

Roseville Public Works, Environment and Transportation Commission Meeting Agenda

Tuesday, January 22, 2013, at 6:30 p.m.
City Council Chambers, 2660 Civic Center Drive
Roseville, Minnesota 55113

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|-----------|----|---|
| 6:30 p.m. | 1. | Introductions/Roll Call |
| 6:35 p.m. | 2. | Public Comments |
| 6:40 p.m. | 3. | Approval of November 27, 2012 Meeting Minutes |
| 6:45 p.m. | 4. | Communication Items |
| 6:50 p.m. | 5. | Traffic Signal / Intersection Discussion |
| 7:20 p.m. | 6. | Receive Recycling Background Information |
| 7:25 p.m. | 7. | Possible Items for Next Meeting – February 26, 2013 |
| 7:30 p.m. | 8. | Adjourn |
| 7:30 p.m. | 9. | Tour of Xcel LED Street Lighting Pilot Project in West St Paul |

*Be a part of the picture...get involved with your City...Volunteer!
For more information, stop by City Hall or call Carolyn at 651-792-7026 or check our website at
www.cityofroseville.com.*

Volunteering, a Great Way to Get Involved!

**Roseville Public Works, Environment and
Transportation Commission**

Agenda Item

Date: January 22, 2013

Item No: 3

Item Description: Approval of the November 27, 2012 Public Works Commission Minutes

Attached are the minutes from the November 27, 2012 meeting.

Recommended Action:

Motion approving the minutes of November 27, 2012, subject to any necessary corrections or revision.

November 27, 2012 minutes

Move: _____

Second: _____

Ayes: _____

Nays: _____

Roseville Public Works, Environment and Transportation Commission Meeting Minutes

Tuesday, November 27, 2012, at 6:30 p.m.
City Council Chambers, 2660 Civic Center Drive
Roseville, Minnesota 55113

1 **1. Introduction / Call Roll**

2 Chair Jan Vanderwall called the meeting to order at approximately 6:30 p.m.

3
4 **Members Present:** Chair Jan Vanderwall; and Members Dwayne Stenlund;
5 Jim DeBenedet; Joan Felice; and Steve Gjerdingen

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7 **Staff Present:** Public Works Director Duane Schwartz; City Engineer
8 Debra Bloom

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10 **2. Public Comments**

11 No one appeared to speak at this time.

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13 **3. Approval of October 23, 2012 Meeting Minutes**

14 Member DeBenedet moved, Member Felice seconded, approval of the October
15 23, 2012, meeting as presented.

16
17 **Ayes: 5**

18 **Nays: 0**

19 **Motion carried.**

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21 **4. Communication Items**

22 Public Works Director Schwartz and City Engineer Bloom noted that updates on
23 various construction projects were included in tonight's meeting packet and
24 available on-line at the City's website at www.cityofroseville.com/projects, and as
25 detailed in the staff report dated November 27, 2012.

26
27 Discussion included updated intersection pedestrian lights, both those already
28 installed and those still needed at various locations throughout the City;
29 clarification by staff on "free rights" near Rosedale entrances with no crosswalks
30 at those locations in accordance with MnDOT practice; and how push buttons
31 provide clearance for pedestrians and/or bicycles on Ramsey County roads in
32 particular (e.g. pre-emption for signals).

Members concurred that they would like to have additional discussion at a future meeting on theory/priorities/best practices for design of pedestrian crossings, as well as implications related to those designs, including legal, ADA, best practices, and safety considerations. Chair Vanderwall opined that this design information was important for the Commission, as well as the public, to understand to have all perspectives outlined.

Further discussion included status of the water lining project, with staff advising that the 3M product appeared to be the solution, and the project was anticipated to begin in April of 2013; County Road D reconstruction meetings and progress to-date, with the Feasibility report in process and anticipated for consideration by the City Council on December 10, 2012, with a Public Hearing scheduled in January of 2013.

At the request of Member DeBenedet, Ms. Bloom advised that Roseville residents had already submitted a petition regarding a sidewalk on the south side of County Road D, and that the petition would be included as part of the Feasibility Study presented to the City Council. Member DeBenedet requested that members of the PWETC be copied on the Public Hearing notice.

Additional discussion included 2013 mill and overlay projects and status of surveys and plans in progress; upcoming meetings with property owners along County Road B-2; and engineering projects in process by City staff for the City of Falcon Heights.

Mr. Schwartz reported on the City's application to the Metropolitan Council for funding through their Inflow and Infiltration Grant Program, and based on their formula, he anticipated that the City would receive a minimum of \$408,000. Based on 2012 pricing, Mr. Schwartz advised that this would cover a significant portion of the City of Roseville's needed work for 2013, approximately three (3) miles of water lining of the anticipated six (6) miles planned. Ms. Bloom noted that bids would be opened in December.

Mr. Schwartz summarized the status of fall maintenance and leaf collection programs; minor ice control efforts needed last weekend

Member Stenlund requested a future field trip in the spring by the PWETC to observe the 3M water lining product.

Member Stenlund also requested an update on the fire station project status; and asked that staff make sure their storm drainage issues were addressed prior to winter.

2013 Utility Rate Adjustment Discussion

Mr. Schwartz reviewed a draft memorandum included in communication items from Finance Director Miller to the City Council for their upcoming meeting

scheduled for Monday, December 3, 2012. Mr. Schwartz advised that staff had preliminarily presented recommendations to the City Council at their November 19, 2012 meeting, based on recommendations of the PWETC's analysis and that of the Council-appointed CIP Task Force.

Mr. Schwartz noted the nuances discovered by Finance Director Miller upon that further analysis regarding a proposed three-tiered rate structure, and unintended consequences to a large group of customers, specifically those currently receiving senior discounts. Additional findings were detailed in Finance Director Miller's memorandum.

Discussion included availability of the discount based on retirement income, with no minimum age required; review of the table of costs for water operations related to depreciation due to implementation of the second phase of the base rate increase previously approved and going into effect in 2013; and distinctions between sewer depreciation versus water depreciation percentages.

Members noted a typographical error on the water table (page 6 of 12) regarding contract pick-up; duly noted by staff.

Further discussion included increased costs for storm drainage operations to include costs for dredging of storm water ponds, with further analysis and future CIP adjustments needed as indicated and based on disposal costs for sludge; and rationale for comparable cities with comparable tiers based on first-ring status and/or their locations adjacent to Roseville.

Additional discussion included difficulties in making comparisons with other communities depending on the age and type of their systems; distinctions with Roseville's water being fully softened versus those private customers responsible for water softening and specific costs for that softening; and the intent in implementing another tier for water usage and how to address negative impacts to some customer groups that would need to be vetted by the City Council.

Members concurred that additional discussion in the future may be indicated depending on the results of the City Council at their upcoming meeting.

5. Ice Control Product Discussion

Street Supervisor Steve Zweber and one of the City's maintenance personnel, Josh Dix, were in attendance to provide an overview of the City's ice control program, as previously requested by the PWETC. An outline and background information was provided in written report dated November 27, 2012.

The presentation included chloride versus non-chloride products; older trucks; previous use of salt/sand mixtures; better rate control found with newer trucks and equipment; replacement of older trucks with new units as the vehicle stock was rotated; and current, better chemical use with evolving technology and computer-

controlled application, including anti-icing applications, with this season being the City's first experiment with those applications.

Mr. Schwartz noted the process with brine in the new trucks flowing to the spinner, not salt, before spinning onto the pavement.

Mr. Zweber noted that previous equipment (four tanks) had been obtained from Otter Tail County and were found more cumbersome and difficult to use than the current equipment. Mr. Zweber provided a visual demonstration of anti-icing examples used during the previous season and distinctions between pre-treating versus not pre-treating; as well as effectiveness for bituminous versus concrete surfaces.

A joint study of MnDOT and Mankato State University was included in agenda packet materials for additional information.

Mr. Dix, having done research on alternative products for ice control, noted that the study had proven inconclusive due to temperature variables; indicating that salt was still the best value.

In addressing comparisons from 2006 to the previous season in 2011/2012, Mr. Zweber noted that ultimate goal was to find a product that broke the bond on pavement prior to a storm, allowing for less salt use once streets were plowed. Mr. Zweber provided the reduction the City had achieved for specific anti-icing routes versus other applications; additional efficiencies achieved for those routes based on pumping capacity and speed of application; and purchasing brine cooperatively with Ramsey County to further reduce costs; and cooperation between Ramsey County and the City of Roseville for some events and in chronic problem areas in Roseville.

Mr. Zweber and Mr. Dix provided a detailed analysis of the brine mix for the most efficient and effective application, as well as cost-effectiveness; considerations for temperature and weather-related situations; use on sidewalks and pathways in addition to roadways; and most effective ice control product was a de-sugared sugar beet molasses product (Geo Melt).

Discussion included effects of the products leaching into yards; difficulties in some sand/salt mixtures running off pavement created environmental issues; benefits in achieving safer driving conditions faster; re-use of sweepings and disposal based on the product; and current recycling through the City's leaf pick-up program tested for safety by getting the sand out of the salt through rate controls and application of products before driven down by too much traffic.

Mr. Schwartz advised that, comparatively for a number of years, the City of Roseville saw, on a comparable mile basis, that it was using significantly less ice control products than most suburbs.

Mr. Zweber noted that Roseville's product use was a small amount in the overall picture; however, he noted that other agencies contributed to the City's system as well. Mr. Schwartz advised that watershed studies were addressing this issue as well specific to water quality.

Further discussion included the advantages for de-icing agents that precluded chloride entering water bodies; budget and storage considerations; willingness of management to make efforts for rain garden areas and lake bodies; two (2) existing trucks having pavement sensors; and trial and error experiments to test various products, typically on City parking lots.

Mr. Zweber reported on staff's ability to consider weekend weather forecasts and pre-treat pavements to reduce material use and achieve overall manpower, equipment and product savings.

Additional discussion included the ability to track traffic incidents through the Police Department; human nature in winter driving conditions; how and when spillage occurs; remaining sensitive to MS4 issues internally to address water quality issues; efficiencies in working during late night/early morning hours for application before traffic creates additional issues and allows the ability to apply bring on the center line to work itself across drive lanes out to roadway edges; and challenges in low volume and/or hilly streets.

Mr. Schwartz noted that the department was very committed to its work; and Chair Vanderwall thanked Mr. Dix and Mr. Zweber for the informative presentation.

6. Preliminary/Updated 2013 Budget Information

Mr. Schwartz provided an updated, as previously requested by the PWETC, on preliminary/updated 2013 Budget information, as most recently provided in City Council agenda packets for their discussion. Mr. Schwartz noted that this was the first time a biennial budget was being used by the City, with the 2013 Preliminary Budget originally adopted by the City Council in December of 2011 as part of that two-year process. Mr. Schwartz advised that, other than minor inflationary increases to operating budgets, the main focus of that biennial budget had been to Capital Improvements, based on recommendations of the City Manager and the CIP Tax Force to bring the City back to a standard that could address its infrastructure needs.

Mr. Schwartz advised that the Public Works budget for operations was basically status quo, with essentially no significant new initiatives for 2012 and 2013. Mr. Schwartz noted that there would be some challenges in the operating budget due to inflationary increases; however, he advised that some anticipated cost-savings may be available from 2012 that could be applied to 2013, if and when approved by the City Council. Mr. Schwartz noted that this reserve was basically created by the warm weather experienced during the winter of 2011/2012.

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Mr. Schwartz called to the PWETC's attention impacts of the CIP recommendations specifically pursuant to the Street Condition Pavement program.

Member Stenlund, on lines 284 and 298 (pathway/parking lots, street lighting), questioned if the PWETC would have additional opportunity to explore LED lighting as previously discussed.

Mr. Schwartz noted that the recommended \$25,000 annually was intended for that purpose; and included studying alternatives for replacement with LED fixtures, rebate programs, and other applications.

Member DeBenedet, with consensus of the body, suggested future presentations by vendors who could and would provide an optimistic analysis of operations and maintenance savings, and payback, for retrofitting LED lighting when replacing fixtures, from an engineering perspective, beyond the presentation recently given by Xcel Energy.

Mr. Schwartz clarified that the City owned a very small portion of the overall street lights in the City; however, he expressed staff's willingness to contact other vendors to provide additional analysis and research for the PWETC.

Member Stenlund noted a previous reference by Ron Leaf (S.E.H. Engineers) to someone from their firm available to provide additional information about street lights, and suggested contacting that firm to provide additional education for the PWETC; and from a feasibility study perspective, determine the best way to replace street lights with more efficient fixtures while still providing the utmost safety for citizens.

Further budget-related discussion included declining gas tax revenue funds and impacts on property tax levies; legislative initiatives to address funding outside the property tax venue and impacts for long-term decision-making; assumptions built into the City budget modeling street funding based on MSA funds and City funds; and the ongoing need to find additional revenue resources.

Mr. Schwartz specifically reviewed the Pavement Management Program (PMP) on page 6 of 10 (lines 192, 204-213) and CIP Task Force recommendations for the street fund as bonds are paid off in 2016 and beyond in order to address predicted PCI levels needed to maintain the overall street system.

