EXECUTIVE SUMMARY

The City of Winston-Salem’s Sanitation Division helps create a healthy environment for the City by the removal of waste materials to a sanitary location. The Division’s Recycle Today program is devoted to its mission of advancing waste reduction, thereby enhancing the quality of life in Winston-Salem. As part of a citywide Going Green initiative, a single-stream, biweekly, curbside recycling program has been adopted. The program functions through a public/private partnership between the City and Waste Management. The City has been innovative in its design and implementation of the new recycling program, and as such has realized numerous environmental and economic benefits. Recycling has been advanced through a change from dual stream to single-stream collection using 96-gallon rollout carts, rather than bins. Collection is carried out using a fleet of automated side loader trucks that return recyclables to a brand new state of the art materials recovery facility.
SECTION 1: DESIGN OF COLLECTION FACILITY/MANAGEMENT SYSTEM

Description of the System

As part of a citywide Going Green Initiative, the City of Winston-Salem, North Carolina has adopted a single-stream curbside recycling program. Going green with recycling is a top priority for all levels of government because of the realization of environmental and economic benefits.

The City provides recycling collection for all single-family households and some qualifying small businesses and multi-family housing complexes within its jurisdiction. The program is a collaborative effort between the City and a private contractor, Waste Management.

All citizens are provided with a blue, 96-gallon cart, which is placed at the curb on their assigned collection day. Collection takes place every other week.

Single-stream recycling, or commingling, does not require sorting of materials. All recyclable materials are mixed within the recycling cart.

The program allows the following materials to be recycled: newspapers, magazines, telephone books, junk mail/office paper, chipboard, corrugated cardboard, glass jars and bottles, plastic bottles, aluminum beverage cans, steel food and beverage cans, aerosol cans, cardboard milk and juice cartons and aluminum foil and pie tins.

Recyclable materials are collected using automated side loader trucks (ASLs), which are operated by one-man crews.

Recyclables are then taken to a Materials Recovery Facility (MRF) where they are separated, baled and prepared for market.
Merits of the System

Implementing a single-stream, bi-weekly, curbside recycling program has greatly benefited the City of Winston-Salem. The advantages of single-stream recycling are numerous. Allowing materials to be commingled into one container reduces sorting efforts on behalf of the citizen, thus allowing the potential for increased participation in the program. The ease of use for the customer leads to potentially higher rates of recovery and diversion of materials from the landfill.

Collection of recyclable materials increased by 22 percent in the first year of the program’s inception, resulting in a net savings of more than $800,000. The increased participation has been attributed to the larger capacity of the new 96-gallon rollout recycling carts and the convenience of commingling.

The reduced cost can be attributed to every other week collection with carts, compared with weekly collection before, and the need for fewer trucks because the automated collection trucks are faster than the manual collection that was required with bins. Fewer trucks also mean less greenhouse gas emissions.

Innovation and Uniqueness

The City of Winston-Salem initiated a pilot program to test citizen acceptance of a new recycling format and to ensure that the projected environmental and economic benefits would be met.

The pilot program was developed using a two-phased approach. The first phase began in the fall of 2007. A feasibility study was conducted using a sample of 176 households from two contiguous neighborhoods. Results from phase one of the pilot program determined that single-stream recycling reaps 2.19 times more recyclable materials. Moving to citywide single-stream recycling would yield a reduction of 29,278 tons of emissions, 75,500 cubic yards in the landfill, 1,716,570 gallons of oil and 116,859,758 gallons of water.

Feedback from the pilot program determined that citizens were satisfied with a change to single-stream recycling. They found the carts to be more manageable than the previous bin system, and found a greater ease of use without having to sort materials.

Positive results obtained from the first phase of the pilot program justified moving to a citywide single-stream recycling program.

Lessons learned from phase one determined that a bi-weekly, rather than weekly, collection model would better service the citizens of Winston-Salem. It was also decided that 96 gallon, rather than 65 gallon, carts were more appropriate. A larger capacity container would be needed when moving to a bi-weekly collection schedule to support the increase in materials.
The pilot study area was broadened to include sample neighborhoods from each of the City’s eight wards. In the fall of 2009, a $100,000 grant was awarded from the Department of Pollution Prevention and Environmental Assistance (DPPEA) to finance the purchase of 96-gallon carts for approximately 1800 households for a period of 36 months.

This phase of the pilot program allowed for daily operations and routing strategies to be tested and ensured a smooth transition into a citywide single-stream, curbside, recycling program would take place.

The City utilizes RouteSmart for ArcGIS; a state of the art computerized routing solution, to generate routes for recycling collection. The goal is to generate routes that are balanced by time and load, using the fewest trucks possible in the least amount of time.

