waste management services in Madison, Wisconsin are almost entirely municipally operated, with the exception of processing and disposal. City crews collect refuse, recyclables and yard waste.

SOLID WASTE COLLECTION

City crews collect approximately 39,000 tons of solid waste annually from 59,329 households in the City. Material is hauled to a City owned and operated transfer station for transport to the Dane County Landfill. The transfer station originally operated as a refuse-derived-fuel processing facility but has been converted to transfer only.

Two-person crews using side-loaders provide weekly trash collection. Residents may use standard trash bags or up to 35-gallon cans, with an unlimited number of cans allowed.

Disposal fees are established by the Dane County Landfill and in 1999 were $32 per ton. Collection costs average $81.43 per ton and transfer station processing and hauling costs average $9.73 per ton for a total cost of $123.16 per ton for refuse handling. These costs do include administration and overhead.

The City also provides a large item collection program for a range of metal and non-metal items, including appliances, fluorescents and computers and tires.

RECYCLING SERVICES

A well-established curbside recycling program in Madison claims an ambitious participation rate of nearly 100 percent of households served. This may be in part due to a mandatory recycling program, and a landfill ban on a range of items, including paper, plastic, metal, yard waste and batteries.

City crews provide collection services to all single family households, at a cost of approximately $124 per ton. Residents must use a "madisonpride" bag for commingled containers. Newspaper, corrugated cardboard, magazines and phone books must be separately bundled or bagged. Material is hauled to the Dane County MRF where a processing fee is paid. In 1999, this fee averaged $41.57 per ton. The City also receives a revenue credit of 80%, averaging $41.68 per ton in 1999.

YARD WASTE PROGRAMS

Madison offers yard waste collection for bagged material twice in April, and then opens three drop-off sites for materials during the growing season. Brush collection occurs once per month in each of the five divisions of the city's collection area. City crews conduct fall leaf collection three times in the fall. All yard waste except for brush is transferred to the County's Compost site where a tip fee of approximately $2.83 per ton is assessed.

SOLID WASTE PROGRAM COSTS

Madison provides an excellent accounting of all of its solid waste management programs, including administration and overhead, education, collection, processing and transfer for refuse, recycling and yard waste. Because of the detail available, a budget summary is provided in Table 5 below.

Table 5: City of Madison Solid Waste Program Costs (1998)

Service Area	Cost	Tonnage	Cost/ton	Cost/hhld
Refuse collection	$3,203,870	39,343	$81.43	$54
Transfer station processing costs	$177,432	48,197	$3.68	$2.99
Transfer station hauling costs	$287,709	47,521	$6.05	$4.85
Refuse disposal	$1,515,579	47,361	$32	$25.55
Recycling collection/ processing	$1,861,932	14,860	$125.29	$31.38
Brush collection & chipping	$1,361,654	6,380	$213	$22.95
Transfer station brush site	$161,933	7,521	$21.53	$2.73
Bulk leaf Collection & processing	$933,410	11,422	$81.72	$15.73
Yard waste spring cleanup and drop-off	$269.261	6.209	$43.37	$4.54
Large items	$1,340,799	8,082	$165.89	$22.60
TOTAL COSTS	$11,113,583	86,299	$128.77	$187.32

PORTLAND, OREGON

Portland has designated several "franchise" areas and bid out services to private haulers. Rates are set by the City, through an "open-book" negotiation with the franchise haulers.

Section 8.1(A) of the Franchise Agreement requires the City to perform an annual rate review to establish a rate schedule for all levels of residential solid waste and recycling service. The City's rate structure is developed with several objectives in mind, including:

- Providing uniform solid waste, recycling and yard debris collection services citywide.
- Providing customers with a variety of service level options to meet individual needs.
- Pricing services, in most cases, at the true cost of service.
- Providing incentives to recycle and reduce waste generation.

Establishing a rate schedule designed to recover operating costs and capital costs of the franchised haulers, and provide an opportunity to earn a fair profit

Residents are billed by the hauler for comprehensive solid waste, recycling and yard waste collection and processing services. The adopted rate for fiscal year 1999-2000 was $17.60 per household per month, including $7.59 for waste collection and disposal, $2.88 for recycling, administrative fees, a franchise fee of $0.61 and a recyclable material "revenue rebate" of $0.15.

The table below outlines the adopted rate adjustments for the most common service types.

Table 6: City of Portland Rate Structure

	Adopted FY 1999-2000	*FY 1998-99*
Service Level	***Rates***	***Rates***
20-Gallon Minican	$15.10	$14.60
32-Gallon-Weekly	$17.60	$17.20
35-Gallon Rollcart	$19.45	$18.50
60-Gallon Rollcart	$23.35	$22.90
90-Gallon Rollcart	$26.50	$27.55
32-Gallon Monthly	$10.40	$10.10
Weekly Recycling Only	$ 4.50	$ 4.50
Terrain Differential	$ 2.30	$ 2.20

Rates are the sum of from nine to eleven cost components, depending on the type of service. The following table breaks the rate for 32-gallon weekly service into its nine components.[1] The greatest upward pressure on this rate came from increases in the yard debris and solid waste collection charges and a decrease in revenues from the sale of recycled materials.

[1] Other components found in other service levels include an incentive discount for 20-gallon minicans, disincentive premiums for multiple container service and for 60- and 90-gallon rollcarts, and a rollcart/container rental and maintenance charge.

Table 7: City of Portland: 32-gallon can rate (cost/hhld/month)

Rate Component	*FY 1999-2000 Rate*	*FY 1998-99 Rate*
Collection Charge	$4.20	$ 4.15
Disposal Charge	3.39	3.35
Recycling Charge	2.88	2.92
Yard Debris Collection Charge	0.89	0.73
Yard Debris Tipping Charge	0.17	0.26
General and Administrative	3.96	3.88
Operating Margin	1.66	1.61
Less Sale of Recyclable Material	(0.15)	(0.29)
Franchise Fee	0.61	0.59
Total	$17.60	$17.20

The City of Portland strives to promote high quality garbage, recycling, and yard debris collection services while simultaneously maximizing recycling participation and diversion. The following summarizes current program features and performance data.

SOLID WASTE

Portland franchises residential waste collection service and sets the rates that may be charged residential customers. Sixty-nine franchises were initially issued in 1991. Through mergers and sales this has been reduced to 41 franchises as of April 1999. Franchises range in size from 200 customers to over 43,000 customers. Mergers and acquisitions will likely continue to occur, creating a more consolidated system with fewer franchises.

Weekly curbside garbage and recycling collection is the standard level of service. However, customers may select among several service levels, and have the option of non-curb service, monthly service, and/or on-call service. The City sets a variable rate schedule based on the size and number of containers, and the frequency of collection. Rates are lower for smaller volume containers and for a given container size for fewer containers. The variable rate structure gives customers an incentive to reduce the volume of their solid waste destined for the landfill, either by generating less waste or by recycling part of their waste stream. Appendix 1 provides a complete list of residential solid waste, recycling, and yard debris rates.

As of December 1998, 17.2% of residential customers were subscribing to the 20-gallon mini-can service. Overall, 83.3% of the City's residential customers subscribed to a weekly 35-40 gallon rollcart, 32-gallon can, 20-gallon minican, once-a-month garbage service, recycling-only or on-call garbage service. In 1998, the amount of solid waste disposed per customer household was 1,476 pounds, compared to 1,697 pounds in 1992.

RECYCLING

Two recycling districts provide recycling services to customers of any residential franchise having fewer than 3,000 customers. The remaining franchises directly provide collection of recyclable material for their customers. Mergers and acquisitions have blurred this distinction somewhat, as some customers of larger franchises who were formally with small franchises have retained recycling services through one of the recycling districts. As of December 31, 1998, the two recycling districts had a total of 58,000 customers, with another 74,000 customers obtaining recycling services directly from franchised haulers.