Chair Vanderwall suggested a bar chart, similar to that provided for water/sewer discussions, to allow the public and the PWETC an awareness of impacts if and when infrastructure improvements are continually deferred, and only negatively impacting and delaying problem areas.

Member Stenlund noted that the City's Information Technology (IT) Department did not fall under any of the City's Advisory Commissions; and opined that while they do fantastic work, it may be advantageous to provide some additional oversight or public areas of discussion regarding their work with the overall City and various departments.

Chair Vanderwall, referencing the Total Impact Table (page 9), expressed appreciation for the City Council's responsible action regarding overall CIP funding.

Member DeBenedet concurred, noting that while more challenges would occur in the future, this was a good and responsible plan in addressing the infrastructure situation for future residents of the community.

Recess

Chair Vanderwall recessed the meeting at approximately 7:50 p.m. and reconvened at approximately 7:53 p.m.

7. Pavement Condition Index (PCI) Map Discussion

Mr. Schwartz provided an overview of PCI policies and map of current street conditions. The presentation included the following discussion points.

Pavement Policy Summary

- Rate pavements every 5 years (20% annually)
- Target an average condition index of 75-80
- Minimize maintenance dollars spend on poor condition streets
- Adequate street = 65 PCI or higher
- Marginal street = 36-64 PCI
- Poor street = 0-35 PCI
- Strive to keep poor streets to <5% of system

Discussion included what a typical "poor" rated condition street would look like (with patching, potholes, significant cracking and connected alligator cracking indicating structural issues of base materials and/or soils); and pavement distress surveys segment by segment to measure distresses, and then entering that data into a computer program developed by the Corp of Engineers in the mid 1980's that actually calculated the street index, taking into consideration local experience levels for deterioration adjustments and conditions in this area and the City's own street network. Mr. Schwartz advised that all maintenance information is included in that data and budget modeling done as a result of that information.

Adequate Street

- Receives sealcoat every 7-8 years and crack sealing as needed
- Receive greatest return on maintenance dollars spent here

Marginal streets

- Can receive crack sealing and sealcoat if in upper end of range

- Receive mill and overlay when deemed preventative maintenance will not benefit pavement life

Poor condition

- Minimize maintenance dollars
- Reconstruction

Mr. Schwartz noted that priorities are based on condition, as well as proximity to other construction projects; provided examples of various street conditions; and addressed installation of curb and gutter as part of projects, with the only street without City jurisdiction at this time not having curb and gutter was Victoria Street south of County Road B.

Mr. Schwartz also provided a number of twenty (20)-year graphs, as a bench handout, regarding current funding levels and budgets versus a backlog for capital improvements, as used by staff in budget modeling for current spending and current street conditions for recommendation to the City Manager and City Council for future funding needs in the PMP. Mr. Schwartz noted the current 80% overall condition network versus how it diminished at the end of twenty (20) years for the overall PCI. Mr. Schwartz noted that a significant part of this diminished fund availability was due to reduced interest rates and return on investment for the PMP at approximately a 3% return versus previous returns of between 5-7%. Mr. Schwartz noted that other impacts were inflation related, as well as increased cost of materials while interest rates continued to decline.

Mr. Schwartz noted the dramatic difference shown by the graphs in maintaining street conditions in “perfect” condition; assumptions of the program for bringing segments up to 100% compared to the City’s standard practice to achieve an overall condition at 75-80%; and whether the City needed to reconsider desired standards for future maintenance and construction. Mr. Schwartz noted that pavements as now constructed throughout the City lasted about thirty (30) years versus projected twenty (20) years, particularly lesser traffic volume streets.

Discussion included projected traffic patterns in the future (e.g. fewer and lighter cars, more bicycles, economics, and trends of multi-modal options) dependent on which part of the metro area was addressed (e.g. inner-ring suburbs versus those further out).

Mr. Schwartz noted that there were a number of variables affecting road conditions, including the type of traffic, and impacts of freeze/thaw cycles.

Further discussion included private streets inadvertently included on the condition map; current projections by staff to the City Manager and City Council over the next 3-7 years to add an additional \$1 million funding to the PMP to maintain current PCI, and allowing time to make adjustments during that period based on how the fund perform; with the CIP Task Force addressing that with their

recommendation of \$800,000 annually in additional funding through 2018 for those increases, in addition to potential changes in the MSA funding formulas.

Chair Vanderwall noted the challenges in this other infrastructure need and impacts to citizens. However, he noted that the PWETC was the commission of “invisible things,” and the status of infrastructure needs had not occurred overnight and had built up over a long period of deferred maintenance and replacement, now creating this current situation and the challenges before the City and its citizens. Now that the situation had been taken seriously by the current City Council, Chair Vanderwall opined that the challenge was now to find funding other than property taxes to address the situation.

Members noted the need to compare Roseville streets to those of other communities, and while the City’s roads are considered better, the question was whether that was necessary and could the City continue to afford that distinction.

Discussion included other options for further discussion including street conditions in relationship to emergency vehicle access (e.g. cul-de-sacs and/or private streets); property tax considerations and benefits versus vehicle loading and related impacts; pros and cons for considering assessments for mill and overlay projects; size and types of road for residential areas with little traffic; cost for maintenance on less traveled street and proportionate use of other streets for which they had equal access; and how the City of Roseville is viewed based on its property values and aesthetics, including how its streets looked, and impacts for the overall community.

Member DeBenedet questioned how to demonstrate, based on MN law, benefits for a mill and overlay project to adjacent properties.

Mr. Schwartz noted the need for additional monitoring of pavement condition relative to funding for PMP in the future; whether the City was shooting too high in its standards; and whether we will see dramatic impacts on road conditions with decreased funding.

Member DeBenedet questioned the impacts of allowing the PMP standards to drop in the short-term allowing those cost savings and budget amounts to improve the long-term picture and strengthen the PMP.

Mr. Schwartz advised that the 2013 PMP had been reduced as the PCI didn’t indicate a need to continue at the current level in the short term; however, he noted that in the near future the PCI would need to be continued at that higher level. Mr. Schwartz noted that this information had been portrayed to the CIP Task Force; with the need for periodic review for adjustment every few years.

Member DeBenedet noted the need to take into consideration future City Councils who may not be as supportive as the current body.

Chair Vanderwall expressed hope that future City Councils would make good decisions comparable to the current body, for the long-term benefit of the overall community.

Mr. Schwartz noted that implementation of the asset management program should provide good information across all departments and services.

Member Stenlund opined that he envisioned whole blocks in Roseville bought out for high density residential and infill housing as costs continue to rise and people looking for less-expensive housing options than single-family homes. Member Stenlund further opined that this would be how future street improvements would be paid for, through those HDR components, something he saw as a long-term trend.

8. Consider Canceling December 25, 2012 Meeting

Member DeBenedet moved, Member Felice seconded, cancelation of the December 25, 2012 Public Works, Environment and Transportation Commission meeting due to the holiday.

Ayes: 5

Nays: 0

Motion carried.

9. Possible Items for Next Meeting – January 22, 2013

- LED retrofit program (if funded in the final 2013 City budget) – presenters with various perspectives
- Traffic signal and crosswalk design and state law discussion
- Mr. Schwartz noted that the City's recycling contract was up for bid in 2013; and advised that the PWETC would need to review community values as discussed several years ago prior to and as part of that three (3) year rebid process.

Member DeBenedet noted other cities moving toward single sort; and past findings that the City of Roseville achieved more material through its dual sort system, and avoidance of damaged material in the single sort system and inability to be recycled cost effectively. Member DeBenedet suggested that the PWETC needed to hear more about the various options from other recyclers beyond the current provider.

Chair Vanderwall suggested another testing of the water with the new City Council in January on whether to proceed with organized collection if there appeared to be a majority interest in moving forward.

447 Member Stenlund expressed his interest in finding out why other venues (e.g.
448 Hennepin County) were able to recycle more plastic materials, and why that
449 wasn't an option for Roseville, and whether based on market available or for
450 other reasons.

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452 Chair Vanderwall suggested that may need to be part of the specifications
453 sought for the new contract.
454

- 455 • Member DeBenedet suggested that, while still dark at a reasonable time of the
456 day, the PWETC tour the City of West St. Paul to view their LED lighting
457 (January or February preferably before time change and in case of a possible
458 weather-related delay for a tour)
459
- 460 • Member DeBenedet requested an update in the spring of 2013 on the Asset
461 Management orientation, training and application process.
462

463 Mr. Schwartz advised that training was scheduled for December 13 – 15,
464 2012.
465

- 466 • Member Stenlund requested future discussion on the pathway process, similar
467 to that of the PMP in order to obtain a condition rating modeled on that same
468 type of program.
469

470 **10. Adjourn**

471 Member Felice moved, Member Stenlund seconded, adjournment of the meeting
472 at approximately 8:37 p.m.
473

474 **Ayes: 5**

475 **Nays: 0**

476 **Motion carried.**

Roseville Public Works, Environment and Transportation Commission

Agenda Item

Date: January 22, 2013

Item No: 4

Item Description: Communication Items

- At the January 28, 2013 City Council meeting, Arizona State University will make a presentation to the City Council about Best Value Procurement Processes. This is one of the first items on that meeting agenda and is anticipated to be about an hour.
- Projects update-
 - 2013 Sanitary Sewer Lining Project: The 2013 Sanitary Sewer Main Lining Project includes lining for approximately 39,243 lineal feet (7.43 miles) in areas identified as having root intrusion or infiltration problems. The bids were opened in December, the City Council will be asked to award the bid to SAK Construction at the January 28 meeting. Their bid was \$1,174, 835.25.
 - Waterman lining project – The City Council awarded the project in the amount of \$621,886.10 to Veit & Company, Inc., of Rogers, Minnesota. We are working on a manufacturer's warranty with 3M for their product in conjunction with this bid.. Work is anticipated to begin in spring.
 - County Road D Reconstruction - The City Council will be holding a Public Hearing for this project on January 28, 2012, around 7:30 pm. Staff has been asked to provide the City Council with alternatives for construction that do not include a sidewalk along the entire south side of the road.
 - Villa Park Sediment Removal Project - This project is being led by Capitol Region Watershed District. It is currently out for bids. Work is anticipated to be completed this summer
 - Staff is working on the following projects:
 - County Road B-2 Pathway Construction
 - Wheeler Avenue Closure
 - Utility Extension at 3040 Hamline Avenue
 - McCarrons lake Subwatershed Drainage Improvements
 - 2013 Pavement Management Mill and Overlay Project
- Maintenance Activity
 - Boulevard tree trimming is in progress with 20% of inventory as goal.
 - Winter maintenance activity is below historical averages

Attachments:

- A. County Road D Public Hearing notice
- B. Draft Council Action with 2013 water consumption rate recommendation



January 16, 2013

RE: PUBLIC HEARING FOR STREET RECONSTRUCTION PROJECT
Monday, January 28th, 2013, ROSEVILLE CITY HALL
County Road D, between Lexington Ave and Victoria Street

Dear Property Owner:

The City Council will be holding a Public Hearing for the County Road D Reconstruction Project at their regular meeting on:

Monday, January 28, 2013,

in the City of Roseville Council Chambers at 2660 Civic Center Drive

City Council meetings start at 6:00 pm. Public Hearings are early in the Council agenda; because of this our notice to you regarding this public hearing stated the Council meeting start time.

Additional items have been added to the Council agenda that will impact the scheduled time for this item. Specifically, there is a presentation scheduled for 6:30 pm that is anticipated to last about an hour. As a result, the County Road D presentation and public hearing will begin around 7:30 p. m. We wanted to let you know this, so that you can better plan your evening. We recommend that you get to the meeting around 7:15, in case the previous item runs short.

If you cannot make it but would still like to address the Council, please provide me with your comments in a letter or email that will be shared with the City Council.

Sincerely,

Debra Bloom
City Engineer

651-792-7042

deb.bloom@ci.roseville.mn.us

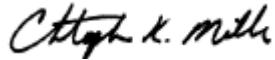
ROSEVILLE
REQUEST FOR COUNCIL ACTION

Date: 1/28/13

Item No.:

Department Approval

City Manager Approval



Item Description: Consider the 2013 Water Consumption Rate Adjustments

BACKGROUND

At the December 3rd and 10th City Council meetings, the Council discussed potential changes to the 2013 water consumption rates including the conservation-based rate structure. The Council directed Staff to bring the matter back for Council consideration in January, 2013 for final review.

During the previous meetings, a majority of the Council indicated that they were not in favor of modifying the City's water conservation-based rate structure and had expressed some interest in eliminating the conservation-based rates altogether in favor of a more uniform rate.

It was noted at the December 10th meeting that the elimination of the City's conservation-based rates would have an impact on the City's Water Conservation Plan which is incorporated into the broader Comprehensive Plan. When the City submitted both of these Plans for regulatory approval, the water conservation rate structure was included.