In route creation, a unique challenge was to overlap recycling and refuse routes, so that the greatest amount of households had collection scheduled on the same day. The difficulty laid in the fact that there is no trash service on Monday, whereas there is recycling collection five days a week.

The City provides backyard collection service for the infirmed. The City is unique in that this program allows the citizen to self-certify that they are in need of the service, rather than having to get a signed note from a doctor. Once a citizen signs a form stating that they are unable to move their cart to the curb, they are added to a special collections list so that the driver knows to collect their recyclables from the backyard.

What Makes the System Different?

The City of Winston-Salem’s, single-stream, bi-weekly, curbside recycling program functions through a public/private partnership. The City has entered into a contract with Waste Management, whom has been contracted to collect and process recyclable materials. Waste Management supplies the fleet and labor and manages the materials recovery facility.

Both the City of Winston-Salem and Waste Management benefit from this public/private partnership. The City has no capital overhead and workers compensation liabilities. Waste Management has exclusive rights to all recyclables collected within the city limits, giving them firsthand knowledge of the quantities and types of commodities to be sold in the open market. The City and Waste Management participate in a revenue sharing program, in which the City receives 33% of all revenue generated from material sales. This is highly advantageous in a good market, however can carry considerable risk when the market is down.
SECTION 2: ENVIRONMENTAL CONTROLS & REGULATORY COMPLIANCE

Environmental Protection

Single-stream, curbside, bi-weekly recycling allows for more natural resources to be conserved and less virgin raw materials to be used. The ease of use of the single-stream system increases citizen participation.

Increased participation results in a greater amount of materials recovered, which in effect increases diversion rates from the landfill.

The use of automated vehicles decreases truck emissions and fuel consumption by allowing for faster collection and the ability for more collection points per work hour.

The use of large capacity carts, with lids, decreases the possibility of fiber commodities being lost due to excessive winds, thus reducing litter in neighborhoods.

The chart below shows the total annual tons of recyclable materials recovered for 2011-2012.

<table>
<thead>
<tr>
<th>Recycled Materials</th>
<th>Total Annual Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scrap Metals</td>
<td>177.48</td>
</tr>
<tr>
<td>Recycled Mixed Paper/Office Paper</td>
<td>665.55</td>
</tr>
<tr>
<td>Recycled Newspaper</td>
<td>7.188.03</td>
</tr>
<tr>
<td>Recycled Cardboard</td>
<td>177.47</td>
</tr>
<tr>
<td>Recycled Aluminum</td>
<td>99.30</td>
</tr>
<tr>
<td>Recycled Plastics</td>
<td>549.10</td>
</tr>
<tr>
<td>Recycled Glass</td>
<td>1,807.59</td>
</tr>
</tbody>
</table>

Environmental Quality

The overall impact on environmental quality and resource conservation for the year 2011-2012 is as follows: 36,589.01 cubic yards of landfill airspace saved, 104,359.20 mature trees saved, 827,404.36 gallons of oil saved, 56,217,350 gallons of water saved and 38,684,093.9 Kilowatt Hours of electricity saved.

Human Health

Automated curbside recycling has positive benefits on human health. Worker injury is kept to a minimum because the driver stays in the truck at all times. The operator is no longer coming into contact with recyclable materials, thus reducing worker injury.

Social injustice problems are also minimized. Every citizen is provided with the same level of service, regardless of race, culture, and socioeconomic status.

Furthermore, ASL trucks collect more materials in less time decreasing noise pollution in residential areas.
Facility Compatibility

A requirement for locating the new materials recovery facility was that it be positioned in such a way that made it a “good neighbor.” The building had to meet all City zoning ordinances, and was to have direct access to a highway to keep travel time to a minimum. Its strategic location provides easy access to other metropolitan centers in close proximity increasing the likelihood that it will be used by other municipalities for processing. The construction of the building was designed to allow for future expansion to house new equipment as commodities increase. The additional storage space at the facility provides an avenue for housing recyclables during times of mechanical breakdown.

Site Compliance

All trucks and equipment used in the City’s curbside recycling program are compliant with local, state and federal regulations.

The MRF is in strict compliance with all applicable regulations and permits. There is a management compliance system that ensures that all regulatory and permits requirements are met. The company is committed to environmental protection and conducts environmental audits at all of its facilities regularly.

The new facility has been reviewed by North Carolina Department of Environmental and Natural Resources (NCDENR) and the local fire department. There were no findings of any violations.

Evidence of Awards/Letters of Support

The City’s new recycling program has received positive coverage in the local newspaper. Several articles ran in the Winston-Salem Journal detailing the pilot program, the new materials recovery facility (see Supplemental Materials page 21) and the implementation of the citywide program (see Supplemental Materials page 22).