The City of Portland specifies 13 items as recyclable. Plastic bottles, telephone books, aseptic juice and milk cartons, aerosol cans, and scrap (mixed waste) paper were added to the curbside recycling program between 1992 and 1996. Other recyclable material includes newspaper, glass, cardboard, aluminum, tin cans, scrap metals, and motor oil. Portland switched from source separated curbside collection to commingled in October of 1999. Collection costs dropped from $3.45 to $2.88 per household per month.

The city also subsidizes three drop-off depots and requires all multi-family housing complexes to have recycling for; newspapers, scrap paper, and or three other materials. Those three materials are selected by the complex owner or manager from this list: glass bottles and jars (clear and green); magazines; corrugated cardboard and kraft paper (brown bags); plastic bottles (including milk jugs); steel "tin" cans. This recycling requirement affects all residential properties of five units and larger, such as apartments, condominiums, mobile home parks and moorages, within Portland's Urban Services Boundary. The requirement has been in effect since January 1996.

Curbside recycling is weekly, and residents use two yellow bins to divide containers and paper. The city's own extensive education program is augmented by Metro, a regional government serving 3 counties surrounding the Portland area. Metro provides extensive public information services supporting recycling, waste reduction and other environmental services.

In 1999, there was an average of 661 pounds of recyclable materials diverted per customer household, versus 560 pounds in 1994 and 226 pounds in 1991, prior to franchising.

YARD DEBRIS

Yard debris is collected on a biweekly basis, with options for customers to set out extras and/or subscribe to 60- or 90-gallon yard debris rollcart service. The yard debris set-out rate has increased from about 25% in 1994 to 31.7% in 1998, with yard debris diversion also increasing, from 230 pounds per household in 1994 to 301 pounds per household in 1998. Prior to going to biweekly collection in 1993, the monthly program was only diverting about 100 pounds of yard debris per household annually.

Increased diversion of yard debris is significant because State law requires jurisdictions to offer weekly collection of yard debris unless it can be demonstrated that the alternative program disposes similar percentages of yard debris to that disposed by jurisdictions with weekly programs. Portland did not select a weekly program because it would have required a substantial rate increase and customers had shown a strong preference for retaining the less costly, every other week system. Metro, the City of Portland, and other local governments in the region undertook extensive waste sorting studies to determine the effectiveness of keeping yard debris out of the waste stream. In a three-year study begun in 1994, annual waste sorts were conducted at the height of the spring growing season by measuring the amount of yard debris in statistically reliable samples of garbage truck loads.

The effectiveness of Portland's program has improved dramatically since the onset of measuring. In 1994, Portland's garbage was shown to contain 11.28% yard debris by weight, compared to 4.59% for weekly programs. These measurements fell to 5.62% and 4.9%, respectively, in 1995, and 3.77% and 3.6%, respectively, in 1996. Independent statistical analysis deemed Portland's every other week program equivalent to a weekly program in keeping yard debris out of the waste stream. Therefore, Metro does not require Portland to implement a weekly program and further waste stream sampling is not required.

MULTI-FAMILY RECYCLING

While the multifamily mandatory recycling program has generally been successful, the most common failure to comply at most sites is the lack of recycling opportunity for tenants to recycle mixed waste paper. Haulers reported collecting about 7350 tons of household recyclables from multifamily accounts in 1998. This amounts to about 220 lbs. per household. Staff estimates that over 95% of the multifamily complexes in the city are providing recycling services to their tenants. Following are some specific ways BES works to maintain a high recycling rate in the multifamily sector:

> The Solid Waste & Recycling Program and the City's Energy Office publish a semi-annual recycling newsletter, *The Complex Recycler*, and distribute it to multifamily owners and managers. It includes inserts for posting or reproducing and distributing to tenants.
>
> BES continues to provide recycling container labels without charge to commercial permittees. These stickers are available in English and several other languages for multifamily (and other commercial) sites, informing residents what materials are accepted and how to prepare them for recycling. Similarly, BES provides multifamily tenant recycling flyers to permittees. The flyers are available in 16 languages.
>
> Portland State University, under contract to the City, has been restickering the recycling shelters at complexes. Because many commercial haulers now collect recyclables in a commingled fashion, PSU is adding "Mixed Waste Paper" stickers to paper recycling containers at complexes that currently are not offering the opportunity to recycle that material.

Staff visited 103 businesses in 1998 to see if they were in compliance with the City's 1996 recycling requirement. Of those, 45 needed to make some modification to their existing recycling program to be fully in compliance. After a "thirty day assistance period" all of those 45 businesses had made the necessary changes to their programs. In addition, staff registered 27 telephone complaints against commercial permitted haulers. Of those, 16 resulted in the sending of a Notice of Potential Violation, the vast majority of these were for early morning collection of solid waste at multifamily complexes.

COMMERCIAL PROGRAMS

Solid Waste & Recycling Program staff, along with other local jurisdictions, participated in the BRAG program in 1998. BRAG, the Business Recycling Awards Group, is a regional recognition program wherein businesses can receive positive promotion in local media, a certificate and a window decal, for their activities in recycling, waste prevention, and buying recycled content products. There are two levels of award, Basic BRAG and Distinguished BRAG. Portland commercial customers also receive an annual BRAG newsletter with recycling and waste reduction ideas along with a listing of regional BRAG winners. In 1998, 18 businesses received BRAG recognition.

Portland State University, under contract to the City, provides assistance to businesses in setting up and improving their recycling systems. In 1998, PSU assisted 28 businesses. PSU also worked with BES staff during the winter holiday season to encourage grocery stores and bakeries to donate their usable food to food banks, and to reduce other food wastes going into the garbage. Over two hundred businesses were contacted in this effort

MINNEAPOLIS, MN

Solid waste services in the City of Minneapolis are literally divided in two: City crews provide bi-weekly curbside recycling services in addition to regular solid waste and yard debris collection to approximately half the city, while the rest of the city receive service from private sector contractors, as negotiated by the City.

Residents receive a public utility bill, including a solid waste base fee covering the cost of solid waste collection, recycling collection, yard trimmings collection, neighborhoods clean sweeps and the South Transfer station--essentially everything but the cost of disposing of garbage. In addition, a $2.23 monthly solid waste management tax is assessed. The City offers a recycling credit of $7 per dwelling unit to registered buildings whose residents participate in the recycling program.

Residents now also pay a disposal fee based on the size and number of garbage carts registered at the property: $4/cart/month for large, 90-gallon carts, or $2/cart/month for small 22-gallon carts. This "pay as you throw" approach has helped increase participation in recycling.

On recycling day, residents may place at the curb a range of bulk items, including major appliances, metal items (bed frames, grills, bicycles, clothesline poles, shelves, pipes, swing sets); TVs, computers, and computer monitors and carpet. Of these “large items”, metals are recycled to the extent possible and computer equipment is consigned to a processor which recycles as much as possible.

Recyclables, except batteries, are processed and marketed a contract with a private processor.

SOLID WASTE AND RECYCLING FEES

Each household is also assessed a Hennepin County for program development, and other environmental services

The State of Minnesota also requires Minneapolis to collect a tax on mixed municipal solid waste management services. The solid waste base fee has a taxable and a non-taxable component. The taxable component is for mixed municipal solid waste management services: the taxable component per dwelling unit per month is $15.00, with a $7.00 credit for recyclers. The non-taxable component of the solid waste base fee is the portion that pays for recycling, yard trimmings and other materials separated from the waste stream. The entire cart disposal fee is taxable.

The primary source of funding is the Solid Waste Base Fee and Disposal Fees charged on the Public Works Utility Bill. The Solid Waste Base fee is $20 unit/month. The Large Cart Disposal fee is $4 cart/month and the Small Cart Disposal fee is $2 cart/month. The Recycling Credit, for participating households, is $7/unit/month.