Based on guidance from the Department of Natural Resources and the Met Council, if the City wanted to revert back to a uniform rate structure we would need to implement additional demand reduction measures including:

- ❖ Lawn sprinkling regulations such as odd/even restrictions or prohibiting sprinkling during certain times of the day.
- ❖ Monthly water and sewer billing.
- ❖ Residential and Commercial water audits.

There are additional requirements, but many of them are already being met. Additional information regarding these measures can be found in *Attachment B*.

At this time, the City is not in a position to implement all of the measures noted above. Until such time that we are, Staff recommends that the current conservation-based rate structure remain in place along with the various education and awareness programs that have been used in prior years.

**** The remainder of this report contains an excerpt from the December 3rd and 10th Staff Reports.**

Discussion on Water Conservation Rates

In January, 2009 the City instituted a new water conservation-based rate structure designed to encourage water conservation in conjunction with the goals and strategies outlined in the City's Imagine Roseville 2025 initiative, as well as a new State Law that required water service providers to encourage water conservation. This law has since been amended and the City is no longer required to have conservation rates as long as they can demonstrate that aggregate water use has declined due to other measures.

The City created a 2-tiered rate structure that was designed to target **excessive** water usage as opposed to the water used for everyday household needs. It is not unusual to see a 4 or 5 person household use 30,000 gallons or more per quarter for general use such as personal hygiene, washing clothes and dishes, cooking, etc. This is evidenced by evaluating a household's wintertime usage. In recognition of this, the rate structure was designed to encourage conservation without unduly penalizing larger households for 'normal' water use.

The current water rate structure is as follows:

Category	2012 Usage Rate
SF Residential; Up to 30,000 gals./qtr	\$ 2.15
SF Residential; Over 30,000 gals./qtr – winter rate *	2.40
SF Residential; Over 30,000 gals./qtr – summer rate **	2.65
Non-SF Residential – winter rate	2.80
Non-SF Residential – summer rate **	\$ 3.10

In an effort to gain a broad perspective on citywide household use, the following chart depicts the percentage of single-family homes that fall into the current water rate categories based on usage over the last 12 months and the 2-tiered rate structure.

CURRENT Water Rate Tier	% of SF Homes: Winter	% of SF Homes: Summer
0 – 30,000 gallons per quarter	90 %	85 %
Over 30,000 per quarter	10 %	15 %
Total	100 %	100 %

As this table indicates, under the current water rate structure, 10-15% of single-family homes are impacted by the higher rates. The Public Works, Environment, and Transportation Commission recently discussed the City's water rate structure and conservation rates. The Commission is recommending that the City move to a 3-tier system to incorporate the following breakpoints:

Tier	Description
1	0 – 16,000 gallons per quarter
2	16,000 – 24,000 gallons per quarter
3	Over 24,000 gallons per quarter

The threshold of 16,000 gallons between tiers 1 and 2 is based on the current average usage in a single-family home. The Commission further recommends that the rate structure be revenue neutral so that usage rates at tiers 2 and 3 are sufficient to partially offset usage rates at the first tier. City Staff is comfortable in moving to a 3-tiered system, however the aggregate data continues to suggest that single-family homeowners are already successfully employing a variety of water conservation approaches.

68 The following chart depicts the percentage of single-family homes that fall into each water rate category
69 based on current usage and the proposed 3-tiered rate structure.

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PROPOSED Water Rate Tier	% of SF Homes: Winter	% of SF Homes: Summer
0 – 16,000 gallons per quarter	70 %	60 %
16,000 – 24,000 gallons per quarter or more	15 %	20 %
Over 24,000 gallons per quarter	15 %	20 %
Total	100 %	100 %

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72 Under the proposed 3-tiered rate structure, approximately 30-40% of single-family homes will be impacted
73 by the higher tier rates, compared to 10-15% today. Under this scenario, approximately 2,100 homes will
74 pay more for water services than they currently do as a direct result of the change in rate structure.

75
76 As noted above, the PWET Commission has advocated that the new 3-tiered rate structure be revenue
77 neutral. Under the current 2-tiered structure the lowest tier is set at an amount that is commensurate with
78 the cost to purchase water from the City of St. Paul. This ensures that in the event ALL homes fell into the
79 lowest tier, the City would not be financially jeopardized. Therefore, any incremental revenue derived from
80 the higher tier is set aside for contingency purposes and to promote long-term stability of the rates.

81
82 If on the other hand we move to a revenue neutral rate structure, the premium charged for usage at Tiers 2
83 and 3 will allow the lowest tier rate to decline. As a result, 60-70% of single-family homes would pay less
84 than they currently do. In effect, homes with lower usage will be subsidized by those with higher usage.
85 This is in sharp contrast to the current philosophy where all homes pay the same pass-through cost of water
86 purchased from St. Paul.

87
88 It should be noted that many of these same low usage homes that would benefit from this new approach
89 already receive a subsidy through the senior discount program.

90
91 Another consideration on whether to move to a 3-tiered rate structure is whether such an approach actually
92 promotes water conservation. We have observed that water usage has declined in the past couple of years
93 despite most households never reaching the threshold for the higher tier. One could argue that education
94 and awareness has been the leading factor in discouraging homeowners from excessive water use, rather
95 than the financial incentive (penalty) that accompanies higher tiers.

96
97 One can assume that each household has a threshold for which a financial incentive would cause them to
98 modify their water use behavior. Arguably however, it would take more than just a few dollars per month
99 which is the case under both the current and proposed water rate tier structure.

100
101 A final point for discussion involves the fairness that tiered water rates can have on larger families. For
102 example, let's assume that the per-person water usage for someone that follows moderate water
103 conservation measures is 5,000 gallons per quarter. A 3-person household would use 15,000 gallons per
104 quarter and would not hit the higher tier. However, a 4-person household would use 20,000 gallons per
105 quarter and hit the higher tier simply because there are more people living in the house. On an individual
106 basis the 4-person household is just as conservative in their water use, but they pay a higher rate
107 nonetheless.

108
109 Taking this example further, let's assume that the 4-person household is even more conservative and uses
110 only 4,500 gallons per quarter, per person. This amounts to 18,000 gallons per quarter which once again

111 triggers the higher tier rate. In this example, the 4-person household pays a higher rate despite having
112 superior conservation behaviors compared to the smaller household.

113

114 **POLICY OBJECTIVE**

115 An annual review of the City’s utility rate structure is consistent with governmental best practices to ensure
116 that each utility operation is financially sound. In addition, a conservation-based rate structure is consistent
117 with the goals and strategies identified in the Imagine Roseville 2025 initiative.

118 **FINANCIAL IMPACTS**

119 See above.

120 **STAFF RECOMMENDATION**

121 Based on the increasing wholesale water purchasing costs from St. Paul and given the demand reduction
122 requirements that would need to accompany the elimination of water conservation-based rates, Staff is
123 recommending water consumption rate adjustments as shown in the attached resolution.

124 **REQUESTED COUNCIL ACTION**

125 Motion to adopt the attached resolution establishing the 2013 Water Consumption Rates.

126

Prepared by: Chris Miller, Finance Director
Attachments: A: Resolution establishing the 2013 Water Consumption Rates
B: Memo regarding Water Conservation Requirements

127

EXTRACT OF MINUTES OF MEETING OF THE
CITY COUNCIL OF THE CITY OF ROSEVILLE

* * * * *

Pursuant to due call and notice thereof, a regular meeting of the City Council of the City of Roseville, County of Ramsey, Minnesota was duly held on the 28th day of January, 2013 at 6:00 p.m.

The following members were present:
and the following were absent:

Member introduced the following resolution and moved its adoption:

RESOLUTION _____

RESOLUTION ESTABLISHING THE 2013 WATER CONSUMPTION RATES

NOW, THEREFORE, BE IT RESOLVED, by the City Council of the City of Roseville, Minnesota, the water consumption rates are established for 2013 in accordance with Schedule A attached to this Resolution.

The motion for the adoption of the foregoing resolution was duly seconded by member
and upon a vote being taken thereon, the following voted in favor thereof:

and the following voted against the same:

WHEREUPON, said resolution was declared duly passed and adopted.

State of Minnesota)
) SS
County of Ramsey)

I, undersigned, being the duly qualified City Manager of the City of Roseville, County of Ramsey, State of Minnesota, do hereby certify that I have carefully compared the attached and foregoing extract of minutes of a regular meeting of said City Council held on the 28th day of January, 2013 with the original thereof on file in my office.

WITNESS MY HAND officially as such Manager this 28th day of January, 2013.

William J. Malinen
City Manager

Seal

Schedule A

Water Usage Rate

Category	2012 Usage Rate	2013 Usage Rate
SF Residential; Up to 30,000 gals./qtr	\$ 2.15	\$ 2.20
SF Residential; Over 30,000 gals./qtr – winter rate *	2.40	2.45
SF Residential; Over 30,000 gals./qtr – summer rate **	2.65	2.70
Non-SF Residential – winter rate	2.80	2.90
Non-SF Residential – summer rate **	\$ 3.10	\$ 3.20

* Each successive Tier is approximately 10% higher than the previous rate

** Summer rates are approximately 10% higher than the corresponding winter rate



Public Works Department/Engineering

Memo

To: Chris Miller, Finance Director

From: Duane Schwartz, Public Works Director

Date: 12/19/2012

Re: Demand Reduction Measures to Meet Water Conservation Requirements

Minnesota Statutes, section 103G.291 requires public water suppliers to encourage water conservation by employing demand reduction measures. This can be accomplished through a conservation program that contains a conservation rate structure or a uniform rate structure that achieves demand reduction. Demand reduction measures are well explained in the information from the Department of Natural Resources I am attaching to this memo.

We are required to have an approved Water Conservation Plan as a part of our Comprehensive Plan. This plan was approved as a part of the 2008 Comp Plan update. Our approved plan includes a conservation rate structure and water conservation education efforts. The current conservation rate structure was included at that time.

To get approval for a conservation program that would meet the regulator's requirements with a uniform rate structure we would need to consider and implement the following additional demand reduction measures:

- Lawn sprinkling regulations such as prohibiting during certain times of the day and odd/even
- Monthly Billing
- Home water audits
- Commercial water audits

We currently meet recommended measures in metering and leak detection programs. We will need to demonstrate residential per capita consumption is <75 gallons per day and maximum to average day usage is below 2.6. Our current residential per capita usage meets this requirement but we have exceeded the 2.6 ratio on high demand days during drought periods. Our unaccounted water is under the target goal.

If the City Council is apprehensive to implement additional conservation rate measures, I would recommend we continue with the current conservation rate structure and monitor compliance with the conservation goals for the metro area. If we demonstrate additional measures are needed we can recommend action in a future year.

Demand Reduction Measures

Public water suppliers have an important role in influencing the activities of their customers, which is why those serving more than 1,000 people are required to incorporate demand reduction measures in their [water supply plan](#). However, all communities, independent of size, can benefit by adopting conservation measures that save money and protect water resources for long-term economic growth, as well as public and ecological health. These measures focus on activities consumers can implement to reduce the total use of water, as well as target conservation during the warm and dry periods of summer, while saving users money by reducing water bills.

Water conservation practices can effectively reduce the demand placed upon groundwater and surface water sources as well as municipal water supply systems. Municipalities can reduce water and sewage treatment costs, and delay or eliminate expensive infrastructure improvements (e.g. new wells, water treatment plants and water towers) by encouraging customers to reduce water consumption.

What is a Demand Reduction Measure?

A demand reduction measure serves to reduce water demand, water losses, peak water demands, and nonessential water uses. Demand reduction measures must also include a conservation rate structure, or a uniform rate structure with a conservation program that achieves demand reduction.

Demand reduction measures including a conservation rate structure, or a uniform rate with a water conservation program, must be employed before public water supplier requests well construction approval from the Department of Health or before requesting an increase in permitted volume for a water appropriation permit.

Actions that may be considered a demand reduction measure include, but are not limited to the following activities:

Reducing Water Demand – actions that encourage water consumers to use less water

- | | |
|---|--|
| * Time of day sprinkling regulations | Water efficient appliances |
| * Billing on a monthly basis | Use of rain barrels |
| Conservation rates ✓ | Water audits of customers |
| Water efficient landscaping | Rain gauge regulations |
| Smart meters for automatic sprinkling systems | Recycling water or gray water reuse |
| Water efficient fixtures | * Water conservation education efforts ✓ |

Reducing Water Losses – actions that reduce the volume of water that is not consciously used for a particular purpose

- | | |
|--|---|
| * Leak detection and repair programs ✓ | * Meter testing and replacement/repair programs ✓ |
| * Metering all connections ✓ | * Home water audits (indoor and outdoor) |
| * Commercial/industrial use water audits | |

* MORE THAN LIKELY REQUIRED FOR UNIFORM RATE STRUCTURE
(PER MET COUNCIL STAFF)
✓ CURRENT MEASURES

Reducing Peak Demand – actions that prevent the water use of a single day from being far greater than the volume used on other days

Water efficient landscaping program	Odd/even sprinkling ordinances
Smart meters for automatic sprinkling systems	Outdoor water use bans
Time of day sprinkling ordinance	

Reducing Nonessential Use – actions taken by consumers to reduce water that is not used for drinking, cooking, cleaning or sanitation (i.e. domestic water use)

Billing on a monthly basis	Water efficient appliances
Conservation rates	Water efficient fixtures
Water efficient landscaping	Rain gauge regulations
Smart meters for automatic sprinkling systems	Use of rain barrels
Time of day sprinkling regulations	Recycling water
Water audits of customers	Water conservation education efforts

What are Conservation Rates?