Most recently, on April 26, 2013 the Winston-Salem Journal published an article entitled City saves $800,000 with rollout recycling carts (see Supplemental Materials page 23).

The Mayor was interviewed stating the success of the program is “…double good news with the increased participation and savings to the city. More people are getting used to the new carts, and we have made a concerted effort to become a sustainable community. It helps us save money.”

The City Manager is quoted saying, “the change has been a win for everyone. This is a sustainability innovation that had immediate positive returns in cost and in environmental benefits.”
Integrated Solid Waste Management System

The City of Winston-Salem’s Sanitation Division creates a healthy environment by the removal of waste materials to a sanitary location. In addition, it promotes and advances waste reduction, reuse and recycling. In an effort to control waste generation as the population expands, and economic development takes place, the City has developed an integrated solid waste management program.

Residents are provided with weekly trash and yard waste pickup and bi-weekly recycling collection. Loose leaf removal occurs every fall and bulky item collection is offered every spring.

The disposal system is composed of four landfills, a leaf transfer site and a leaf processing site, a hazardous waste disposal facility and a recycling materials recovery facility.

Recycling collection is integrated and complementary to the refuse and yard waste collection systems. Recycling routes were generated to coincide with refuse routes wherever possible. 93% of the population has trash and recycling collection on the same day of the week.

Recycling, refuse and yard waste all function under the curbside collection system model using 96-gallon carts that are color coded based on collection type. As shown here, blue carts are for recycling, brown carts are for trash and green carts are for yard waste.
SECTION 3: PROGRAM PLANNING

Planning Process

In 1990, the City of Winston-Salem implemented a recycling program in accordance with North Carolina General Statute, 130A-309A and over the next two decades partnered with Waste Management Recycle America, (WMRA) to collect, process and market recyclables using a dual stream system.

In January 2009, with a stated goal of cost savings, the City launched a single-stream recycling pilot with 2200 households and the use of 65 gallon rollout carts. The pilot included educational sessions to prepare participants for a new method of recycling.

The pilot was devised to provide valid data for statistical reports and outcomes based on a sample of the population. Comparison of pretest and posttest results showed a strong correlation among single-stream recycling and increased pounds per week.

Citizens in the sample neighborhoods were pleased with the benefits they received and the City was able to postulate that moving to single-stream recycling would reap 6.89 pounds of additional recycling per week. As a result, it was determined that the city would transition to a biweekly, curbside, collection program using 96 gallon carts.

The implementation plan developed for transitioning to the new method included gaining political approvals, marketing, manufacturing and delivery of carts, and efficient routing giving special consideration to scheduling so as not to confuse or inconvenience program participants.

Key considerations for political approval were put forth by the City Council, including the construction of a state-of-the-art MRF.

The new MRF met all permitting and zoning criteria, was built in an industrial park inside the municipal corporate limits, has easy access to interstate highway, created an expanded partnership with the local school system to provide educational programming and demonstrated an overall good-neighbor demeanor.

Marketing the single-stream program included a campaign made-up of
newspaper interviews, television news stories, paid advertising, newspaper articles, and feature articles in the city’s quarterly newsletter as well as a link from the city webpage to a dedicated website.

A tri-fold brochure was delivered with each cart and an updated yearly schedule is available via the website. A full page spread, composed by the City’s Marketing Department ran in the Winston-Salem Journal (see Supplemental Materials Page 20).

Program information is also available through the City’s Call Center (Dial 311) providing citizens with information about schedules, allowable items and customer service issues.

Toter, a local vendor was awarded the contract to manufacture and deliver carts.

RouteSmart, a computer based routing application, was used to develop and maintain collection routes and maps while achieving the efficiencies realized in time motion studies.

Evidence of Effectiveness

The single-stream recycling program began in April 2012 with a goal of saving money and identifying efficient and effective recycling performance measures. This graph provides a comparison of recycling tons collected using the dual stream versus the single-stream collection method.

FY 2011-2012 data shows a set-out rate of 50.93% and household participation has grown to 86.59%.

Planning of the program has been effective given the stated goals have been met. Note the favorable variance of 927.89 recycling tons, the stated efficiency gains, the increase in unused landfill space from items diverted and sold and identification of measurements to aid with gathering, analyzing and interpreting the single stream data presented by WMRA as well as financial data retained by the city.

Plan for System Downtime

The City has a contingency plan for fleet and/or MRF downtime. If the MRF is down, all recyclables can be delivered to a transfer station located in Greensboro, North Carolina or taken directly to an alternate MRF in Raleigh, North Carolina.