Table 8: Minneapolis 1999 Solid Waste Budget: Expense by Object

Salaries and Wages	$5,047,358

Benefits	$1,819,234
Contractual Services	$14,780,534
OPERATING	$542,231
Equipment.capital	$542,231
TOTAL EXPENSE	$23,063,857

Table 9: Minneapolis 1999 Solid Waste Budget: Expense by Division

Solid Waste Collection	$10,970,070
Recycling	$3,768,277
Disposal	$4,504,788
Yard Waste	$2,417,394
Large item and problem materials	$689,182
South Transfer Station	$714,162
TOTAL	$23,063,857

CHAMPAIGN, ILLINOIS

The City of Champaign has a population of approximately 66,888, and neighboring City of Urbana has a population of approximately 38,000. The University of Illinois campus is located in both cities, with the campus split by Wright Street which is the dividing line between these two cities. Most of the classes are held on the Champaign side, while most of the dorms are on the Urbana side.

RECYCLING

The City of Champaign has initiated a recycling program requirement, which states haulers must provide recycling to all residential dwellings with 1 to 4 units. In spite of this requirement, Champaign's recovery rate for recycling is lower than expected. The haulers licensing agreement with the City requires monthly reports on volumes. This program is administered through the City's Public Works Department, Special Services Division.

The City also operates a drop-off recycling center, which is open 24 hours a day, 7 days a week to provide service to the multifamily dwellings of 5 units or more. This site is a two-sort program in which materials are sorted into two types of materials: containers and fibers. Acceptable containers include aluminum, tin, #1 and #2 plastics, and glass. Acceptable fibers include cardboard, newspapers, magazines, office paper, and fiberboard. No other materials are accepted. This drop-off site is partially funded by a grant from the Illinois Department of Commerce and Community affairs.

City ordinances provide for curbside recycling to all citizens who live in a single to four-plex residence. This service is provided by the waste hauler who is required to provide recycling as apart of basic service and must accept the following materials: newspaper, glass, tin, aluminum, and HDPE plastics. Haulers must provide curbside collection of recyclables at least once a week and cannot count materials toward the "per container cost" of service. There are approximately 8 haulers that are providing recycling services to Champaign residents.

The City of Urbana also has a municipal recycling program, in which they contract our recycling services to a recycling collection company. There is a separate University Recycling program, which services most of the University buildings and operates a MRF on campus.

YARD WASTE

Three yard waste collection days are sponsored through the City of Champaign and are offered to single through four-plex residences. These yard waste collections occur in the fall and in the spring. There is an additional Christmas tree collection in the winter. Yard waste is picked up curbside on these days, and there is a drop-off yard waste recycling center that is open year round. This center is operated jointly by the City of Champaign, the city of Urbana, and Champaign County. There is a fee for all dropped off material.

SOLID WASTE

The nearest landfill is located in Danville, Illinois, approximately 40 miles from Champaign, which is owned and operated by Brickyard Disposal. The two largest waste haulers operating in the City of Champaign, Central Waste and ABC Sanitary. Some of the smaller haulers bring their recyclable materials to these larger haulers for processing. ABC Sanitary has a small sorting facility for recyclables within the City of Champaign.

There is no Household Hazardous Waste collection program in the Cities of Champaign or Urbana. The State of Illinois sponsors collection days twice a year, but there are no collection sites near the Champaign area. There is an active Adopt-A-Highway Program in the City of Champaign. There is no commercial recycling mandated in the city, although businesses can pay their waste haulers for recycling services. The city does not have data on these recycling quantities.

When asked about innovative programs within the City, they don't feel that their programs are innovative. As next steps, they would like to see household hazardous waste addressed, as well as computer and office machine recycling and source reduction programs. The "model community program" is something that was operated through the University, and through the Central States Education Center and is no longer in operation.

CITY OF URBANA

Programs in the City of Urbana are included here, because of its proximity to Champaign. Some data is still being supplied, but a brief summary of programs follows.

The City of Urbana has a municipal recycling collection program in which they contract out recycling services to a private collection company. In September of 1986 their curbside collection program started as one of the first in the State of Illinois. They expanded this to include all multifamily residents in 1999. This program is a two-stream collection of fibers and containers. The fibers are processed by the University of Illinois processing facility and the containers go to Resource Management Company in the Chicago area for processing.

The city's recycling program is operated by ABC Sanitary and is paid for by a mandatory recycling tax. This tax is $2/month/unit for single family residents and $2.75/month/unit for multifamily residents. The dorms are charged at $1.45 times the number of legal occupants.

ORANGE COUNTY, NORTH CAROLINA

Orange County, North Carolina has a population of approximately 107,000, with the City of Chapel Hill being the largest municipality. The University of North Carolina with enrollment and staff exceeding 30,000 has their main campus located in Chapel Hill. The City of Carboro is located adjacent to Chapel Hill, similar to the Ann Arbor/Ypsilanti area.

In the last year, the communities of Chapel Hill, Carboro and Hillsborough have taken steps to consolidate solid waste operations into a new County-wide solid waste administrative and operations unit.

RECYCLING

The City of Chapel Hill together with Orange County contract with a company called Waste Industries to collect curbside recyclables from residences and small businesses in the towns of Carrboro, Chapel Hill and Hillsborough. Waste Industries collected from 13,500 curbside units in FY97-98.

Orange County has contracts with Orange Community Recycling (OCR), a private company, to collect recyclables from six staffed Orange County operated drop-off sites as well as four other non-staff municipal drop-off sites, and some commercial buildings including CH-Carrboro Town Offices. OCR's recycling services include an extensive collection program for glass from bars/restaurants. OCR also collects food waste from a number of area restaurants for delivery to the compost facility.

Tonnage delivered to local recycling facilities includes newspaper, magazines, white paper, mixed paper, corrugated cardboard, aluminum cans, steel cans, plastic and glass. Most material is collected source separated. Waste Industries and Orange Community Recycling operate private recycling facilities that process the material. The County is considering development of its own recycling facility that would have the capability to process commingled recyclables.

Following are the costs for recycling services in the urban and rural areas and the multi-family segment.

Current Costs/Current Volumes	Urban	Rural	Multi-Family	Total System
Tons	3,088	744	1,494	5,326
Cost of Collection	$389,083.54	$157,196.00	$137,125.62	$683,405.16
Unit Cost of Collection	$ 126.00 /ton	$ 211.23 /ton	$ 91.78 /ton	$ 128.31 /ton
Cost of Processing	$113,544.46	$ 27,364.00	$ 54,934.38	$195,842.84
Unit Cost of Processing	$ 36.77 /ton	$ 36.77 /ton	$ 36.77 /ton	$ 36.77 /ton
Total Cost of Recycling	$502,628.00	$184,560.00	$192,060.00	$879,248.00
Total Unit Cost of Recycling	$ 162.77 /ton	$ 248.00 /ton	$ 128.55 /ton	$ 165.08 /ton

A comprehensive community education and outreach program is operated by Chapel Hill and Orange County staff including newsletters, education and training and a standard school solid waste/recycling curriculum.

A local ordinance has been adopted County-wide that bans corrugated cardboard from being disposed of in the landfill. As a result, most area businesses have corrugated collection provided separately, typically by private firms. Recent waste sort data indicate that less than 2% of the waste stream is corrugated cardboard.

The University of North Carolina contracts with Orange Recycling Services to collect the majority of the materials including white paper, mixed paper, green bar computer paper, color paper and aluminum cans from inside the buildings, and newspaper, magazines, glass, aluminum and plastic from the outdoor recycling sites. UNC contracts with Waste Industries to collect corrugated cardboard from the outdoor recycling sites and UNC in-house staff collect white paper, confidential paper, corrugated cardboard, aluminum cans and plastic.

Orange Recycling Services collects recyclables from the UNC hospital including newspaper, magazines, white paper, mixed paper, green bar computer paper, corrugated cardboard, aluminum cans, steel cans and plastic and glass.

The Orange County School Recycling program includes 13 facilities (9 schools, 1 garage, 1 maintenance building, 1 central office and 1 support services office). Orange Recycling Services collects the recyclables including newspaper, magazines, white paper, mixed paper, green bar computer paper, corrugated cardboard, aluminum cans, tin cans and plastic. Polystyrene was discontinued from the program in 1998.

Chapel Hill-Carrboro City Schools (CHCCS) with an enrollment in 1998 or 7,811 has a recycling program that includes 10 facilities (9 schools and 1 central office). Waste Industries collects the CHCCS recyclables including newspaper, magazines, white paper, mixed paper, corrugated cardboard and commingled aluminum and tin cans. Polystyrene was discontinued in 1997.