Any rate where the cost per gallon rises as the amount of water used increases, and that can be shown to encourage conservation, can be considered a conservation rate. Conservation rates are based on the premise that the use of water for domestic consumption is fundamental and should be protected. However, as water use increases, it is often for lawn, landscape or other nonessential uses, where opportunities for conservation are greatest.

Demand reduction measures must include a conservation rate, as described here, or a uniform rate with a conservation program, as described later in this document. The types of rates mentioned in law are defined as follows:

Increasing Block Rates: The cost per gallon increases as water use increases within specified “blocks” or volumes. The increase in cost between each block should be significant enough to encourage conservation.

Seasonal Rates: The cost per gallon increases in the summer to encourage the efficient use of water during peak demand periods (caused by outdoor water use). Seasonal rates can take the form of a surcharge added to the normal rate or a separate fee schedule for winter and summer periods. This rate is most effective if water is billed on a monthly basis.

Time of Use Rate: Rates are higher at times of the day when water use demands are high. This rate requires specialized meters that can monitor water use during specified segments of time, for instance every 15 minutes.

Individualized Goal Rate (Water Budget Rate): A rate with tailored allocations developed for each customer. The rate increases as the allocation is used or exceeded by the customer. The allocation is generally based upon winter or January use. This rate is most effective when water is billed on a monthly basis.

Excess Use Rates: Cost per gallon increases greatly above an established level in order to trigger a strong price signal that discourages excessive use. This rate is similar to an increasing block rate but with much higher charges for the larger volume blocks.

What is a Uniform Rate?

With a uniform rate, the cost per gallon is the same regardless of the volume used. When that rate is set at an adequate level, it can effectively promote conservation by encouraging users to limit how much water they use, thereby saving money.

To satisfy the demand reduction measure statute, this rate can only be used in conjunction with a conservation program.

What is a Conservation Program?

Water conservation programs are intended to reduce demand for water, improve efficiency in use, and reduce losses and waste of water. Water conservation programs can also help utility managers satisfy the ever-increasing demands being placed on water resources.

A conservation program is detailed in Part III of an approved [Water Supply Plan](#) and contains the following elements. To better understand the details of each, please refer to the referenced section:

A. Conservation goals, including

- | | |
|--|---|
| a. Unaccounted water <10% | a. Metering connections and maintenance |
| b. Residential per capita demand <75 gallons per day | b. Reducing unaccounted water |
| c. Decreasing per capita demand | c. Conservation water rates |
| d. Decreasing peak demands | d. Outdoor water use regulation |
| | e. Education and information programs |

B. Water conservation program, including:

When a request is made for permission to drill a new well from the Department of Health, or for an increase in authorized volume of appropriation from the DNR, water suppliers that employ a uniform rate for residential use are required to submit a summary of the progress that has been made in implementing the demand reduction measures that were agreed to in the approved Water Supply Plan. In addition, the public water supplier will need to submit water use information that indicates whether the implementation of the demand reduction measures has effectively reduced water use. Public water suppliers without an approved Water Supply Plan, or a Water Supply Plan approved before October 15, 2006, do not have a conservation program.

The DNR welcomes efforts that a public water supplier makes to reduce water use, even if such efforts are different than traditional conservation measures. DNR staff will work collaboratively with water suppliers to tailor demand reduction activities to meet the needs of the community being served. Such measures will be taken under consideration when permission to drill a new well, or increase the authorized volume of appropriation is requested.

What about Multi-family Dwellings?

Multi-family dwellings may be at an advantage for conservation rate implementation and meeting conservation goals because they share a single yard, leading to more efficient use of water for lawn and aesthetic care, effectively making lower water use targets readily achievable. Multi-family dwellings with one customer meter are to divide the water used during the billing period by the number of units to determine the water use rate. Individual dwellings within a multi-family dwelling may be encouraged to better conserve water by metering each unit separately.

What about Industrial Customers?

The goal of conserving water applies to both residential and industrial customers. However, commercial and industrial water rates are not required to be the same as residential rates, and can consist of uniform rates that promote conservation by industry. For very large water users, the water supplier and user may have a contract that determines the rate used for that customer, with the goal still being to encourage the industry to use water wisely, apply water conservation technologies and limit outdoor water use for lawn irrigation.

Statutory Charge

Minnesota Statutes, section 103G.291, require public water suppliers serving more than 1,000 people to adopt demand reduction measures, including a water conservation rate, or a uniform rate with a conservation program:

Minnesota Statutes, section 103G.291, subd. 3. **demand reduction** (c) Public water suppliers serving more than 1,000 people must encourage water conservation by employing water use demand reduction measures, as defined in Subd. 4, paragraph (a) before requesting approval from the commissioner of health under section 144.383, paragraph (a), to construct a public water supply well or requesting an increase in the authorized volume of appropriation. The commissioner of natural resources and the water supplier shall use a collaborative process to achieve demand reduction measures as a part of a water supply plan review process.

Minnesota Statutes, section 103G.291, subd. 4. **demand reduction measures** (a) For the purposes of this section, "demand reduction measures" means measures that reduce water demand, water losses, peak water demands, and nonessential water uses. Demand reduction measures must include a conservation rate structure, or a uniform rate structure with a conservation program that achieves demand reduction. A "conservation rate structure" means a rate structure that encourages conservation and may include increasing block rates, seasonal rates, time of use rates, individualized goal rates, or excess use rates. If a conservation rate is applied to multifamily dwellings, the rate structure must consider each residential unit as an individual user.

(b) To encourage conservation, a public water supplier serving more than 1,000 people must implement demand reduction measures by January 1, 2015.

What if I Have Questions?

We are committed to working with public water suppliers to develop demand reduction measures that effectively meet the needs of individual communities. Please contact [DNR staff](#) for clarification on any questions you have. You may work with your local staff or contact Joe Richter, Joe.Richter@state.mn.us, 651-259-5703 or Princesa VanBuren Hansen, Princesa.Hansen@state.mn.us, 651-259-5731.

Demand Reduction Measure Summary

Who? Public water suppliers serving more than 1,000 people are required to implement these measures. However, all communities, independent of size, can benefit by adopting conservation measures that save money and protect water resources for long-term economic growth.

What? Must adopt demand reduction strategies, including a water conservation rate or a uniform rate with conservation program

Demand reduction measures reduce:

- Water demand
- Water losses
- Peak water demands
- Nonessential water uses

Combined with:

Conservation rate is any rate where the cost per gallon rises as the amount of water used increases, including:

- Increasing block rates
- Seasonal rates
- Time of use rates
- Individualized goal rate
- Excess use rate

OR

Uniform rate has the same cost per gallon regardless of the volume used

Conservation programs must have:

- Conservation goals with reduction in demand and unaccounted water
- Conservation program that considers metering, rates, regulation and education

When?

- Before requesting well construction approval from the Department of Health
- Before requesting an increase in permitted volume for their water appropriation permit from the DNR
- No later than January 1, 2015

Roseville Public Works, Environment and Transportation Commission

Agenda Item

Date: January 22, 2013

Item No: 5

Item Description: Traffic Signal / Intersection Discussion

Background:

At the November PWETC meeting, the commission members asked a number of questions regarding signals and pedestrian timing. The Commission specifically discussed the Fairview signals within the NESCC pathway corridor. It was requested that staff include this topic on a future meeting.

We have asked Mike Spack, Spack Consulting, to provide the Commission some background on traffic signals, timing, and pedestrians. He is a Professional Traffic Operations Engineer (PTOE) and assisted the City on the signal design for the NESCC project. He will be providing the commission with some information regarding MnDOT and Ramsey County timing practices.

From the meeting minutes:

"Discussion included updated intersection signal lights for bicycles and pedestrians, both those already installed and those still needed at various locations throughout the City; clarification by staff on "free rights" near Rosedale entrances with no crosswalks at those locations in accordance with MnDOT practice; and how push buttons provide clearance for pedestrians and/or bicycles on Ramsey County roads in particular (e.g. pre-emption for signals).

Members concurred that they would like to have additional discussion at a future meeting on theory/priorities/best practices for design of pedestrian crossings, as well as implications related to those designs, including legal, ADA, best practices, and safety considerations. Chair Vanderwall opined that this design information was important for the Commission, as well as the public, to understand to have all perspectives outlined."

Recommended Action:

Discuss Traffic Signals/ Intersections

Attachments:

None

Roseville Public Works, Environment and Transportation Commission

Agenda Item

Date: January 22, 2013

Item No: 6

Item Description: Receive Recycling Background Information

Background:

The current recycling contract expires at the end of 2013. In preparation for the next contract the City Council and City Manager has requested the PWETC review past information and reports related to recycling to formulate recommendations for the content of a Request for Proposals for Recycling Services. A draft RFP is anticipated to be forwarded to the Council in late spring for approval and subsequent advertisement. We are providing background materials at this time so Commission members have a month to review for a discussion at your February meeting. Any additional information needs could be communicated to staff at this time as well.

Recommended Action:

Review information for February meeting discussion.

Attachments:

- A. 2005 RW Beck Report on Pilot Project
- B. 2010 Commission Community Values Minutes
- C. Ramsey County Solid Waste Plan
- D. Roseville Work Plan
- E. Miscellaneous Recycling Articles
- F. Additional Recycling Information

Report

City of Roseville Recycling Pilot Program Summary

Ramsey County, Minnesota

December 2005



December 8, 2005



Norm Schiferl
Saint Paul - Ramsey County Department of Public Health
Environmental Health Section
1670 Beam Avenue, Suite A
Maplewood, MN 55109

Subject: **Roseville's Final Report**

Dear Norm:

The project team of R. W. Beck, Inc. and Dan Krivit and Associates (Project Team) is pleased to submit this final report entitled, *City of Roseville Recycling Pilot Program Summary*. This summary report includes analyses and documentation from previously published reports by the City of Roseville (City), Ramsey County (County), and the Project Team.

In addition to the results contained within this report, there are some additional observations that we will summarize within this cover letter for your consideration.

Post-Pilot and the Competitive Marketplace

After the City's pilot project concluded, the City issued its *Specifications and Request for Proposal for Comprehensive Recycling Service* on August 26, 2005. The Project Team, together with County staff, monitored the City's overall recycling services procurement process and related policy decisions.

The City's request for proposal (RFP) included key variables tested in the Roseville pilot program and allowed potential vendors to propose on a variety of collection methods including:

- Dual-stream and/or single-stream collection;
- Bi-weekly and/or weekly collection frequency ; and
- Current, 18-gallon curbside recycling bins and/or alternative larger recycling bins or carts.

The City utilized the competitive environment of the Twin Cities marketplace for recycling services to encourage best value proposals in response to the City's RFP. Multiple proposal scenarios were allowed. For example, companies could submit a proposal for single-stream collection as well as a dual-stream proposal alternative. This system of "alternative proposals" followed a similar practice used successfully by the City of Maplewood in June 2005.

On September 21, 2005, the City of Roseville received proposals from four companies. One proposal was selected by the City Council in October 2005 and a final contract was negotiated by City staff based on this selection. The Project Team has not yet received copies of the proposals submitted, as these are being retained by City staff as confidential until the final contract is fully executed and such documents are made publicly available. As you know, the Project Team did not participate in the City's proposal review.

It is our understanding that the City received recycling proposals with multiple scenarios for collection methods (single-stream and dual-stream). Although the Project Team has not analyzed the details of the proposals, it is evident the City should benefit from the competitive marketplace to offer recycling services. Ramsey County municipalities should be in good position to continue to leverage this competitive environment to their advantage in order to improve cost-effectiveness of their recycling programs well into the future.

Pilot Design, Recyclable Materials Composition and Residuals Analyses

The Roseville pilot project demonstrated how a recyclable materials composition study can be used to evaluate the impacts on the quantities and types of materials collected when changing recyclable materials collection methods. In addition to the detailed statistical results, the following research objectives were achieved through the Roseville pilot project:

1. Formulated improvements in various pilot research planning and field design strategies (e.g., planning timeframes, number and priority of research variables, labor requirements, costs, etc.).
2. Developed recommendations for a set of definitions/nomenclature that will help further the discussion about the various sources of contamination.
3. Developed and recommended a set of standard methods for recyclable materials composition sorting and analysis.
4. Trained select County staff and local municipal recycling coordinators on composition sorting methods. (These recommended methods were used by the City of Plymouth in their own pilot program.)
5. Received and reviewed previous research by Waste Management, Inc. on processing residuals from their materials recovery facility (MRF) in Minneapolis, (*Summary - Single-Sort Constituent Test*; October 18, 2003).
6. Reviewed other relevant research on processing residuals and compiled a bibliography.
7. Participated in substantive, detailed discussions with City staff and Waste Management staff about procedures to reduce the amount of non-targeted materials set out at the curb by residents.