If any of the ASLs breakdown, there are spare ASL equipped vehicles to run the routes or a spare rear-loader vehicles equipped with a cart tipping attachment.
SECTION 4: PERFORMANCE, ECONOMICS AND COST EFFECTIVENESS

Program Efficiency

Going Green by expanding recycling is a top priority for the City of Winston-Salem. Prior to 2011, the city averaged diverting 20.5 percent of refuse from the landfill. With implementation of single-stream bi-weekly, collection the Going Green goal to divert more refuse is imminent.

Most citizens in the city have joined the Going Green awareness to recycle. The latest recycling annual report showed almost 90 percent of citizens participated in the recycling program with a 50.93% set-out rate.

Citizens have been eager to support recycling because they recognize many economic and environmental benefits. The city has stayed one step ahead in capturing economic and environmental benefits by implementing new processes augmented by improved technology.

The on-going partnership with Waste Management has made it possible to increase recycling tons, as well as net revenue from recycled material sales.

The use of innovative applications such as RouteSmart, has streamlined recycling routes to minimize overall collection costs. All recycling efforts expand jobs, reduce landfill space, prevent pollution, decrease greenhouse gases, conserve natural resources, and sustain the environment for future generations.

Operational Performance

The operational performance achieved has exceeded the goals and expectations for the Recycle Today program. For comparison of other similar facilities, annual budget savings is most salient.

The table below depicts the impact of savings per household or collection point using the single-stream collection method for Winston-Salem and similar cities.

<table>
<thead>
<tr>
<th>City</th>
<th>Single-Stream Savings Impact</th>
<th>Households Collections</th>
<th>Savings Per Collections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raleigh</td>
<td>128,956.00</td>
<td>163,000</td>
<td>0.79</td>
</tr>
<tr>
<td>Charlotte</td>
<td>3,100,000.00</td>
<td>320,000</td>
<td>9.69</td>
</tr>
<tr>
<td>Winston-Salem</td>
<td>657,639.00</td>
<td>83,226</td>
<td>7.90</td>
</tr>
</tbody>
</table>
Increased savings has been recognized due to increased capacity of carts and time to service carts. The ripple effect of the cost structure, especially contract service costs, was recognized immediately after implementation of single-stream. Within five years the capital costs to purchase carts will be satisfied. Completion of the capital cost structure will add an additional $350,000 to annual savings from single-stream recycling. The gap between revenues and operating costs has narrowed, however; it is uncertain when the gap will close completely. Notwithstanding the obstacles preventing closure of the subsidy gap, the City has accomplished its immediate economic and environmental goals. The City has proven that a partnership to process and market recycled materials will be needed to capitalize on costs and revenues going forward.

Customer Service

In Winston-Salem, excellent customer service is a number one priority. The Mayor, City Council, City Manager, and professional staff abide by the city vision statement that depicts the importance of customer service.

The City is on-going in its efforts to keep customer service strong and vibrant. The City’s “One Team” customer service culture can be observed at all levels with employees and partners like Waste Management responsible and accountable to every customer.

The city has created many ways to link the customer to the city. The most often used link is our 24/7 call center, City Link. City Link has been designed to become the one-call information and help phone number for the city. City Link staff will answer questions or enter service requests into the CSR system to be addressed by the appropriate department. Citizens have appreciated this convenience as they can report problems and request information.

Our Vision - City Vision Statement
A municipal government deserving of public that provides excellent and innovative services, and is an active and cooperative partner in creating a vital community.
The City has enhanced customer service via a live Time Warner cable channel. The Government Channel WSTV 13 is the City of Winston-Salem’s Government Access Channel, available to subscribers of Time Warner basic cable in Forsyth County. The goal is to provide information about city government to the citizens of Winston-Salem and Forsyth County.

In addition to live coverage of the City Council and County Commissioner meetings, WSTV 13 offers a wide range of original programming designed to better inform and familiarize the community with the City’s departments, including Recycle Today. WSTV 13 runs informational billboards throughout the day and evening as a public service.

The City has an innovative webpage devoted to the recycling program called, Recycle Today. The web site is citizen friendly including recycling trailer clips and detailed recycling information. Further, web sections like News and Updates inform our citizens about recycling opportunities. Most recently, an on-line survey has been added to capture citizens’ feedback.

These technical platforms empower citizens with information at their fingertips anytime, anywhere.

Budget and Cost Structure

The Recycle Today program has always had favorable budget outcomes and those outcomes can be attributed to sound operational management.

Management has utilized full costs accounting concepts for decision support, and controllable costs for planning and monitoring purposes.

The budget highlights entering fiscal year 2013 explain progress made in reducing the recycling budget while providing exemplary recycling customer services.

The budget highlights show amounts and percent of recycling budget reductions for fiscal year 2013.