Orange County and its member communities have adopted a solid waste plan that would increase the current recovery rate of 38% to 45% by the year 2001 and 61% by the year 2006. Part of this would be accomplished with development of a material recovery facility, probably at the County owned and operated landfill north of Chapel Hill.

The chart on the following page shows the projected growth in recycling tonnage from various programs that potentially would be directed to the planned recycling facility.

Table 10: Orange County Projected Recycling Goals

RECYCLED TONNAGE SOURCE	1997/98	2002/03	YEAR 10
- Urban Single Family Curbside	3,141	5,623	5,765
- Rural Single Family Curbside	539	4,130	4,234
- Drop-off System	2,346	4,441	4,553
- Multi-Family	942	2,836	2,908
- Commercial	1,542	4,070	4,190
TOTALS	8,510	21,100	21,650

SOLID WASTE AND OTHER RECOVERY PROGRAMS

Residents and businesses of the County's main population centers (Carrboro, Chapel Hill, and Hillsborough) have tax-provided garbage collection. Many residents and businesses in unincorporated Orange County contract with private haulers to have their waste disposed. Some county residents bring their garbage to Orange County's solid waste convenience centers which are drop-off centers for solid waste and recyclables.

The Town of Chapel Hill currently operates the Orange County Regional Landfill and other solid waste management activities at their Eubanks Road facility. These activities broadly serve the public and private sectors' solid waste management needs in Orange County. Currently the landfill site occupies two parcels of properties, one north of Eubanks Road (current Construction and Demolition Waste Landfill) and one south of Eubanks Road (current solid waste landfilling activities). Other solid waste management activities are also included on both sites and are described below.

Current activities at the Orange County landfill site include: construction and demolition waste landfilling; construction and demolition waste recovery; mixed solid waste landfilling; drop-off recycling collection (County Convenience Center); and tire, white goods, and mulch management. A brief summary of these activities is presented in the following table.

Activity Name	Volumes	Comments
Solid waste landfilling	5 ,000 tons per month	Estimated 7 year life span remaining
Recyclable and mixed solid waste drop-off collection	150 tons per month	Can be relocated nearby with minimal effort and budget
Construction and demolition waste landfilling	2,000 tons per month	Estimated 18 months life span remaining.
Construction and demolition waste recovery	40 tons per month	Recovery limited by crew and facility size
Recycling Processing and Equipment Maintenance	2,500 tons per year	Activities on adjoining land to the west but traffic will go through site
Tire recovery	1,097 tons per year	Operated on southern edge of site.
White goods recovery	409 tons per year	Operated on southern edge of site.
Household Hazardous Waste Collection	58.6 tons per year	Operated on an isolated portion of the south side landfill site
Mulch management	6,263 tons per year	Very little grass is accepted, mostly brush and leaves.

ATTACHMENT C

SUMMARIES OF ADVANCE APPROACHES

Research papers were prepared on key Plan Update issues and various aspects of advanced approaches to recovery including:

- Advanced Comprehensive strategies for Commercial and Residential Recovery
- Alternative Bidding Approaches for Long-term Service Partners
- Capital Improvement Financing Approaches
- Carpet Recycling
- Comparative Analysis of Alternative Recycling Collection Systems
- Electronics and Electrical Equipment Recycling Programs
- Food Residuals Composting
- Markets for Additional Materials and Problem Markets for Current Materials
- Comparative Analysis of Options for implementing Pay-as-you-Throw Systems in the City of Ann Arbor Solid Waste System.

Brief summaries follow: More detailed coverage of these advance approaches are provided in Volume 2, Background Materials for this Plan Update.

ADVANCED COMPREHENSIVE STRATEGIES FOR COMMERCIAL AND RESIDENTIAL RECOVERY

The City has developed an extensive infrastructure for recovery of residential recyclables and compostables with recycling service provided to single-family households and multi-family households, yard waste collection from single family households and recycling/yard waste composting opportunities at the drop-off center. The City has developed a more limited infrastructure for recovery of commercial waste with cardboard collection routes in the downtown area and collection of commingled paper and commingled bottles/cans on a commercial route that includes schools and other institutions. This latter program is designed to take advantage of "MSW sort line" at the MRF that allows recyclables to be pulled from loads of MSW that have high recycled content.

The capacity of these programs has enabled the City to achieve relatively high levels of recovery. A recovery rate that exceeds 50% has been calculated based on the waste, recyclables and compostables collected by the city from residential and commercial sources and taking the Michigan container deposit law into account (recycling residential bottles/cans through retail outlets). The City tracks this data on a monthly basis, using the truck scale located at the City MRF/Transfer Station.

Additional waste and recyclables are generated by other commercial sources within the City that choose not to use the base level of City provided solid waste service or that generate more waste than the City service will pickup. These commercial generators are serviced by private haulers with most of the waste and recyclables taken to other sites within the region for disposal and/or recycling. Little to no data is available on these activities.

The City's focus on building recycling and yard waste collection capacity over the last five-years has been a key to achieving both environmental and financial benefits to the City through recovery oriented waste management strategies. As part of the five-year plan update, the next stage of capacity building for enhanced comprehensive recovery from residential and commercial sources must be investigated to determine if additional environmental and economic benefits are possible. This background report provides an overview of the options for advanced recovery that may be applicable to the City's situation.

There are several different approaches that can be taken to achieving higher levels of recovery from residential and commercial sources. As described below, some of these options require significant investments in collection and processing equipment while others build on the investment already made by the City in its collection and processing infrastructure.

- Primary processing treats the whole solid waste stream as if it were uniform and homogenous, moving the material through various thermal, mechanical and/or chemical processing phases to recover value, in the form of by-products like recyclables or compostables, natural gas or other fuels.

- Secondary Processing uses many of the same technologies as primary processing but targets the remaining fraction of the waste stream after other fractions have already been handled through other collection and processing approaches such as source separated recycling programs.

- Targeted Stream Processing splits off highly recoverable fractions of the waste stream that are more uniform and recoverable. Material is then moved through composting or recycling systems and prepared for marketing.

The City currently places a high emphasis on the Targeted Stream Processing approach. The MSW Sort Line at the MRF and the methane recovery operations at its closed landfill represent hybrid forms of the Secondary Processing approach. Primary Processing Strategies have not been part of the City's approach to date.

The City has made a significant investment in its existing collection, processing and waste transfer system. This investment has resulted in significant environmental and economic benefits to the City. This Targeted Stream Processing Approach has served the City well. There are additional steps that can be taken to further develop the Targeted Stream strategy in order to reach higher levels of diversion cost effectively. Investments will be required, both with improvements to the processing capacity, as well as improvements to the collection system. These investments, while significant, are much lower in terms of overall capital required, than any of the Primary Processing or Secondary Processing technologies cited above. As an added benefit, these Targeted Stream strategies have already shown their cost effectiveness and are expected to continue to have costs that are in the same range in the future, remaining well below the operating costs of the Primary Processing or Secondary Processing technologies. The net result is that the City should be able to achieve diversion levels of 60 to 70% overall should it decide to implement the full range of Targeted Stream strategies described above, with capital requirements and operating costs well below those of the Primary Processing or Secondary Processing technologies.

ALTERNATIVE BIDDING APPROACHES FOR LONG-TERM SERVICE PARTNERS

The City has contracts with Recycle Ann Arbor and agreements with its own municipal work force to provide certain services. These arrangements including pricing were developed through competitive bidding. It is apparent, however, that the private sector is not as able as in the past to provide a pool of possible bidders to provide these services. The private hauling business has consolidated to just a few firms, only one of which is an active service provider for trash collection to residential customers in the area. These same companies have also retreated from past interest in being full service recycling service providers. Specialty operations, such as the recycling drop-off center, are of even less interest to the private sector.