Subsequent to the Roseville pilot study, an issue arose related to mixed broken glass. The Minnesota Pollution Control Agency wrote a letter to Waste Management on September 2, 2005 in response to correspondence about Waste Management's handling of mixed broken glass from the City of Roseville's recycling program. The letter stated that although the MPCA has accepted specific materials for use as alternative daily landfill cover, it is not considered recycling. This letter is indicative of the need for local recycling officials to continue such policy discussions with the MPCA as per our recommendation #3 in the attached summary report.

Norm Schiferl
December 8, 2005
Page 3

Thank you and the City of Roseville for the opportunity to provide these services. We are hopeful that this work will benefit other Ramsey County municipalities in the future.

Sincerely,

A handwritten signature in blue ink that reads "Robert W. Craggs". The signature is written in a cursive style with a light blue circular stamp or watermark behind it.

Robert Craggs
R. W. Beck, Inc.

Cc: Mary Chamberlain, R. W. Beck, Inc.
Dan Krivit, Dan Krivit and Associates

City of Roseville Recycling Pilot Program Summary

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Appendix A: City of Roseville: Analysis of Processing Residuals

Attachment A-1: Primer on Definitions

Attachment A-2: Additional Discussion of the WM Study at its
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Attachment A-3: Excerpts from the City of Shoreview Recycling
Contract – Residuals Requirements

Appendix B: Data Analysis of City of Roseville Recyclable Materials Composition Sorts

Attachment B-1: Composition Analysis Categories

Attachment B-2: Recyclable Materials Composition Protocol

Attachment B-3: Health and Safety Plan

Attachment B-4: Data Sheet

This report has been prepared for the use of the client for the specific purposes identified in the report. The conclusions, observations and recommendations contained herein attributed to R. W. Beck, Inc. (R. W. Beck) constitute the opinions of R. W. Beck. To the extent that statements, information and opinions provided by the client or others have been used in the preparation of this report, R. W. Beck has relied upon the same to be accurate, and for which no assurances are intended and no representations or warranties are made. R. W. Beck makes no certification and gives no assurances except as explicitly set forth in this report.

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City of Roseville Recycling Pilot Program

Executive Summary

Overview

The City of Roseville, Minnesota (City) conducted a pilot study in 2004 to help refine its curbside recycling program to capture more recyclable material. The pilot analyzed the impacts that various collection methods have on the quantity and quality of residential recyclable materials collected curbside, as well as impacts on customer participation.

The project team of R. W. Beck, Inc. and Dan Krivit and Associates (Project Team) was retained by Ramsey County (County) to assist the City with this pilot project to:

- Assist with the design of the pilot;
- Conduct a recyclable materials composition assessment;
- Analyze the results of the field evaluation; and
- Produce a final recycling pilot project summary based on all available data and project reports produced by City staff, County staff, and the Project Team.

Directed by City staff, the pilot study included field tests of different strategies for providing curbside recycling collection services, analysis of data gathered from recyclable material composition sorts, a survey of residents before and after the pilot, gathering of set-out and participation data, and an examination of contamination issues. Waste Management, Inc., the existing City recycling contractor, conducted the collection operations of the pilot project.

Pilot Study Methodology

It was determined that key program parameters could be tested in a pilot collection project by comparing different collection approaches in different neighborhoods within the City.

The collection approaches that were tested are summarized below in Table ES-1.

Roseville Recycling Pilot Program Summary

Table ES-1
Pilot Study Components

	Monday Single-Stream	Monday Single-Stream Contrast	Tuesday Increased Frequency	Wednesday Increased Education	Thursday Larger Bin Capacity	Friday Control (Current System)
Frequency of Collection	Every other week	Every other week	Weekly	Every other week	Every other week	Every other week
Bins/Carts	64-gallon cart	64-gallon cart	18-gallon bin	18-gallon bin	Two 22-gallon bins with wheels	18-gallon bin
Added Education	Only pertaining to new sorting system	Only pertaining to new sorting system	Only pertaining to new frequency of collection	Extra educational materials	Only pertaining to new bin capacity	None
Demographics	Similar	Newer homes & more affluent than other pilot areas	Similar	Similar	Similar	Slightly higher average income than other pilot areas except Contrast

Results of Pilot Program

Material Composition Assessment

To compare the types and quantities of recyclable and non-targeted materials collected in each of the various pilot study areas, the pilot program included detailed material composition sorts and analysis.

For each pilot route (including the Control route), one field sort was conducted in the two-month “Before” period (June-July 2004) and two field sorts were conducted in the four-month “During” period (August-November 2004).

The statistical analysis measured if there was a statistically significant change in the percentages of the various recyclable materials, and/or the actual weight of certain materials in the pilot areas.

The overall results from the analysis reflect that the composition of materials collected for recycling changed significantly with single-stream but did not change significantly with any of the dual-stream variations (increased frequency, increased capacity, increased education).

The percentage of non-targeted materials (at the curb) in the single-stream routes were higher than the percentage of non-targeted materials found on the same routes collected as dual-stream routes in the “Before” period. The percentages of non-targeted materials in the single-stream routes were higher than the percentages of non-targeted materials found in the combined “During” dual-stream pilot routes.

Tonnages of Material Collected

Average gross weights (all tonnages, including non-targeted materials) collected per route for each week of the study for which data was collected (three weeks in the “Before” period, and five weeks in the “During” period for the dual-stream routes, nine weeks for the Weekly route) were calculated. These gross weights were then converted to an average gross weight collected per household per route.

Weights of non-targeted materials included by residents with their recyclables were calculated for each pilot area. Overall, non-targeted materials in the “During” single-stream areas were found to be statistically significantly higher than the dual-stream “Before” areas.

Using this contamination data from the composition study, the gross weights per household were then adjusted by subtracting the non-targeted materials to determine the net pounds of targeted recyclable materials per household collected per route in the “Before” and “During” periods for each pilot area, as shown below in Table ES-2.

Table ES-2
Comparison of Net¹ Pounds per HH Collected Per Route *Before* and *During* the Pilot

	Routes “Before” Pilot - All Dual-Stream Net Average Non-Targeted Materials ²			Routes “During” Pilot Net Average Non-Targeted Materials ²			Statistically Significant Difference
	Mean (Avg. Lbs Collected per HH per Route)	Lower Range	Upper Range	Mean (Avg. Lbs Collected per HH per Route)	Lower Range	Upper Range	
Mon. SS	21.33	19.70	22.96	28.16	25.83	30.49	✓
Mon. – SS Contrast	26.87	25.72	28.03	34.39	32.19	36.59	✓
Wed. – Addt’l Educ	21.73	15.84	27.63	25.30	22.62	27.99	
Thurs. – Larger Bins	20.03	17.82	22.23	26.87	23.29	30.46	✓
Fri. – Control	24.14	19.19	29.10	26.86	20.60	33.11	

¹ Average total pounds after non-targeted materials were subtracted.

² The range was calculated by subtracting the difference in pounds collected with and without non-targeted materials from the gross pounds collected per household.

Comparing the tonnages collected before and during the pilot:

- The single-stream routes resulted in statistically significant increases in total tonnages recovered, even when their relatively high portions of non-targeted materials were subtracted out, as compared to the same areas collected as dual-stream routes in the “Before” period.
- The Larger Bin Capacity route resulted in a statistically significant increase in total tonnage recovered, net of non-targeted materials, as compared to the same area collected in the “Before” period.

Table ES-2 compared the pilot routes in which the recyclable materials were collected every other week. Because the Tuesday pilot route was collected weekly, the pounds collected per household were not comparable to those collected every other week, so a comparison of the weekly routes was conducted separately.

During the pilot, the average gross pounds of recyclable material collected per household on the weekly route was 14.95 pounds. The average pounds of non-targeted materials per household was .55 pounds per week, resulting in the net pounds per household per week of 14.40 pounds.

The effects of weekly collection of recyclable materials can be compared to every other week collection on an *annual* basis. Table ES-3 below shows the projected annual pounds per household for each route, based on the average pounds collected per collection event during the pilot, net non-targeted materials.

Table ES-3
Comparison of Projected Pounds Per HH Per Year

	Average Pounds Collected Per Collection Event During Pilot¹	Estimated Pounds Per HH Per Year
Mon. SS	28.16	732.16
Mon. – SS Contrast	34.39	894.14
Tues - Weekly	14.40	748.80
Wed. – Addt'l Educ	25.30	657.80
Thurs. – Larger Bins	26.87	698.62
Fri. – Control	26.86	698.36

¹ Net non-targeted materials.

As reflected above, weekly collection resulted in annual quantities collected that are comparable to the single-stream pilot route.

Set-out and Participation Rates

City staff conducted field audits of each pilot route, each collection week in order to collect accurate set-out data by identifying households that had curbside recycling bins or carts set out for collection. The results of the set-out data analysis showed that the routes with the largest increase in the number of set-outs were the single-stream route and the Larger Bin Capacity route.

Participation was defined as a household that set out recyclable materials at least once during the six collection events of the pilot routes collected every other week, and at least once during the first six collection events and once during the second six collection events of the pilot route collected weekly. The pilot route with the largest increase in participation was the Larger Bin Capacity route.

Customer Attitudes

The City conducted two mail surveys, before and after the pilot study. About one-half of pilot program participants responded to each of the mail surveys. In the pre-survey, 39 percent of respondents stated that a financial rebate would motivate them to recycle more. In the post-survey, when asked if they would be willing to pay more for the cart system, 49 percent in the single-stream pilot stated yes, and 64 percent in the single-stream contrast pilot stated yes. Of the weekly route respondents, 45 percent stated they would be willing to pay more for increased collection frequency. The survey results are summarized in detail in Table 11 of the report.

Conclusions

The Project Team has summarized the results of the City's recycling pilot program as follows:

- The largest increase in the number of set-outs occurred in the single-stream and larger bin capacity routes.
- The largest increase in participation occurred in the larger bin capacity routes.
- The largest increase in quantities of material collected per household occurred in the single-stream and larger bin capacity routes.
- Based on the tonnages collected during the pilot routes, it is estimated that on an annual basis, the amount of recyclable materials collected weekly would be comparable to the quantities collected on a single-stream route.
- The composition of the single-stream routes showed increased percentages of paper collected, decreased percentages of metals, glass and plastic, and an increase in the percentages of non-targeted materials. However, the net quantities collected in the single-stream routes were greater than the dual-stream routes.
- The pilot route that was provided increased public education materials did not result in a statistically significant increase in the quantity of materials set out at the curb.

Opportunities for improving curbside recycling in any given municipality are truly program-specific. The City of Roseville has a very mature program and its pilot program results may differ if compared to other programs. Cities need to decide the optimal curbside recyclable materials collection program based on a range of issues including cost, materials recovery levels, participation, and customer preference.

Recommendations

The Roseville pilot project can provide lessons for other recycling program managers looking for opportunities to improve program performance.

1. The implementation of single-stream recycling is a significant, visible change in residential recycling. Ramsey County municipalities should closely examine the available results from this Roseville pilot and other research projects referenced when evaluating alternative collection options such as single-stream. Single-stream collection, larger bin capacity, and/or increased frequency may foster an increase in quantities collected.
2. Ramsey County staff should continue policy discussions with the MPCA about the definition of “recycling” as it relates to glass. Glass is presently not considered recycling when used as landfill cover.
3. Municipalities should consider including RFP/bid and contract provisions for contractors to measure the various types of contamination. If a municipality elects to include such requirements, the municipality should also consider how to monitor and enforce such provisions for measurement of contamination.

City of Roseville

Recycling Pilot Program Summary

Overview

The City of Roseville, Minnesota (City) conducted a pilot study in 2004 to help refine its curbside recycling program to capture more recyclable material. The pilot analyzed the impacts that various collection methods have on the quantity and quality of residential recyclable materials collected curbside, as well as impacts on customer participation.

The project team of R. W. Beck, Inc. and Dan Krivit and Associates (Project Team) was retained by Ramsey County (County) to assist the City with this pilot project. The Project Team has been providing recycling technical assistance to County municipalities since 2000. The County authorized the Project Team to consult with the City on this pilot project to:

- Assist with the design of the pilot;
- Conduct a recyclable materials composition assessment;
- Analyze the results of the field evaluation; and
- Produce a final recycling pilot project summary based on all available data and project reports produced by City staff, County staff, and the Project Team.

Directed by City staff, the pilot study included field tests of different strategies for providing curbside recycling collection services, analysis of data gathered from recyclable material composition sorts, a survey of residents before and after the pilot, gathering of set-out and participation data, and an examination of contamination issues. Waste Management, Inc., the existing City recycling contractor, conducted the collection operations of the pilot project.

This report describes the background, design, methodology, results and conclusions of the study.