Budget Highlights: Curbside/Multi-family Recycling

Beginning in FY 10-11, the solid waste disposal fund has reduced its support for the city’s recycling program by 20% per year. For FY 12-13, the support is reduced by 10% rather 20%, resulting in a benefit to the general fund of $200,000. Also, in July, 2011, Council approved entering into a new ten-year contract for recycling services for single family homes, multifamily homes, schools and drop-off sites. The new contract includes the transition from the weekly collection of the 18-gallon bins to the bi-weekly collection of roll-out carts. The new contract took effect April, 2012. For FY 12-13, program expenses are decreased ($1,239,640 million). This savings is offset by the annual lease payments for roll-out carts, $561,000, and a $661,370 reduction in support from the solid waste disposal fund.
The most striking reduction is operating cost under responsibility, contracting services. Recycle Today was able to rollback $1,239,640 in contracting services this fiscal year and more savings will be recognized in future years.

The City is able to benchmark budget operating costs by comparing the recycling services cost per ton collected to the state recycling cohort. The cohort includes the following cities: Apex, Asheville, Burlington, Cary, Charlotte, Concord, Greensboro, Greenville, Hickory, High Point, Salisbury, Wilmington, and Wilson.

The graph below depicts recycling service cost data from 2007 to 2011.

The graph indicates that most cities experienced a rise in recycling costs per ton collected during the period 2009 thru 2010. During this duration, the Recycle Today program budget experienced budget pressures due to increase fuel costs.

During the fiscal year 2013, the fuel costs have been trending normally causing a lesser impact on the budget as compared to 2009 and 2010.

Generation of Revenues

The past three years including fiscal year 2013, have been positive years for revenue generation, as can be seen in this chart. Looking ahead, most economic indicators indicate a steady recovery from the recession in Winston Salem, which is good news considering the Recycle Today program requires more revenues to provide a means to cover operating costs.

The program has adopted a business model that uses partnerships to capture more recycling tonnage and revenues. Most recently, the City joined with Coca-Cola to promote recycling.

The “Recycling and Win” contest was effective in increasing tons and generating revenue.
Description of Equipment
The City’s recyclables are collected using a fleet of six automated side loader trucks (ASLs) from Waste Management. These trucks function with one-man crews in which the driver operates a mechanical arm from the truck’s cab, never having to leave his/her vehicle. The truck’s mechanical arm grabs the blue, 96-gallon, cart from the curb, empties it into the truck, and returns it back to the curb.

Once materials have been collected, they are taken to the new state of the art Materials Recovery Facility. This 85,000 square foot facility employs the latest advanced technology for separating materials and increasing capacity while simplifying the lives of customers who can put everything into one container.

The City utilizes RouteSmart for ArcGIS, a computerized mapping program, to create, manage and maintain all of the recycling routes.

The goal is to generate routes that are balanced by time and load, using the fewest trucks possible in the least amount of time.

The major challenge was to ensure that recycling routes and refuse routes matched where possible, while maintaining the same day of service for the greatest amount of customers.

A total of 8,469 households had a change in collection day as a result of the new single-stream recycling system. These citizens were notified of the day change several months before the launch date, so that they had ample time to prepare (see Supplemental Materials page 24).

Accordingly, only seven percent of the population had a service day change, whereas 93% remained on their previous collection schedule.

The City has been divided into five sections based on collection day of the week. Density of the built environment and travel time were taken into consideration when determining the boundaries of each route. Ten service routes were created within each of the service days, with half of the routes being collected one week,
half being collected the alternate week, allowing for a bi-weekly collection schedule.

For example, there are 10 recycling routes serviced on Monday. Routes 1 through 5 are serviced during “red weeks” and routes 6 through 10 are serviced during “blue weeks.” This map shows recycling collection by day of the week with the bi-weekly designation.

The City of Winston-Salem services approximately 65,000 households (including qualifying small businesses and multifamily housing complexes) with single-stream recycling collection.

On average, approximately 1500 households are serviced per day. Certain routes are heavier than others, with a maximum number of 2,982 households and a minimum of 749 households being serviced in one route.

The difference can be attributed to density in various portions of the city, where drive time (miles driven) is higher and households serviced is lower and vice versa.

During cart delivery, citizens were given a pamphlet with the corresponding calendar for their delivery area. The new calendar for fiscal year 2013 was published in the Winston-Salem Journal and collection information is advertised on the City’s webpage.
The City of Winston-Salem has a unique online service finder application. The citizen enters their address and the application tells them their scheduled delivery day for garbage and recycling service, and also provides a link to the bi-weekly recycling calendar.

Efficiency and Effectiveness of Equipment

The fleet has been reduced from ten trucks to six with the introduction of single-stream, biweekly, curbside recycling using ASLs.