The bottom line is that the competitive bidding process may no longer be the best way to secure affordable pricing for contracted services. The remaining private hauler in the region has indicated that they are not interested in participating in competitive bidding "just for benchmarking purposes". While their corporate owner will obviously require them to bid, it is unlikely that such a bidding environment will produce true competition to provide the service.

There are several different types of approaches that can be used as an alternate to competitive bidding. The assumption for these approaches is that the "right service provider" is already under contract and that the real issues are service, performance and price. The following approaches can be used to define these three contract parameters outside of a competitive bidding process: 1) price/performance benchmarking; 2) cost plus price/performance contract negotiation, and 3) gainsharing, continuous improvement and other performance incentive systems.

The lack of a truly competitive marketplace for certain services may eliminate competitive bidding as a viable option for contract renewals in some cases. The bidding process then becomes a time consuming and costly procedure that may, in fact, be counterproductive to the City's goals for quality service at the best cost. Feedback was received from one of the private service providers that indicated a strong reluctance to participate in bidding in which the public agency was allowed to proposed under "managed competition" bid approaches.

Alternatives to competitive bidding do exist and are being used by public agencies when their current service provider is satisfactory. Service, performance and price then become the focus of contract negotiations. Tools such as performance/price benchmarking, cost plus and gainsharing incentive systems provide a framework for negotiation that keep both parties honest in their positions and in the final outcome.

Such approaches also provide a better environment for a long-term "partnership" to emerge in which both parties better understand the others needs. This allows both parties to come to a mutual agreement on short and long-term goals and creates a framework where innovation and continuous improvement are integrated into the program development process.

CAPITAL IMPROVEMENT FINANCING APPROACHES

The City currently finances solid waste and recycling capital improvements through the a variety of municipal capital financing techniques, varying from direct purchase, use of a motor vehicle fund, through a Capital Renewal and Replacement Fund, voter approved bonds, dedicated solid waste millages, interdepartmental equipment loans, and private financing.

There are several areas were additional funding may be needed for the solid waste and recycling programs. Following are the options that could be considered.

- Annual Operating Budget: Purchases can be made out of agency funds as part of the annual operating budget. This is best used for timed purchases that can be spaced out over the useful life of the item. An example would be replacing a fleet of 7 trucks with a useful life of 7 years by purchasing a new truck each year. Containers with a useful life of ten years could have 10% of them replaced each year.

- Revenue Fund Surplus: A program that is set up as a enterprise or revenue fund can build up a surplus each year which will result in a enterprise fund surplus that can then be allocated to various purposes. One purpose is as a buffer for variations in operating income, perhaps due to changes in sales of revenue based services such as special pickups, commercial trash collection, or sales of bags and tags in a PAYT program. These funds can also be used to establish capital replacement set-asides. The Southeast Oakland County Resource Recovery Authority (SOCRRA) for example, takes in all revenue from the sale of recyclables, then sets aside a portion up to a predetermined cap that is reserved for replacement of equipment in their MRF. Any funds above that cap are returned to its member communities as a tipping fee off—set.

- Renewal/Replacement Funds: A related approach is the establishment of a separate fund, supported by direct annual appropriations, one time appropriations, annual budget surplus or allocated revenue streams. The City's current MRF Capital Renewal and Replacement Fund is an example of this approach.

- Capital Lease Financing: Outside sources of lease-to-own financing can be used for specific equipment purchases, typically rolling stock or large capital items that are easily recovered and sold under default conditions or end-of-lease decisions where the user decides not to purchase. Often the equipment suppliers can provide for this lease financing as part of their equipment bid.

- Private Investment: Private sector service providers invest their own funds in a system, when the contract terms include appropriate compensation and consideration. This typically includes a longer term for the contract, methods for reimbursement of the investment should the public sector terminate the contract or take possession, and related guarantees of return on the investment through "put-of-pay" arrangements or guaranteed levels of flow through the project. The current arrangements with the MRF operator include some of these provisions and were used in the initial project to finance some of the equipment.

- Bond Financing: There are a variety of methods of public sector bond financing that may be used to finance larger capital purchases. Attached is a description of terms for various types of bond financing. Voter approved general obligation bonds were used in the original solid waste bond that funded much of the current expansion of the recycling and waste transfer system. Revenue bonds, in which a guaranteed revenue stream is used to cover bond principal and interest payments, is a common technique for utility system funding, yet has never been used in Ann Arbor for solid waste system funding.

The method of capital financing used varies with the size of the capital purchase that is required as well as the timing (ie: one time versus routine replacement). Bond financing is more appropriate to larger purchases in order to justify the set-up costs, legal fees, and related costs). Bond financing is also more appropriate for longer life investments.

Agency funding mechanisms including replacement funds provide a more flexible system that is capable of handling smaller purchases, shorter life purchases and more routine replacement purchases. It is important, in this approach, to maintain a discipline about funding these capital purchases if an agency funds system is used. Scheduled contributions to set-aside funds are one way to build this discipline.

Private investment provides an attractive, though typically more expensive, method of financing that can provide flexibility in system capitalization and quick-turn around. Contractual protections must be built into private financing approaches to protect the interests of both the City and the private sector participant.

CARPET RECYCLING

Each year 3-4 million pounds of carpeting enter the waste stream in the United States. All of the major carpet manufacturers in the United States are developing programs and processes to recycle this material. The challenge is to do this at a cost that is competitive with other disposal options.

The heterogeneous composition of carpet makes it more difficult to process than many other post consumer materials like plastic, glass and metal. Additional processing is required to separate the different materials. The typical carpet is made of four major components, face yarn, primary backing, adhesive and secondary backing. Face yarn can be made from nylon, polypropylene, wool, polyester or acrylic but the vast majority (~75%) of carpets use nylon (either nylon 6 or nylon 6,6) for the face fiber. Even though the yarn is the most obvious component of the carpet it only accounts for approximately 50% of the weight of new carpet. The adhesive (composed of latex and calcium carbonate) accounts for approximately 40% of the carpet. Primary backing (~5%), usually polypropylene is the material that the face yarn is tufted through and separates the face yarn above from the adhesive below. Finally the secondary backing at ~5% provides strength and keeps the carpet square.

For the purposes of post-consumer collection and processing it is important to realize that the above description describes the content of new carpeting. Used carpet is about 30% heavier due to trapped dirt.

There are several potential fates for post-consumer carpet if they are to be kept out of the waste stream. Since most carpet is removed because of appearance, if the appearance can be returned to "like new", it can be reused. Several companies are currently doing this.

- Reconditioning is a form of reuse and hence is higher on the waste reduction hierarchy than recycling. Though complete life cycle analysis has not yet been done it is reasonable to assume this option will consume less material and energy than other re-manufacturing and recycling processes.

- The simplest method of converting carpet to raw material for other processes is to chop, grind and extrude it. This process removes about half of the adhesive and filler while producing a poor quality pellet with voids and an unpleasant smell. None the less these pellets can be combined with additional polyolefin to produce a feed stock for making molded parts.

- The face yarn is the most valuable portion of the carpet. It can be separated by shearing. The advantages of this method include: the resulting fibers can be combined with virgin fibers by spinning. A bi-component spinning method uses virgin fibers to surround a core of recycled fibers hiding the color of the recycled fibers. Both residential and commercial carpets can be sheared. Disadvantages include: The dirt must first be removed from the carpet; a lot of the fiber is left behind because they are in and behind the backing.

- Several other downcycling options have been investigated. Pilot programs or at lease field studies have been conducted for uses as reinforcement for fiber reinforced thermoplastics, fiber reinforced concrete, and fiber reinforced paving.

By far the largest scale recycling programs are those run by the carpet manufacturers themselves. For many years programs have been operating to recycle nylon. In these programs collection sites sort used carpets and ship them to a central facility where the nylon face fiber is de-polymerized back to its starting material. A few of these companies have expressed an interest in collaborating with the City's drop-off operation for carpet recovery.

COMPARATIVE ANALYSIS OF ALTERNATIVE RECYCLING COLLECTION SYSTEMS

The City has contracts with Recycle Ann Arbor and FCR that provide for two stream recycling collection with separate collection of solid waste and yard waste.