Background

The City of Roseville is an inner ring suburb of St. Paul with a population of about 34,000. The population has remained relatively stable since 1970. The City has an aging population (the median age is 41; 30% of residents are over 55; and 20% of residents are over 65). The percentage of residents who speak a second language has grown to 9.4%.

The City has offered a curbside recycling program since 1987. Materials were source-separated by residents until the beginning of 1999, when the City converted to its current dual-stream (two-sort) curbside recycling collection program. Over the years the frequency of collection has increased, from monthly, to twice per month, and then to every other week. Between 2,500 and 3,000 tons of material have been collected per year since 1992 (21 to 26 pounds/household/set-out); however there has been no sustained growth since 1992.

As part of its current curbside recycling collection contract with the City, Waste Management collaborated with the City to implement a pilot study.

Pilot Study Design and Methodology

Design Parameters

Trend for Increasing Commingling

Beginning in the 1980's and early 1990's in much of Minnesota and the metropolitan area, residential curbside collection programs required residents to separate recyclables into several categories. Following a trend that had already begun elsewhere in North America, by the late 1990's some waste haulers and recycling collectors in Minnesota were converting to the commingled dual-stream system (also referred to as dual-sort or two-sort). In this system, residents separate recyclable materials into two streams: fiber (paper products including newspapers, cardboard, magazines, mixed paper) and containers (rigid containers including metal cans, plastic bottles, and glass bottles). This dual-stream collection method is the City's current system.

More recently, Waste Management, the City's contracted recycling vendor since 1999, has been converting some of its contracted municipalities from a dual-stream collection system to a single-stream system, whereby mixed fibers and mixed rigid containers are combined in one container, usually a large, wheeled cart. There are two other haulers that have, or plan to implement single-stream systems in the metropolitan area in the near future.

A key reason for the shift to increased commingling is to make recycling more convenient for residents, thereby fostering additional participation and recovery of materials, and potentially lowering costs. The tradeoff in this system is that more processing is required at materials recovery facilities (MRFs) to separate mixed recyclable materials and make them acceptable to end-use markets. Some industry professionals have cited concerns that commingled systems can result in increased contaminants that have to be disposed as refuse, as well as an increase in the amount of broken glass generated as a result of commingling.

Recent Studies

Two studies in recent years have suggested ways to improve local recycling programs.

“Improving Recycling of Residential Paper in Minnesota,” conducted by the Recycling Association of Minnesota (RAM), focused on efforts to spur residents to recycle more paper, especially mixed paper, using pilot studies in a few cities in and near the metropolitan area (RAM Study). The RAM Study showed that residents in the pilot areas responded well to detailed instructions, and as a result, the residential paper recovered in the pilot areas increased 17 to 41 percent. There is significant potential to recover more residential paper with no or little additional collection costs.

“A Comparative Analysis of Applied Recycling Collection Methods,” conducted by Eureka Recycling during 2001-2002, featured a comparison of different approaches to collecting residential recyclables through pilot studies of each approach in several neighborhoods in the City of St. Paul (Eureka Study). These approaches included source-separated, dual-stream, and single-stream recycling collection, coupled with variations in collection frequency, number and sizes of bins and carts, and education. The Eureka Study resulted in the City of St. Paul adding plastic bottles to their curbside recyclable materials collection program and converting from a bi-weekly, source separated program to a weekly, dual-stream program using 18-gallon bins.

As a result of these previous studies, the City of Roseville decided that several key program parameters required further study. In addition to comparing the cost effectiveness and performance of dual versus single-stream collection programs, City staff designed the pilot project to investigate the effects of the following other key program parameters:

- Education;
- Bin/cart capacity; and
- Materials recovered and contamination.

Education

Results of both the RAM and Eureka Recycling studies indicated education is a key component to increasing residential participation. Even though the City has not made any changes to its curbside recycling program since 1999, some residents appear to not fully understand the scope and logistics of the recycling program. This is similar to other communities as well. The City of Roseville designed the pilot to address these educational concerns by supplementing one pilot route with new educational materials and measuring impacts of additional education only on program performance.

Bin/Cart Capacity

Previously-collected data by the City and results of the Eureka Recycling study indicated that an increase in bin capacity is a program component that may increase recycling participation.

Up until late 2001, the City provided one 18-gallon bin per household, even though the recycling program had expanded to accept more materials. While 81% of City residents surveyed in 2002 who recycled said they used the 18-gallon bins, 54% of recyclers said the bins did not meet their needs. When asked what would improve the

Recycling Pilot Program Summary

bins, 66% responded “make the bins larger”, 61% responded “add wheels”, and 34% responded “add covers”.

As a result, three components emerged for study based on previous studies and the focus groups in early 2004 of City residents: larger bins, wheels for bins and carts, and weekly collection, as described below.

- Larger bins. The City chose to use two 22-gallon bins in place of the 18-gallon bin currently provided to residents for the “Larger Bin Capacity” area of the pilot study. (Bin covers were to be provided as well, but were not available from the vendor at the time of the study.)
- Wheels. The Eureka Study found the collection method that had the largest percent increase in tons collected was the dual-stream route with two 32-gallon wheeled carts, but cited the expense of the carts as a barrier to implementation. Waste Management provides the option of 32, 64, or 96-gallon wheeled carts for single-stream service in other communities. For the City’s pilot, the City chose to attach wheels to the 22-gallon bins used in the “Larger Bin Capacity” area, and to use one 64-gallon cart provided by Waste Management for the single-stream pilot areas.
- Weekly collection. Weekly collection potentially offers residents both a means to increase the capacity of recyclables they can store between collections, while also eliminating the need to monitor which week is the week for recyclable materials collection. Thus, an “Increased Frequency” pilot study area was included.

Materials Recovered and Contamination

One of the key issues with the trend to more commingled recyclable materials collection (e.g., dual-stream and single-stream collection systems), is the degree to which these methods result in more material being collected that is not ultimately recycled or remanufactured. Such contamination or residuals may fall into three categories:

- Non-targeted materials, at the curb: Materials that are defined by the municipality as not acceptable but are frequently included by residents in their curbside bins, such as film plastic, plastic toys, plastic tubs, and wet-strength containers (i.e., beer/pop/water boxes).
- Processing residuals, at the MRF: Materials that are disposed as trash as an unwanted by-product after processing of recyclable materials at the MRF, such as dirt, residue from containers, and items contaminated to the point of rendering them non-marketable.
- Contaminants in marketed product, at the mill: Inclusion of materials that are prohibited or which exceed specifications for an end-market manufacturer. For example, glass is a prohibited contaminant in most end market specifications for newspaper bales from recovered paper suppliers.

Mixed Broken Glass

There is an ongoing debate within the recycling industry about the appropriate end-use applications for glass that is broken during the collection and processing of commingled residential materials that cannot be separated by color for remanufacture back into glass bottles. Such mixed-color, broken glass pieces may instead be used for lower value aggregate uses, such as sandblast media, supplements to traditional road construction aggregates, and alternative daily cover at landfills.

The larger policy question transcending this glass issue is: “Should municipalities play a role in encouraging the concept of highest and best use for recyclable materials when designing their recycling programs and contracting for recycling services?”

These residuals and contamination issues are discussed in more detail in Appendix A. The pilot project included evaluating the extent of non-targeted materials at the curb and review of existing data on process residuals.

Pilot Study Methodology

It was determined that most of the key program parameters could be addressed in a pilot collection project by comparing different collection approaches in different neighborhoods within the City.

The collection approaches that were tested included:

- Single-stream: Bi-weekly collection, one 64-gallon wheeled cart, tested in two different neighborhoods;
- Increased collection frequency: Weekly collection, one 18-gallon bin, dual-stream system;
- Increased public education efforts: Bi-weekly collection, one 18-gallon bin, dual-stream system, increased education;
- Larger bin capacity: Bi-weekly collection, two 22-gallon bins with wheels, dual-stream system;
- Control, using the current system: Bi-weekly collection, one 18-gallon bin, dual-stream system.

These pilot study areas are summarized below in Table 1.

Recycling Pilot Program Summary

Table 1
Pilot Study Components

	Monday Single- Stream	Monday Single- Stream Contrast	Tuesday Increased Frequency	Wednesday Increased Education	Thursday Larger Bin Capacity	Friday Control (Current System)
Frequency of Collection	Every other week	Every other week	Weekly	Every other week	Every other week	Every other week
Bins/Carts	64-gallon cart	64-gallon cart	18-gallon bin	18-gallon bin	Two 22-gallon bins with wheels	18-gallon bin
Added Education	Only pertaining to new sorting system	Only pertaining to new sorting system	Only pertaining to new frequency of collection	Extra educational materials	Only pertaining to new bin capacity	None
Demographics	Similar	Newer homes & more affluent than other pilot areas	Similar	Similar	Similar	Slightly higher average income than other pilot areas except Contrast

Selection of Pilot Areas

The City selected pilot areas of 330-360 single-family homes – the approximate size of one full collection route. The pilot route selections were made after a review of U.S. Census data and discussions with Waste Management staff. Each area was roughly similar in demographics except that a second single-stream area, called the Contrast area, was selected that featured newer homes and more affluent residents. A control route of comparable size was also selected that had no changes in collection method. The area chosen for the Control route had a slightly higher average income level than all the other test areas, except for the single-stream contrast area.

Time Period

For each pilot area, residents' behavior was monitored in a two-month "Before" period (June – July 2004) followed by a four-month "During" period (August – November 2004). Data from certain weeks were excluded from the data analysis to avoid bias. These included:

- the week of July 4 during the "Before" period;
- the first two weeks of the "During" period, because information had just been sent out to residents of the non-Control pilot areas, and previous studies have shown there is an initial surge of participation that results from direct contact; and

- the last week of the “During” period, because residents had been sent a satisfaction survey.

Participation and Set-Out Rates

To record participation and set out rates of residents, City staff conducted route audits to observe customer behavior by identifying households that had curbside recycling bins or carts set out for collection. Staff also confirmed housing counts with property tax and utility billing records.

Weights and Composition Sorts

Three weeks of collection data were compiled for the “Before” period. Five weeks of data were compiled for the “During” period, except for the Weekly area, in which nine weeks of data were compiled. Each collection vehicle was driven to Waste Management’s MRF in Minneapolis and weighed to determine the quantities of materials collected by route.

For one week of the “Before” and two weeks of the “During” period, the City conducted composition sorts of representative samples of each load, using a methodology developed by the Project Team for the pilot study that is consistent with industry standards.

Results of Pilot Program

This section describes the results of the study including:

- materials composition;
- quantities collected;
- set-out and participation rates;
- contamination; and
- customer attitudes.

Material Composition Assessment

To compare the types and quantities of recyclable and non-targeted materials collected in each of the various pilot study areas, the pilot program included detailed material composition sorts and analysis. As shown in Appendix B, the Project Team (under direction from the County), developed the composition analysis categories, the materials composition protocol, data sheets, a health and safety plan, and provided the statistical analysis. The random sampling protocol incorporated American Society of Testing and Material (ASTM) standards to ensure the samples selected for composition sorts were representative of the entire load.

For each pilot route (including the Control route), one field sort was conducted in the two-month “Before” period (June-July 2004) and two field sorts were conducted in the four-month “During” period (August-November 2004). Using the Project Team protocol, City staff coordinated the field sorts, which were conducted at the City’s

Recycling Pilot Program Summary

Public Works garage by City staff and waste and recycling professionals from the metropolitan area. For each sample, nine categories of recyclable and four categories of non-targeted materials were sorted and weighed. The categories are listed in Table 2 below.

Table 2
City of Roseville
Composition Analysis Categories

Recyclable Materials
1. Old Newspaper (ONP)
2. Household Office Paper and Mail (HOPM)
3. Old Magazines/Catalogs (OMG)
4. Phone Books
5. Uncoated Old Corrugated Cardboard (OCC) and Brown Paper Grocery Bags
6. Old Boxboard (OBB)
7. Metal Cans
8. Glass Bottles and Jars
9. Plastic Bottles
Non-targeted Materials¹
1. Beer, Pop & Water Boxes
2. Other Paper Trash
3. Plastic Bags and Other Film Plastic
4. Other Trash (i.e., non-recyclable items such as twine, foam packaging, ceramics, mirrors, aerosol cans, medical waste, etc.)

¹ Defined by the City and outlined in public education pieces and explained to residents by City customer service staff answering telephone inquiries.

The data from the sorting events were entered into R. W. Beck's specially designed waste composition model, which uses 90% confidence intervals to measure statistically significant differences (see the analysis in Appendix B). In some cases, data from the pilot areas were aggregated to increase the number of samples for statistical analysis.

Statistical Analysis

The statistical analysis measured if there was a statistically significant change in the percentages of the various recyclable materials, and/or the actual weight of certain materials in the pilot areas. The following is a summary of key findings from the Project Team's analysis.

Single-Stream

The following comparisons were statistically significant:

- “During” versus “Before.” The single-stream routes yielded increased percentages of paper compared to the same areas collected as dual-stream routes in the “Before” period.
- “During” versus “Before.” The single-stream routes generated decreased percentages of metals, glass and plastics compared to the same areas collected as dual-stream routes in the “Before” period.