Average daily fuel consumption is approximately 50 gallons per day. This has resulted in a fuels savings of 200 gallons per day, or 1,000 gallons per week. At an average of $3.20 per gallon of fuel, that equates to a cost savings of $640 per day or $3200 per week.

According to the US EPA, $8.92 \times 10^{-3}$ metric tons of carbon dioxide is emitted into the atmosphere per gallon of gasoline burned. That equates to a savings of 17,240 metric tons of carbon dioxide emissions per day, or 86,200 metric tons per week.

A time-motion study revealed that it takes approximately 60 seconds to service one household in a moderately dense area with an ASL truck. Compared with the dual stream, sort at the truck, model that is a time savings of approximately 30 to 60 seconds per collection point. Additionally, the use of the ASL trucks combined with rollout carts has eliminated the 30 second idle time per household that was necessary in the old system.

The use of RouteSmart for ArcGIS has increased the efficiency of the recycling collection system. Routes were balanced by time and load, so that the maximum number of homes is serviced in the least amount of time using the fewest number of trucks.

Trucks are partitioned into sections of the city, so that their paths never cross. This means fewer trucks are driving up and down residential streets on a given day, keeping noise pollution to a minimum.

Fewer trucks collecting larger loads of recyclables minimizes fuel consumption and carbon dioxide emissions. Additionally, knowing the approximate location of a collections truck allows for better communication between the dispatcher and the driver.
Employee Training

The service provider has an extensive training program for both the drivers and the materials recovery facility labor force.

Each employee is required to participate in a general orientation concerning the safety procedures for the company. Employees are then separated after the completion of the general orientation for specific training related to their job responsibilities.

Collection drivers are sent to a special training facility for two weeks to learn the company “rule book” of safe operations. Once they have completed the training, they are returned back to their local worksite and continue their training on an actual route.

This training on the route takes approximately four weeks. The first week of training involves riding with a driver trainer to observe proper operation and maintenance of the automated side loader. Weeks 2-4 involve a continuous increase in the amount of time the driver actually operates the vehicle in the presence of a trainer. At the end of the four week time period, the driver is allowed to operate a route without any assistance.

Drivers are observed once a month in operation for the first six months of operations.

Employees who work at the MRF undergo a weekly training covering a broad range of safety topics that cover every aspect of the Recycling business. Waste Management utilizes TrueNorth Training tracking which creates a database for each employee. As training topics come due, employees are trained. The tracking package is monitored also at the corporate level and each facility is required to be 100% current with all safety topics. Topics covered include:

<table>
<thead>
<tr>
<th>Lock Out Tag Out</th>
<th>Accident Injury Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Borne Pathogens</td>
<td>Machine Guarding</td>
</tr>
<tr>
<td>Seat Belt Use</td>
<td>Tipping Floor Procedures</td>
</tr>
<tr>
<td>Fire Prevention</td>
<td>OSHA Programs</td>
</tr>
<tr>
<td>Safe Working Procedures</td>
<td>Administrative and Environmental Topics</td>
</tr>
</tbody>
</table>

SWANA Collection Systems Excellence Award Nomination 2013
Safety Procedures

The company tracks injuries in every phase of its business operations. Prior to opening the new MRF, there had been no accidents for the past seven years. Metrics used are TRIR (Total Recordable Incident Rate), LWTR (Lost Time Work Rate), and VARR (Vehicle Accident Rate). To date, the new facility has not yielded any accidents.

Vehicles are maintained as a part of a program that requires servicing for every 300 hours of operation. This provides a preventative type of solution to address minor issues that may become large issue without close attention. Drivers also are required to conduct a preventative maintenance inspection at the end of each route in the presence of a fleet technician. The technicians remain in close communication with drivers and work to ensure that vehicles are working at their optimum.

SECTION 7: PUBLIC ACCEPTANCE, APPEARANCE AND AESTHETICS

Appearance of Vehicles

The ASL recycling trucks are fully marked with Waste Management logos and provide a number to the recycling hotlines as a means of providing information to the customers. Trucks are kept clean and in great working condition.

Maintenance Program

Waste Management utilizes an internal maintenance team that reports directly to the facility manager to ensure the smooth operation of the MRF. Maintenance is conducted on a preventative basis. Uptimes for the operation of the facility are at 90% or higher.

All of the MRF equipment is inspected daily. Technicians go through a seven page checklist of items that are pertinent to the safe and effective operation of the equipment. Maintenance technicians meet and review any findings the following day after inspections and make plans for needed repairs.

Each equipment operator is supplied with a book to record any abnormalities or malfunctions noticed with the equipment. Facility inspections take place monthly and safety committee meetings are scheduled so that employees have a round table discussion to broach safety topics.
Public Relations and Education

The City and Waste Management work together to provide great community relations and public education efforts. Prior to the creation of the Pilot Program, the department created flyers to assist with educating the public about the benefits of single-stream recycling.