The collection costs for recyclables are a significant component of recycling program costs and therefore many municipalities in North America are considering methods of minimizing these costs through changes in collection equipment and methods/schedules for collection. Some of these changes will effect the required processing capabilities of the MRF.

Costs of collection are effected by;

- the type of collection system and equipment used.

- the particular characteristics of the community being served and level of service.

The factors which effect unit collection costs for recyclables based on the collection system and equipment used include the type of collection container, degree of separation required at the curb, and co-collection with other waste streams at the curb.

An evaluation of alternative collection systems can be a very complex analysis. However, most municipalities have found that;

- reducing collection frequency has resulted in cost savings, but can require distribution of calendars to maximize participation,

- reducing the number of compartments from 4 or 5 to 2 compartments will reduce collection costs as long as separate containers are used to store separately the fibers and containers at the curb,

- co-collection of commingled recyclables and garbage streams can result in significant cost savings.

The results from a number of demonstration and full scale collection systems can be used as a guide to comparing the costs of collection using different collection methods.

Ann Arbor has captured significant savings in recycling collection by moving to the two-stream commingled technology. Further savings from moving to single stream or a "wet/dry" system offer potential but will require significant modifications to the collection fleet and to the processing facility and require a great deal of capital. There is evidence that these approaches may result in higher recovery levels and some cost savings.

ELECTRONICS AND ELECTRICAL EQUIPMENT RECYCLING PROGRAMS

Electronics are a small component of MSW by weight but they contribute significantly to the lead burden, in some studies they are second only to batteries. Electronics are also a source of mercury and PCBs (Polychlorinated biphenyl - not printed circuit boards. In this report we will write out circuit boards and abbreviate polychlorinated biphenyl as PCBs)

Electronics provide an excellent opportunity for expanded recycling programs because so little is currently recycled. According to the EPA report "Household End-of-Life Electrical and Electronic Equipment" only 14% of the electronic equipment is either reused or recycled. That compares to 70% for major appliances.

This component of MSW is not going away. In fact small household electronic appliances are one of the fastest growing sources of household electricity consumption. This growth in appliances will become a growth in waste in the future. According to the Electronics Industries Association, the following numbers of units were sold in 1996 in the US. In future years these will all end up in the waste stream.

There are several different types of programs for the collection of Electronic and Electrical Equipment (EEE) and even more ways to combine features of each., In order to determine which system is best for Ann Arbor, it will be necessary to compare Ann Arbor with other existing programs. Unfortunately, because there are only a few programs that focus on end-of-life issues this will be a challenging task. (There are many more that simply focus on reuse, which is only part of the traditional solid waste management hierarchy of reduce, reuse, recycle, incinerate, and landfill.) Other programs are operating in different environments with regulatory pressures, state-wide mandates, high disposal costs and pay-as-you-throw programs. Even so there is a tremendous amount that Ann Arbor can learn from these pioneering programs to avoid mistakes and save money.

Electrical and electronic recycling programs don't pay for themselves. Major costs include the disposal of the CRT (Cathode Ray Tube) and potentially transportation costs. CRT disposal costs range from $5 to $10 per CRT. The larger programs (like Massachusetts) have the economy of scale, but even smaller programs like the Bluestem project in Linn County, Iowa are able to get disposal cost down to $5 per CRT by competitively bidding the demanufacturing and disposal contracts. Transportation costs very widely and depend on the distance from the collection site to the demanufacturing facility. Transportation and logistical barriers will need to be thoroughly evaluated for the Southeastern Michigan region before Ann Arbor begins accepting large quantities of household electronic equipment.

Surveys indicate a willingness to pay $5 per CRT is as high as 79% for residential markets. In the Bluestem project people were happy to pay the $5. In fact, it seemed to confirm their belief that the computer they spent so much on just a few years ago was not worthless. Keep in mind, that project is in a pay-as-you-throw county.

There is still concern about other residents that are not willing to pay and the potential for illegal dumping if CRT's are banned from landfills. In addition the willingness to pay on the part of small TV repair shops tends to be much lower. In general, TV repair shops tend to present more complicated issues. Hennepin County is licensing TV repair shops as generators of special waste. There is also the concern that some people/businesses are accumulating monitors and computers as a speculative venture, possibly hoping to sell them overseas. These are all important collection issues that have been addressed by existing programs and Ann Arbor need not reinvent the wheel.

Typically the costs of collection, reuse and recycling become more economical as the infrastructure develops. Ann Arbor should expect initial costs to be higher than ultimate costs. Again there is much to be learned from existing programs to improve the economics of end-of-life management for EEE materials, including:

- Efficient sorting based on toxicity and expected fate,
- Development of partnering opportunities (i.e. charitable organizations and job training),
- Minimize transportation cost by location choice and maximizing load,
- Choosing collection sites for maximum accessibility,
- Utilize volunteers to reduce labor costs,
- Use outreach efforts to maximize community participation,
- Evaluate willingness-to-pay.

As of early 2002, a major regional and state-wide initiative is being started by Counties in SE Michigan with leadership by Oakland County, Washtenaw County, the City of Ann Arbor, Recycle Ann Arbor, the Michigan Recycling Coalition, and others. Part of that effort is funded with grant support from the State of Michigan and is targeted at developing a collection consortium of public sector programs to build a supply network for waste electronics. Similar initiatives, partially sponsored by the Automation Alley high-tech program in Oakland County, are targeted at generating a supply network for commercial sources of waste electronics. The final objective, being led by Oakland County, is the recruitment of a major center for processing of waste electronics in SE Michigan, meeting the highest standards for environmental protection, material reuse and cost effectiveness.

FOOD RESIDUALS COMPOSTING

Local and State officials all over the country are taking a second look at their waste streams. Now that recycling and yard waste composting systems are up and running officials are turning to food waste to improve their diversion rate. The U.S. Environmental Protection Agency estimates that food residuals account for nearly 7% of the municipal solid waste stream. Nationally only paper, yard waste, plastic and metal are larger contributors to our landfills.

The solution being found all over the country is food residuals composting. Of the four composting categories that Biocycle tracks (biosolids, MSW, yard trimmings and food residuals) food residuals is the fastest growing and is expected to continue its fast growth "well into the 21st century."

The first thing that local officials typically do is launch an aggressive backyard composting program. Next they turn to Institutional, Commercial and Industrial (ICI) composting programs looking for expansion opportunities. ICI composting facilities fall into several categories. First, well established agricultural production facilities generating clean feedstock materials include farming and animal production as well as meat and fat renderers. This area is mature and there is little room for growth. The second category is industrial processors (e.g., fruit juice plants, fish processors etc.) but they tend to take material generated on-site exclusively and are not open to offsite sources. Institutional composters (e.g., correctional facilities, schools etc.) are also not very likely to be open to new sources of material due to their small size, and regulatory concerns about taking material generated offsite.

Potential growth in these three types of programs should not be ignored but it is likely to take place in the form of an increase in the number of programs, not the size of existing programs. There may be a critical role to play for municipalities in education, promotion and expertise but not in actual facility development.

The greatest opportunities for growth come from projects that take a combination of feedstocks including pre-consumer, post-consumer, food processing and other organic waste. For the City of Ann Arbor, this may mean building on the success of the already operating windrow composting facility for yard waste (and a small quantity of food waste) that could be further expanded to accept food residuals.

There are many ways to produce compost from food residuals but by far the most common is the windrow. In-vessel (with or without worms) is often used for on-site systems installed at institutions because it can be done at the point of generation with less demand on material handling and complete elimination of any concern for vermin related management problems. Aerated windrow and static piles are also sometimes used.

The majority of facilities that compost food residuals use windrow techniques as shown in the summary below..

60%	windrows
11%	in-vessel
10%	aerated static piles
6%	aerated windrows
5%	static piles
5%	vermicomposting
	few backyard style bins

The "Integrated Solid Waste Management Plan Update" Prepared by the Solid Waste Commission, 1994, included the following recommendations.