Dual-Stream

- “During” versus “Before.” The composition of materials collected in the combined “During” dual-stream pilot areas was not significantly different from the composition compared to the same areas in the “Before” period.
- “During” versus “During.” The composition of materials collected in each of the “During” dual-stream pilot areas (Weekly, Two Bins, Education) were not statistically different from each other.

Non-Targeted Materials

- The percentages of non-targeted materials (at the curb) in the single-stream routes were higher than the percentages of non-targeted materials found on the same routes collected as dual-stream routes in the “Before” period.
- “During” versus “During.” The percentages of non-targeted materials in the single-stream routes were higher than the percentages of non-targeted materials found in the combined “During” dual-stream pilot routes.

The overall results from the analysis reflect that the composition of materials collected for recycling changed significantly with single-stream but did not change significantly with any of the dual-stream variations (increased frequency, increased capacity, increased education).

Tonnages of Material Collected and Processed for Recovery

The overall goal of this pilot program was to help the City refine its curbside recycling program to capture more recyclable material. Thus, this section includes an analysis of how much additional material was recovered in each of the tested pilot approaches.

As discussed in the Pilot Design and Methodology section, a key issue is how to address material that is collected at the curb but is not ultimately recovered and recycled. Such contamination or residuals falls into three categories:

- Non-targeted materials, collected at the curb;
- Processing residuals from the MRF; and
- Contaminants in marketed product (e.g., in bales sold to end-markets).

Comparison of Tonnages Collected During Pilot Collection Routes

The first step in comparing the tonnages was to develop average gross weights (all tonnages, including non-targeted materials) collected per route for each week of the

Recycling Pilot Program Summary

study for which data was collected (three weeks in the “Before” period, and five weeks in the “During” period for the dual-stream routes, nine weeks for the Weekly route). These gross weights were then converted to an average gross weight collected per household per route.

During the material composition sorts and analysis, weights of non-targeted materials included by residents with their recyclables were calculated for each pilot area. Overall, non-targeted materials in the “During” single-stream areas were found to be statistically significantly higher than the dual-stream “Before” areas.

Using this contamination data from the composition study, the gross weights per household were then adjusted by subtracting the non-targeted materials to determine the net pounds of targeted recyclable materials per household collected per route in the “Before” and “During” periods for each pilot area.

Table 3
Comparison of Pounds per HH¹ Collected Per Route With and Without Non-Targeted Materials²
Before and During the Pilot

	Routes “Before” Pilot - All Dual- Stream		Routes “During” Pilot	
	Gross (with non-targeted materials)	Net (without non-targeted materials)	Gross (with non-targeted materials)	Net (without non-targeted materials)
	Mean (Avg. Lbs Collected per HH per Route)			
Mon. SS	22.03	21.33	30.35	28.16
Mon. – SS Contrast	28.17	26.87	37.79	34.39
Wed. – Addt'l Educ	22.75	21.73	26.38	25.30
Thurs. – Larger Bins	20.91	20.03	27.79	26.87
Fri. – Control	25.09	24.14	27.78	26.86

¹ Pounds per household were calculated by converting the average truck weights (in tons) for each route into pounds and dividing by the number of households on each pilot route.

² The non-targeted materials were calculated by applying the percent of non-targeted materials found during the recyclable materials composition sorting events for each pilot route to the average pounds collected per HH.

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Table 4

Comparison of Gross¹ Pounds per HH² Collected Per Route *Before* and *During* the Pilot

	Routes “Before” Pilot - All Dual-Stream			Routes “During” Pilot			Statistically Significant Difference
	Mean (Avg. Lbs Collected per HH per Route)	Lower ³ Range	Upper ³ Range	Mean (Avg. Lbs Collected per HH per Route)	Lower ³ Range	Upper ³ Range	
Mon. SS	22.03	20.40	23.66	30.35	28.02	32.68	✓
Mon. – SS Contrast	28.17	27.02	29.33	37.79	35.59	39.99	✓
Wed. – Addt’l Educ	22.75	16.86	28.65	26.38	23.70	29.07	
Thurs. – Larger Bins	20.91	18.70	23.11	27.79	24.21	31.38	✓
Fri. - Control	25.09	20.14	30.05	27.78	21.52	34.03	

¹ Includes non-targeted materials such as plastic bags, trash, fines, etc. that may be considered contaminants.

² Pounds per household were calculated by converting the average truck weights (in tons) for each route into pounds and dividing by the number of households on each pilot route.

³ Represents the potential range for a 90% confidence interval - considered an industry standard.

Table 5
Comparison of Net¹ Pounds per HH Collected Per Route *Before* and *During* the Pilot

	Routes “Before” Pilot - All Dual-Stream Net Average Non-Targeted Materials ²			Routes “During” Pilot Net Average Non-Targeted Materials ²			Statistically Significant Difference
	Mean (Avg. Lbs Collected per HH per Route) ³	Lower Range	Upper Range	Mean (Avg. Lbs Collected per HH per Route) ³	Lower Range	Upper Range	
Mon. SS	21.33	19.70	22.96	28.16	25.83	30.49	✓
Mon. – SS Contrast	26.87	25.72	28.03	34.39	32.19	36.59	✓
Wed. – Addt'l Educ	21.73	15.84	27.63	25.30	22.62	27.99	
Thurs. – Larger Bins	20.03	17.82	22.23	26.87	23.29	30.46	✓
Fri. – Control	24.14	19.19	29.10	26.86	20.60	33.11	

¹ Average total pounds after non-targeted materials were subtracted.

² The range was calculated by subtracting the difference in pounds collected with and without non-targeted materials from the gross pounds collected per household.

³ Derived from Table 3, net average pounds per household calculations.

Comparison of Bi-Weekly Routes

Table 5 shows the following results:

- “During” versus “Before.” The single-stream routes resulted in statistically significant increases in total tonnages recovered, even when their relatively high portions of non-targeted materials were subtracted out, as compared to the same areas collected as dual-stream routes in the “Before” period.
- “During” versus “Before.” The Larger Bin Capacity route resulted in a statistically significant increase in total tonnage recovered, net of non-targeted materials, as compared to the same area collected in the “Before” period.
- Tonnages recovered (net of non-targeted materials) for the other dual-stream pilot areas were not statistically significantly different “During” versus “Before.”

Tables 3 through 5 compared the pilot routes in which the recyclable materials were collected every other week. Because the Tuesday pilot route was collected weekly, the pounds collected per household were not comparable to those collected every other week, so a comparison of the weekly routes was conducted separately, as discussed below.

Comparison of Weekly (Tuesday) Routes

During the pilot, the average gross pounds of recyclable material collected per household on the weekly route was 14.95 pounds with lower and upper ranges of 10.96 and 18.94 respectively. The average pounds of non-targeted materials per household was .55 pounds per week, resulting in the net pounds per household per week of 14.40 pounds with lower and upper ranges of 10.41 and 18.39. It should be noted that some residents on the weekly route continued to set out their recyclable materials every other week, even though they were offered weekly collection.

The effects of weekly collection of recyclable materials can be compared to every other week collection on an *annual* basis. Table 6 below shows the projected annual pounds per household for each route, based on the average pounds collected per collection event during the pilot, net non-targeted materials.

Table 6
Comparison of Projected Pounds Per HH Per Year

	Average Pounds Collected Per Collection Event During Pilot¹	Estimated Pounds Per HH Per Year
Mon. SS	28.16	732.16
Mon. – SS Contrast	34.39	894.14
Tues - Weekly	14.40	748.80
Wed. – Addt'l Educ	25.30	657.80
Thurs. – Larger Bins	26.87	698.62
Fri. – Control	26.86	698.36

¹ Net non-targeted materials.

As reflected above, weekly collection resulted in annual quantities collected that are comparable to the single-stream pilot route.

Processing Residuals

The previous section addressed contamination with non-targeted materials by residents at the curb. Once recovered materials were collected, they were taken to Waste Management's MRF in Minneapolis for processing during the pilot project.

Actual data from the processing of the collected materials was not provided to the City as part of the pilot study. However, the Project Team reviewed literature regarding processing residuals. In addition, Waste Management provided the results of an internal study of materials processing at the Minneapolis MRF in 2003 of single-stream collected materials. Based on this literature review, key items regarding processing residuals and other contamination issues included the following:

Waste Management Study

- The study was performed for materials collected only from selected single-stream routes in the Twin Cities area (normally this MRF processes material from non-single-stream sources as well). The Waste Management study reported that 5.95% of total inputs became residuals. These materials included both contamination by residents at the curb (non-targeted materials) and residuals from facility operations (processing residuals, such as dirt and very small pieces of material).
- The Project Team notes that the Waste Management study considered both the 2% of total products as color-sorted glass and 11% of total products as color-mixed, broken glass. Both forms of glass were defined as a recycled product. Were the 11% of color-mixed, broken glass not considered to be a marketed, recycled commodity, the residual rate would be nearly 17% for this facility (5.95% from other reported residuals plus the 11% from color-mixed broken glass).

Recycling Pilot Program Summary

- No comparison of dual-stream versus single-stream residuals was provided as part of this study.
- The study cited its production standard of an average of 1.5% or less for total contamination (outthrows and prohibitives) for its newspaper grade with an action limit¹ of 2%. The study stated that sample bales pulled at random met this standard.
- The Waste Management study was internal, and the information that was provided was in summary form; thus no critical third party review was possible.

Other Studies

- An R.W. Beck study for the American Forest and Paper Association (AFPA) in 2002 reflected significantly higher “prohibitives” in newspaper and mixed paper from single-stream versus dual-stream sources. Sampled bales of ONP from single-stream plants contained more than twice as much plastic and non-recyclable paper by weight and almost 40 percent more metal than did bales sampled from dual-stream facilities, for an overall increase of 65% more prohibitives.
- Another consulting study for the AFPA was conducted in 2003 by Jaakko Poyry Consulting and Skumatz Economic Research. The study found that on average, contamination levels in single-stream facilities were three to eight percentage points higher compared to dual-stream facilities.
- For its study in 2001-2002, Eureka Recycling used Governmental Advisory Associates (GAA) survey data to estimate residual rates at dual-stream and single-stream facilities. Based on facility surveys, GAA research showed that dual-stream programs had an average residual rate of 6.4% and single-stream programs had an average residual rate of 27.2%.

These residuals and contamination issues are discussed in more detail in Appendix A.

Analysis of Set-Out Rates

City staff conducted field audits of each pilot route, each collection week in order to collect accurate set-out data by identifying households that had curbside recycling bins or carts set out for collection. The results of the set-out data for the bi-weekly pilot routes are shown below in Table 7.

¹ Any deviation above 2 percent in the regular sampling of bales subjects the production staff to a number of remedial procedures entailing review of all operational functions. It also requires additional sampling until a production standard of less than 1.5 percent is met.

Table 7
Comparison of Set-Out Rates Before and During the Pilot
(Bi-Weekly Routes)

	Single-Stream	Single-Stream Contrast	Addt'l Education	Larger Bin Capacity	Control
Set Out Before	69.4%	82.1%	66.8%	62.7%	71.4%
Set Out During	84.6%	89.6%	72.1%	78.0%	75.6%
Percentage Change	15.2%	7.5%	5.3%	15.3%	4.2%

The routes with the largest increase in the number of set-outs were the single-stream route (15.2%) and the Larger Bin Capacity route (15.3%). Even though the residents in the control area were not made aware of the pilot, their set-out rate increased slightly (4.2%). It should be noted that the residents participating in the pilot for the Single-Stream Contrast area had a significantly higher set-out rate than the other pilot areas prior to the implementation of the pilot program.

The results of the set-out data for the weekly pilot route are shown below in Table 8.

Table 8
Set-Out Rates Before and During the Pilot
(Weekly Route)

Set Out Before (Bi-Weekly)	69.2%	
	First 6 Weeks of Pilot	Second 6 Weeks of Pilot
Set Out During (Weekly)	51.1%	56.2%

During the pilot study, the weekly route had a total of twelve collection events (compared to six collection events for the bi-weekly routes). For this reason, the set-out rates were broken down into the first six weeks and the second six weeks of the pilot.

Because the Tuesday pilot route had bi-weekly collection before the study, and weekly collection during the study, it was not possible to calculate a percent change in set-out rates. As mentioned previously in this report, some residents on the weekly route continued to set out their recyclable materials every other week, even though they were offered weekly collection, resulting in lower set-out rates during certain weeks.

Analysis of Participation Rates

Table 9 reflects the results of the participation data collected by the City for the bi-weekly pilot routes. Participation was defined as a household that set out recyclable materials at least once during the six collection events that made up the pilot.

Recycling Pilot Program Summary

Table 9
Comparison of Participation Rates Before and During the Pilot
(Bi-Weekly Routes)

	Single-Stream	Single-Stream Contrast	Add'l Education	Larger Bin Capacity	Control
Participation Before	85.3%	91.8%	79.6%	78.5%	85.8%
Participation During	94.3%	96.7%	89.5%	93.3%	89.3%
Percentage Change	9.0%	4.9%	9.9%	14.8%	3.5%

The pilot route with the largest increase in participation was the Larger Bin Capacity route (14.8%).