There were only 2200 homes in the first pilot and a campaign was started to see which neighborhoods most wanted to participate.

The criteria for selection involved an estimated participation of 90%. In order to submit interest, residents had to call into the call center for documentation.

At the end of the campaign period, information from the call center was tallied to identify the locations that would take part in the pilot. During the two year period of the pilot program, the department along with Marketing developed brochures and implemented a media campaign to emphasize the benefits of recycling.

Once Council approved the implementation of a city wide transition, another media campaign was initiated to educate citizens about the upcoming changes.

The department achieved this goal by utilizing various methods to disseminate information. The Marketing Department helped to create personalized commercials detailing the recycling program and how it would work.
New brochures were created highlighting what to place in the cart along with color coded calendars so residents could keep track of their week of collection.

TV commercials were created to inform residents during early morning and late evening hours.

Public Service Announcements videos were also created to educate the residents about the new program.

After implementation of the program, the City of Winston-Salem partnered with COKE for a “Recycle & Win” contest. Residents placed a sticker on their recycle cart. Random winners were chosen weekly if they recycled in the proper manner. The City awarded over 150 winners during the 26 week campaign with a gift certificate to a local grocery store.

An online service portal was created that provided residents with address information pertaining to their week of collection.
Recycling facility to make and save money for Winston-Salem

Jesse Burkhart/Special Correspondent | Posted: Tuesday, November 13, 2012 6:51 pm

Call it an up-cycled building – a new facility that will change the way Winston-Salem recycles and save the city $800,000 to $1 million a year.

Thanks to the single-stream recycling facility that will open Thursday, the city will collect more recyclables and process them more efficiently. As a result, the facility will generate more revenue for the city while reducing the expense of collecting recyclables.

“This is a state-of-the-art facility,” said Johnnie Taylor, director of Winston-Salem’s Sanitation Division. “It has some of the best equipment in the recycling processing industry today, and it’s a facility that the city of Winston-Salem should be proud of.”

The facility was contracted through Waste Management, a Houston-based company that provides collection, transfer, recycling and disposal services.

The company invested $8.5 million to upgrade an 85,000-square-foot plant at 280 Business Park Dr. that previously housed Austin Foam, which closed when Dell shut down its manufacturing facility.

Austin Foam made the packaging that ships with Dell’s personal computers. Taylor said upgrading the facility cost the city nothing. Marla Prince, senior community relations specialist for Waste Management, said the facility will be able to process 100,000 tons of material annually, up from 36,000 tons per year now.

The single-stream collection method allows participants to combine their recyclable materials, including paper, glass, aluminum, tin and plastics, into one container instead of separating them into multiple containers. That process recovers up to three times more recyclable materials, Prince said, and brings the city more revenue from selling more recyclables to outside vendors.

“(The single-stream) process allows considerably more convenience to the homeowners, expands the list of acceptable items and, of course, allows for significantly more volume capacity,” Prince said.

“Any additional ton recycled is a ton that earns revenue and saves on the disposal side.”

Previously, Winston-Salem used a dual-stream method of collection, which required recyclables to be separated at the curb by residents and drivers, with materials collected weekly. The single-stream program allows residents to recycle materials using a more convenient 96-gallon cart on wheels.

Also, the single-stream program’s greater volume capacity enables every-other-week collection instead of weekly collection. This diverts waste from landfills and reduces the number of vehicles required for recyclables collection from 11 to six, saving on gas, emissions and wear on streets trucks, Prince said.

Altogether, Taylor estimates that the program will save Winston-Salem $800,000 to $1 million annually. Appropriately, the facility’s grand opening is set for Thursday, which is “America Recycles Day.” The facility is not open to the public. However, educational tours of the facility are available to local residents and school groups. Those interested may call (336)631-9439 to schedule tours.
**Editorial: City’s new program saves money and energy**

Journal editorial board | Posted: Sunday, May 5, 2013 12:00 am

By using its new rollout recycling carts this past year, Winston-Salem has done a good deed for the environment and for its own pocketbook. The city managed to recycle more materials, cut carbon emissions by picking up recyclables less frequently and also saved the city more than $800,000. In the face of our continuing economic struggles, that’s significant.

The city began using the blue 96-gallon rollout carts in April 2012, meaning we’ve just completed our first full year with them. They have more capacity than the green bins that were used previously and recyclable materials don’t have to be sorted, as they were with the bins. They also only need to be rolled to the curb every two weeks rather than every week.