Composting Recommendations

a. Use of the existing compost facility should be maximized by expanding the material that the City collects and processes, to include all uncooked vegetative waste, commercial vegetative waste, and other organic materials.

b. A pilot compost collection program should include select commercial locations that generate large quantities of vegetative waste,

c. The City should contract for a study of expanded source-separated compostable organic material collection and processing facility,

d. The City should test a pilot for collection of home vegetative food waste, then make a decision on expanding the program City-wide based on that pilot.

The "Feasibility Assessment: Composting Food Waste & Source Separated Organics in a Biosolids Composting Program, " A report prepared for the City of Ann Arbor Solid Waste Department by Resource Recycling Systems, Inc. in 1996 included recommendations to incorporate food waste and other source separated organics into the current windrow composting facility. A pilot program was recommended to demonstrate feasibility.

The following steps should now be considered:

- **Expand the University program to include all dining facilities**
- **Include commercial generators**
- **Expand yard waste composting to include residential food residuals**
- **Form a waste data collection team to study the Art Fairs this year**

MARKETS FOR ADDITIONAL MATERIALS AND PROBLEM MARKETS FOR CURRENT MATERIALS

The City has two primary arrangements for moving recyclable materials to markets.

Material Recovery Facility: The MRF, operated by FCR under contract to the City, is an important distribution channel for many of the City's recyclable materials. One of its strongest features is the ability to take in commingled recyclable material, separate the different marketable products, clean those products, and then package them to market specifications. This is a key outlet for the City's high volume commodity type recyclables including all its paper products, its bottles and cans and misc. metals and wood waste.

ɔn: The Drop-off Station, operated by Recycle Ann Arbor under contract to the City, is an important distribution channel for special materials, smaller quantity materials, and bulky materials that can be recycled. This is a key outlet for the City's smaller volume and or bulky recyclables such as ferrous scrap metal, non-ferrous scrap metal, recoverable wood waste, batteries, Styrofoam, books, etc.

The City's ability to respond to new markets, or deal with problems with current markets, will only be as strong as its links with these two key partners, or links with new partners under new arrangements should they be necessary.

Interviews with the operators of these two facilities included questions about any problem markets that they are dealing with. Problems were identified with textiles, green glass, aggregate glass, and new single serve packaging like the plastic beer bottle.

It is important to note the absence of a number of candidate materials from this list. Many products are recycled by Ann Arbor's two facilities. This includes products that other programs do not take and that are generally viewed as difficult to recycle. The fact that materials like box-board, phone books, Styrofoam, and hard-cover books are all successfully recovered is evidence of the success that has been achieved with the City's materials marketing strategy building on the capabilities of its two service partners.

There are market areas where new opportunities are being created, either by taking currently recyclable materials in new forms, or by accepting new recyclable materials. These include continued growth in commingled paper markets, the "All Plastic Bottles" campaign being sponsored by the American Plastics Council (APC), engineered plastics, carpeting, polyurethane foam, LDPE plastic packaging, and drywall.

COMPARATIVE ANALYSIS OF OPTIONS FOR IMPLEMENTING PAY-AS-YOU-THROW SYSTEMS IN THE CITY OF ANN ARBOR SOLID WASTE SYSTEM.

The City of Ann Arbor is a participant in the American Big Cities (ABC) Campaign for Pay-As-You-Throw (PAYT). Through the campaign, EPA provided assistance to the City including a 2-day workshop held on August 2nd and 3rd of 2000. A report on that workshop has been provided to the City. The following document further develops some of the recommendations from that document into specific scenarios for PAYT in the City of Ann Arbor Solid Waste System. Note that the recommendations of the EPA report are necessary steps in implementing any of the following scenarios.

Six different scenarios have been developed based on the EPA report and the background on PAYT available through the workshop and through other technical resources. These scenarios, ordered from least to greatest impact, are:

D. Status Quo With Focus on Non-PAYT Measures to Increase Diversion/Participation

E. Millage Funded System w/Can Limits and Supplemental Bag/Tag PAYT Program

F. Bag/Tag PAYT System with Base Level of Millage Funded Service

G. Subscription PAYT System with Base Level of Millage Funded Service

H. Bag/Tag PAYT System with no Millage

I. Subscription PAYT System with no Millage

These scenarios are developed further with more detailed descriptions and assessments of any advantages and disadvantages. Based on strong response in the citizen and business surveys favoring the current approaches and generally reacting negatively to financial incentives it was decided that the first scenario "Status Quo With Focus on Non-PAYT Measures to Increase Diversion/Participation" would be integrated into the strategies that make up the Plan Update.

ATTACHMENT D

SERVICE PROVIDER SHORT PROFILES

City of Ann Arbor Solid Waste Department – Collection Operations: The Department's collection operation provides weekly solid waste collection for 22,000 single family homes using 25 cubic yard side loading compacting Lodal vehicles, along with weekly curbside collection of compostables from April through November, collection of Christmas trees in January and side-door refuse and recycling collection for disabled individuals. They also provide dumpster collection of solid waste to a majority of the 24,000 multi-family residential units including Christmas tree bulk pickup from prearranged sites in January. They also provide dumpster collection of solid waste to approximately half of the city's 3,000 non-residential locations as well as weekly recycling collection from downtown businesses, weekly recycling collection from dedicated recycling dumpsters.

Key Issues include 1) continue focus on customer satisfaction to minimize complaints and maximize service to residents and businesses; 2) meeting budget constraints and productivity targets; 3) manpower constraints especially regarding peak demand periods for yard waste collection and student move-in/move-out; 4) curbside recycling leave-behinds that become waste collection problems; 5) downtown recycling non-compliance and education requirements; 6) school program cardboard dumpsters; 7) lack of tipping area at the MRF for corrugated and mixed commercial paper loads; and 8) abuse of the current rules for services provided during student move-in/move-out.

City of Ann Arbor Streets Maintenance Division: The Streets Maintenance Division provides two pickups each fall of leaves swept to the curb in Ann Arbor's residential neighborhoods. Also sweeps streets and assists in storm cleanup of fallen limbs, branches, etc. These responsibilities are all secondary to its primary mission of street maintenance and winter ice and snow management. The fall leaf pickups are provide through a combination of equipment (front-end loaders, rear-packing compaction trucks, street sweepers, dump trucks) and personnel (primarily from Streets with help from Parks and Solid Waste). Streets maintains detailed records of the allocation of these resources and their cost, broken down by each neighborhood service sector in the fall leaf program.

Key Issues include 1) need for used rear packer trucks for the fall leaf collection, which are no longer available from the Solid Waste Department since front-loader trucks were purchased; 2) Utilization of the rear packers during the balance of the year, since the leaf program only requires 8 to 10 weeks of availability; and 3) adequate and convenient space at the compost site for quick and efficient tipping of collected leaf material during the fall.

City of Ann Arbor Parks Department: The Parks Department operates all City parks and recreation facilities, collaborating with Ann Arbor Public Schools and other similar partners in open space, parks, recreation, forestry and natural resource management within the City.

Parks has a small sized (8 to 10 cy) rear load compacting trash collection vehicle that completes a routine collection route servicing 550 barrels located in Parks facilities. Their annual trash pickup has been consistent over the last three years at about 120 tons of compacted trash per year. February is the low month at 4 tons and July is the highest at 18 tons. They have a backup vehicle and have 1 full time staff equivalent dedicated to this route, active 6 days a week, with 100% utilization.

Some Parks facilities (pools, etc.) have dumpsters that are provided by and serviced by the Solid Waste Department. Parks has responsibility for servicing special events at Parks facilities and recreational grounds with a good example being the football Saturday events at Almendinger Park. Large festivals, such as the Blues and Jazz Festival, are required to contract for their own trash management although there is spillover impact on the Parks facilities that the Department must service.

The Forestry operation within Parks is responsible for brush and wood chipping. A fleet of three brush chippers and receiving trucks is kept active by Parks as they maintain and upgrade the City's forest resource. Parks also arranges for harvesting of aquatic growth from ponds on City property and manages the disposal of these organic materials through composting at isolated park sites.

Parks is also actively involved in incidents of illegal dumping, especially since many of these events are targeted at the more remote areas of the City, which generally have land that Parks is responsible for. Parks has a roll-off container at their maintenance yard that is used for tipping of bulky waste material, and is hauled by a private contractor to a landfill.

Key Issues include 1) Demand for more waste barrels in parks and open space that can't be met since their own collection route is at 100% capacity; 2) demand for more dumpsters at facilities, that can't be met unless the Department of Solid Waste picks up these as new locations; 3) expanding volumes of trash primarily due to use of single service containers at parks (recently proposed for coverage under the state container deposit law); 4) lack of any significant recycling services; 5) more wood chips are generated by their operations than they can use; 6) their own composting sites are being converted to active park area which is limiting their options for handling organic materials from parks operations.

FCR, City MRF Operator: FCR, a for-profit corporation owned by the Casella Waste Systems, a publicly traded for-profit corporation, is under contract to the City to operate the City's Transfer Station and Material Recovery Facility. FCR is the strongest recycling processor in the area with non-City accounts including communities and/or their haulers from as far away as Toledo and Kalamazoo. At last reported account, recyclables from as many as 28 different communities are being directed to the facility.

Key Issues include 1) upgrading the current approach to management of the MRF Renewal and Replacement Fund to address the high rate of throughput for the MRF; 2) related issues regarding upgrades to the building and site, which are not scheduled into the MRF Renewal and Replacement Fund; 3) need to expand the MRF to deal with expanded tip floor for commercial fiber, to more easily handle large volumes of sortable commercial waste by adding an OCC screen, to improve space allocation around the baler discharge and storage area, and improvements in the tipping area for solid waste; 4) possible need to renegotiating transfer arrangement if a new disposal site is chose during the next disposal services bid process; 5) attention to problem materials like textiles that are not working out well at the MRF; 6) continue focus on building a "partnership" relationship with the City for the MRF.

Recycle Ann Arbor: Recycle Ann Arbor (RAA) is the not-for-profit 501 (c)(3) corporation providing recycling services in and around Ann Arbor since 1976 and under contract to the City since the early 80's. RAA is a subsidiary of the Ecology Center, a membership based not-for-profit 501 (c)(3) corporation, providing environmental programming in the City of Ann Arbor since 1971. RAA provides 1) Residential Curbside Recycling Collection, 2) Residential Multi-Family Curb-Cart Recycling Collection, 3) Commercial Curb-Cart Recycling Collection, 40 Commercial High-Grade Recycling Collection, 5) Reuse Center, 6) Residential Roll-off Service for Recycling Drop-offs, and 7) Operate the City Recycling and Solid Waste Drop-off Center.

Key Issues include 1) Drop-off Recycling Site needs expanding for additional materials and higher volumes, an improved incentive structure to address the high volumes of materials being delivered to the facility and shifting to a more partnership contracting arrangement with the City; 2) Curbside recycling contract with the City needs longer time frame, more emphasis on recovery and incentives for the higher recovery that RAA is handling, an alternative to the competitive bidding process and more flexibility with use and upgrade of curbside equipment; 3) Curbcart system can be expanded to provide much larger range of service to commercial accounts; 4) partnership opportunities could be further developed between the City and RAA's Reuse Center; 5) collaboration with other communities may require attention to how the City, RAA and these other communities should organize; and 6) continued collaboration on education.

University of Michigan: U of M is a partner with the City in the Material Recovery Facility/Transfer Station and a participant in the vegetative waste composting pilot.. U of M has a contract with FCR for the same term as the City's for use of the MRF and Transfer Station. U of M invested some money in the initial development of the MRF. They are currently sending food waste from three dormitory kitchens to the Ann Arbor compost site as part of a vegetative waste composting pilot. Their waste management and recycling services operation is equipped with staff, collection trucks and containers as needed to handle their waste stream and recyclables. They run an efficient operation with a strong commitment to recycling and the ability to reduce costs in their solid waste system as their recovery programs gain strength.

Key Issues include 1) ready to expand the vegetative waste pilot as a permanent system; 2) planning on expanding volumes through collection at sports and recreation facilities, additional recyclables from the medical campus, small amounts of construction waste from U of M Services projects and animal bedding from life science operations; 3) continued focus on opportunities for additional recovery and improved bulky waste management during student move-in and move out, especially with recyclable computer packaging; and 4) concerns regarding commercial solid waste and recycling services at U of M operations in leased buildings, which the U of M waste and recycling operations are prohibited from servicing.

Washtenaw County Public Works Division of the Department of Environment and Infrastructure Services: The County oversees development of the County Solid Waste Plan required by the State of Michigan as the official designated planning agency and plan implementation agency. They administer the tip fee surcharge funds that are received from the Arbor Hills Landfill and Waste Management Center operated by Onyx in Salem Township. The County oversees the county-wide household hazardous waste program as well as the county's pollution prevention and toxics inspection program.

Key Issues include 1) commercial recycling in the County, a major focus of the just approved county solid waste plan and part of the required *Commercial Recycling Task Force* that will start up in 2001; 2) changes that are likely in the overall strategy for use of the landfill tip fee surcharge funds as the funds decline in real dollar value and part of an approach to use the more limited surcharge base to leverage new initiatives and new funding systems in partnership with local units of government, building on the funds that those communities are already dedicating to these issues, thus securing more "bang for the buck"; 3) City involvement in the required *Intergovernmental Task Force* that will start up in 2001 and be a major focus of county efforts to work with local governments on expanded recycling as described in the plan; and 4) continued focus on the county's household hazardous waste collection system including efforts to expand the range of services to the CESQG group (Conditionally Exempt Small Quantity Generators).

Mister Rubbish, A Division of Waste Management, Inc.: Waste Management is the largest private sector service provider in commercial waste services in City - could be as much as 90% of non-city accounts. It is also one of many providers of roll-off services.

Key Issues include 1) The City's 6 a.m. service restriction limits their options for early morning hour operation; 2) downtown shared accounts prevent accountability for location of containers, cleanliness/litter, condition of dumpsters, etc.; 3) construction and increased traffic makes service provision difficult and may indicate an interest in use of the City's transfer station; 4) movement of accounts to City primarily with apartment complexes; 5) inability to provide recycling data to communities that request it due to lack of scale at site; 6) ability to continue providing recycling services since the closure of their own recycling facility north of town; and 7) preference not to participate in bidding on city services when there is not an absolute commitment to privatize operations.

Onyx North America and the Arbor Hills Landfill and Resource Management Center: This landfill, located in Salem Township in Washtenaw County, receives all the solid waste delivered from the City's Transfer Station. Onyx North America Corporation is owned by Vivendi, a European Environmental Services and Infrastructure Company, having acquired the facility from BFI as part of the federal review of industry consolidation and mergers that occurred in the late 90's. This landfill is the most accessible landfill to the area with shortest haul distance and an agreement with Washtenaw County that provides 3% of revenues to the County for use in local solid waste management programs and which has resulted in additional funds being returned to the City for recycling programs.

Key Issues are limited to their interest in continuing to be the disposal service provider to the City and their willingness to bid competitively when the contract must be renewed in the next few years.

Calverts Processing Facility and Transfer Station: Calverts provides roll-off service to industrial and construction/demolition projects throughout the region, including Ann Arbor, and processes some of those roll-offs through their licensed processing facility off Jackson Road in Scio Township, west of Baker Road.

The processing facility is set up to maximize the recycling/separation of incoming loads of industrial dunnage, construction waste and demolition waste. Up to 90 percent of some loads are able to be recovered. On average it appears that recovery of materials brought to the facility is about 60%. Calverts also takes other loads direct to landfill either due to low recovery potential, easy access to landfill from site of generation, or requirements of generator that material be immediately landfilled.

Calverts probably handles approximately 20% of roll-off service inside the City limits. Main competitors in roll-off service include Mister Rubbish (WMI), Republic, Standard, Dinverno, as well as a number of firms from outside the area, primarily Jackson and Wayne County based firms.

Key Issues were limited to internal needs for additional capital to improve and upgrade the facility and expand its recycling capacity.