On top of that, more people are putting more materials in the bins. Collections of recyclables increased with the new carts, from 10,080 tons the previous year to 12,988 tons this year. That’s an extra 22 percent of used material that won’t have to go into a landfill.

They’re better for our air quality, because less energy is required to run the pick-up routes.

And there are the savings. This year with the blue carts have cost the city $1.4 million compared to $2.8 million for the previous year.

Newspapers (including this one), magazines, telephone books, junk mail/office paper, chipboard, corrugated cardboard, glass jars and bottles, all plastic bottles, aluminum beverage cans, steel food and beverage cans, aerosol cans, cardboard milk and juice cartons, and aluminum foil and pie tins can be recycled.

City Manager Lee Garrity told the Journal’s John Hinton, “The change has been a win for everyone. This is a sustainability innovation that had immediate positive returns in cost and in environmental benefits.”

City officials should be proud of our recycling program. It’s a wise, forward-thinking use of resources. It’s convenient for residents. And it saves money
City saves $800,000 with rollout recycling carts

John Hinton/Winston-Salem Journal | Posted: Friday, April 26, 2013 9:16 pm

City officials said Friday that collections of recyclable materials increased 22 percent in Winston-Salem in the first year of using larger rollout recycling carts, saving the city more than $800,000.

Mayor Allen Joines said the recycling program is a city asset. “It is double good news with the increased participation and savings to the city,” Joines said. “More people are getting used to the new carts, and we have made a concerted effort to become a sustainable community. It helps us save money.”

Johnnie Taylor, the city’s sanitation director, attributed the increase in collections to the larger capacity and convenience of the single-stream rollout carts in which residents place all of their recyclable material, compared with the dual-stream collection bins that the city previously used. That method required residents to separate their recyclable materials.

During the first year of rollout recycling (April 1, 2012, through March 31), crews collected 12,988 tons of recyclable material, compared with 10,080 tons from the same period a year earlier, the city said in a news release.

In January 2012, the city began distributing 96-gallon blue roll-out carts to homes with curbside recycling inside the city limits so residents could roll out their recyclables rather than carrying them.

But city officials asked residents not to use the carts until April 2012, when curbside recycling throughout the city switched over to biweekly collection with the roll-out carts.

City Manager Lee Garrity said the recycling program has reduced carbon emissions. “The change has been a win for everyone,” Garrity said. “This is a sustainability innovation that had immediate positive returns in cost and in environmental benefits.”

During the first full year of rollout recycling, the city spent $1.4 million compared with $2.8 million during the previous 12 months, the city said. The city saved $801,330. “After five years, the city will no longer have cart payments and the savings will be that much higher,” Taylor said.

The program’s savings have already been factored into the city’s budget for 2013-14, said Garrity and Greg Turner, an assistant city manager. “We have incorporated those savings into the budget because we knew what they were going to be,” Turner said.

City officials allocated $2.27 million to the curbside-recycling program in the city’s 2012-13 budget, according to the city document.

The city said the reduced cost can be attributed to collecting every other week with the carts, compared with weekly collection prior to that, and the need for fewer trucks because the automated collection trucks work faster than manual collection, which was required with bins.

Fewer trucks also mean less greenhouse gas emissions, Taylor said. “We are pleased, but not surprised at these results, because this is what we were expecting when we made the switch,” Taylor said. “Rollout recycling is providing better service to our citizens for less cost.”
Your Recycling Day is Changing!

When the city switches to rollout recycling in April, you’ll have a new recycling day.

Questions: Call CityLink at 311 or 727-8000

Your new recycling day will be Monday of every Blue week. You should use your rollout recycling cart for the first time on Monday, April 9.

Remember, recycling will be collected every other week once rollout recycling begins.
- Households will either have red week or blue week collection.
- A 2012 calendar showing blue collection weeks is in the brochure delivered with your rollout recycling cart.
- If you have misplaced the brochure, you can enter your address on the Recycling Today homepage (www.Recycling.CityofWS.org) to see a collection schedule, or call CityLink 311.

Through the end of March, continue to use your green recycling bin on your current recycling day!

Your Recycling Day is Changing!

When the city switches to rollout recycling in April, you’ll have a new recycling day.

Questions: Call CityLink at 311 or 727-8000

Your new recycling day will be Monday of every Red week. You should use your rollout recycling cart for the first time on Monday, April 9.

Remember, recycling will be collected every other week once rollout recycling begins.
- Households will either have red week or blue week collection.
- A 2012 calendar showing red collection weeks is in the brochure delivered with your rollout recycling cart.
- If you have misplaced the brochure, you can enter your address on the Recycling Today homepage (www.Recycling.CityofWS.org) to see a collection schedule, or call CityLink 311.

Through the end of March, continue to use your green recycling bin on your current recycling day!