The results of the weekly pilot route participation data are reflected below in Table 10. Participation for the weekly route was defined as a household that set out recyclable materials at least once during the first six collection events and once during the second six collection events of the pilot.

Table 10
Participation Rates Before and During the Pilot
(Weekly Route)

Participation Before (Bi-Weekly)	82.0%	
	First 6 Weeks of Pilot	Second 6 Weeks of Pilot
Participation During (Weekly)	87.2%	87.5%

As was the case in the set-out rates, the percent change in participation rates before and during the pilot were not calculated because of the different collection schedules.

Surveys

The City conducted two mail surveys, before and after the pilot study. Near the end of the “Before” period, residents in the test areas were sent a pilot program introduction letter and survey. The purposes of these surveys were to remind residents what materials were accepted in the program and to ask residents about their recycling habits. Residents were asked to identify what they recycle and give a reason(s) why they do not recycle other items. There were two policy related questions asked:

- What currently motivates you to recycle?; and
- What would motivate you to recycle more?

With three weeks remaining in the “During” period, the City mailed a reminder letter stating that the pilot program was coming to an end, and included a satisfaction survey. Participants were asked about their satisfaction with the tested method and if they would be willing to pay more for a change in service. Additionally the residents were asked what they liked and disliked about the tested method. Finally they were asked which of the following they value the most and want the City to consider when making changes to the recycling program. Their choices, in which to rank 1 to 4, included:

- Convenience;
- Price;
- Environmental benefit; and
- Amount of recycling information provided by the City.

Survey Results

About one-half of pilot program participants responded to each of the mail surveys. The survey results are summarized in Table 11.

Table 11 Roseville Resident Survey Summary		
Pre-Surveys		
Why recycle?	Why put recycling in trash?	Motivate to recycle more
■ 90% Good for environment ■ 88% Reduce waste ■ 70% Civic duty/community pride ■ 51% Help the economy ■ 42% Save on garbage bill	■ 53% Contaminated with food or debris ■ 19% Unsure what to recycle ■ 12% Bin is too small ■ 8% Not enough room in garage ■ 8% Sorting is too difficult	■ 39% Financial rebate ■ 32% Bigger bins ■ 27% Weekly collection ■ 25% More information on what to recycle
Post-Surveys		
Satisfaction	Willing to pay more	Value most in recycling program¹
■ 92% Contrast ■ 90% Single-stream ■ 69% Two Bins ■ 62% Weekly	■ 64% Contrast ■ 49% Single-stream ■ 45% Weekly	■ 1.93 Environmental benefit ■ 1.95 Convenience ■ 2.08 Price ■ 3.26 Amount of information
¹ Ranked 1 - 4, with 1 being most important.		

Conclusions

The Project Team has summarized the results of the City’s recycling pilot program as follows:

- The largest increase in the number of set-outs occurred in the single-stream and larger bin capacity routes.
- The largest increase in participation occurred in the larger bin capacity routes.
- The largest increase in quantities of material collected per household occurred in the single-stream and larger bin capacity routes.
- Based on the tonnages collected during the pilot routes, it is estimated that on an annual basis, the amount of recyclable materials collected weekly would be comparable to the quantities collected on a single-stream route.
- The composition of the single-stream routes showed increased percentages of paper collected, decreased percentages of metals, glass and plastic, and an increase in the percentages of non-targeted materials. However, the net quantities collected in the single-stream routes were greater than the dual-stream routes.
- The pilot route that was provided increased public education materials did not result in a statistically significant increase in the quantity of materials set out at the curb.

Opportunities for improving curbside recycling in any given municipality are truly program-specific. The City of Roseville has a very mature program and its pilot program results may differ if compared to other programs. Cities need to decide the optimal curbside recyclable materials collection program based on a range of issues including cost, materials recovery levels, participation, and customer preference.

Finally, the Roseville pilot project had many other benefits including discussions regarding:

- The value of pilot projects versus converting to a city-wide with program changes without such field demonstrations;
- Recycling contract compliance and performance monitoring;
- Proposed definitions of contaminants or residuals from the various points in the recycling system:
 - at the curb (“non-targeted materials”)
 - from the MRF (“processing residuals”)
 - at the mill (“prohibitives” and “outthrows”; e.g., cross-material contamination in paper bales)
- Proposed methodologies for measuring contamination at each of the three points listed above;
- Proposed standard methods for curbside recyclables composition analysis;

- The need for further policy direction from the Minnesota Pollution Control Agency (MPCA) about the definition of “recycling” as it pertains to use of color-mixed, broken glass being used at landfills as a supplement to traditional aggregates; and
- Other incentives that were not tested in the pilot project that may also motivate residents to recycle more (e.g., financial incentives, public message content, etc.).

The value of the Roseville pilot project to Ramsey County and its other cities is reflected in part through the comprehensive, quantitative data summarized in this report, together with these adjunct qualitative and policy discussions.

Recommendations

The Roseville pilot project can provide lessons for other recycling program managers looking for opportunities to improve program performance.

1. The implementation of single-stream recycling is a significant, visible change in residential recycling. Ramsey County municipalities should closely examine the available results from this Roseville pilot and other research projects referenced when evaluating alternative collection options such as single-stream. Single-stream collection, larger bin capacity, and/or increased frequency may foster an increase in quantities collected.
2. Ramsey County staff should continue policy discussions with the MPCA about the definitions of “recycling” as it relates to glass. Glass is presently not considered recycling when used as landfill cover.
3. Municipalities should consider including RFP/bid and contract provisions for contractors to measure the various types of contamination. If a municipality elects to include such requirements, the municipality should also consider how to monitor and enforce such provisions for measurement of contamination.

Appendix A

City of Roseville

Analysis of Processing Residuals

The project team of R. W. Beck and Dan Krivit and Associates (Project Team) completed a “desk-top” analysis of residuals as produced from the Waste Management, Inc. (WM) materials recovery facility (MRF) in Minneapolis in relation to the City of Roseville’s (City) curbside recycling pilot collection study. This analysis of processing residuals is the Project Teams’ analysis of available data on the issue of processing residuals given that there were no independent measurements of outputs from the WM Minneapolis MRF.

This analysis is divided into the following sections:

- Background/Problem Statement
- Available Data from the City of Roseville Pilot Project
- Summary of WM Study at its Minneapolis MRF
- Other Available Data
- Policy Implications
- Recommendations for Additional Study
- Bibliography of References Cited
- Attachment A-1 – Primer on Definitions
- Attachment A-2 – Additional Discussion of the WM Study at its Minneapolis MRF
- Attachment A-3 – Excerpts from the City of Shoreview Recycling Contract: Processing Residuals Requirements

Background

Many communities are considering changing their recycling programs to single-stream systems. The City of Roseville conducted a pilot collection study in 2004 to test the residents’ response to a variety of collection design changes, including two pilot routes testing single-stream recycling. One of the key components in quantifying the overall impacts of collection design choices is the need to estimate the change in “processing residuals from the MRF” as one indicator of environmental impacts.

Changing a collection design impacts many system variables:

- Overall participation may increase or decrease due to increased convenience (e.g., less sorting, wheeled carts);

- Individual household recovery rates may increase (more recyclable materials set out and less trash) affecting the relative composition of the recycling stream;
- More “non-targeted materials” may be set out by residents for recycling;
- The collection crews may not inspect the recycling bins at truck-side for non-targeted materials (if lidded carts are loaded with semi-automatic or automatic lifting devices on board the curbside recycling vehicles);
- Once delivered to a MRF, the relative percent and absolute tons of “processing residuals” output for disposal may increase;
- Once sorted and processed at the MRF, the individual recyclable commodities (e.g., bales of newspaper, aluminum cans, etc.) may have more or less “contaminants” depending on MRF design, management and operations; and/or
- There may be more or less glass breakage throughout the collection and processing stages such that the relative output of color-sorted glass vs. color-mixed, broken glass changes.

Beyond “processing residuals”, other potential environmental and health impacts of collection system changes include:

- Overall or “net” recovery of recyclable material (i.e., more or less tons actually recycled);
- Efficiency of collections (e.g., change in curbside truck payloads, routing, etc.);
- Worker health and safety (e.g., manual vs. automated lifting; centralized processing requiring manual sorting, etc.); and
- Composition of recyclables, commodities products, and processing residuals.

Because independent, actual field measurements were not conducted as a part of the Roseville pilot project, this analysis does not empirically quantify the “process residuals” but rather discusses the available data as reported in other studies. Also, the policy implications are outlined and recommendations for further research itemized.

Standard Definitions - Currently the recycling industry lacks standardized definitions. This is one of the key barriers to professional dialogue about designing studies to measure impacts of changes to single-stream recycling programs. The following set of terms is proposed to the City and Ramsey County as a basis for such discussion (see Attachment A-1 for a more thorough set of proposed definitions and examples.)

“Non-Targeted Materials” - Materials that are defined by the municipality as not acceptable but are routinely included by residents in their curbside bins.

“Processing Residuals” - Materials that are disposed as mixed solid waste as an unwanted by-product after processing of recyclables at MRFs.

"Contaminants in Marketed Product" - Outthrows and prohibitives as defined for specific commodities and grades by each end market (i.e., mills or other manufacturing plants that utilize processed recyclable materials).

If these terms are clearly defined and reported, the recycling industry will be able to better compare research results. The actual composition, sources, and systematic causes of increased processing residuals will be better understood. Also, through improved communications and professional research, public and private management controls will become more feasible and accepted as "best practices". Thus, standardized definitions should be a first step if reducing the amount of processing residuals is a top priority for both municipalities and private contractors regardless if the collection system is dual-stream or single-stream.

Data from the City of Roseville Recycling Pilot Project

A comprehensive recyclable materials composition analysis was conducted as part of the overall City pilot project. One of the key indicators of effectiveness measured for each collection method was the amount of non-targeted material collected. The non-targeted material was divided into four subcategories:

- Beer, Pop & Water Boxes
- Other Paper Trash
- Plastic Bags and Other Film Plastic
- Other Trash

The composition analysis team used a simple standard for determining if a questionable item should be sorted into the non-targeted material: "If the City public education tools list the item under '*Don't include these items*' (in your curbside recycling bin), then the sampled item was placed in one of the non-targeted material subcategories. For example "beer, pop & water boxes" were defined as non-targeted materials because the City staff instructs residents who call to exclude these coated ("wet strength") boxes from their recyclable materials set at the curb.

The Project Team's data analysis of the City's recyclable materials composition sorts (Appendix B of this report) compared the material compositions by weight of the single-stream collection routes to the dual-stream routes during the pilot. The results showed the percentages of non-targeted materials (contaminants) in the single-stream routes were higher than the percentages of non-targeted materials found in the dual-stream routes.

Summary of WM Study at its Minneapolis MRF

Waste Management, Inc. (WM) conducted a composition analysis at its Twin Cities MRF located in Minneapolis. The study, titled Summary - Single-Sort Constituent

Test, dated October 18, 2003, was provided to the Project Team by WM. (See Attachment A-2 for a more detailed discussion and analysis of this WM study.)

The report provides summary information resulting from the sorting and analyses performed by WM at their Twin Cities MRF. The purpose for the test was to determine the resulting material constituents resulting from single-sort recycling collection and processing. WM reported that the resulting “Residue Fraction of Processed Materials” from this test was 5.95 percent. WM stated that unrecoverable materials were defined as materials not targeted for recycling at the Twin Cities MRF.

The WM report provided a separate breakdown of products and process residue from both the “single-stream process system” (i.e., paper recovery line) and the “container process system” (i.e., container recovery line). The first paper (“single-stream”) line produced about two percent residue of total input. The second, container line produced about four percent residue of total input. Color-mixed, broken glass was not considered residue by the study and represented 11 percent of the total input. Color-sorted glass, in contrast, represented two percent of total input.

The residue estimate of 5.95 percent of total input is reasonable if the mixed-color, broken glass is assumed to be a marketed, recycled commodity. If not, the total residue, including such mixed-color glass, is about 17 percent. The other constituents of the residue make up a minor fraction (e.g., film plastic such as bags, fluff, fines, grit, other trash, and floor sweepings). Therefore, one of the key, remaining questions not answered by the WM report is how much more does mixed-color, broken glass increase within the single-stream process system at the WM Minneapolis MRF as compared to glass from two stream collections processed directly into the container process system at the MRF. Without a comparable two-sort test and analysis, it is not possible for the Project Team to estimate.

Other Available Data

Several other studies and municipal recycling contracts are relevant to this analysis of processing residuals.

Eureka Recycling (Minneapolis, MN), under its former structure within the Saint Paul Neighborhood Energy Consortium, published an extensive study of a similar pilot collection study as conducted in 2001. Six different collection pilot routes were established similar to the Roseville pilot study design. (For more details, see Eureka Recycling’s web page: www.EurekaRecycling.org.)

The Eureka study analyzed their pilot results for many of the same variables, including:

- Percent increase in tons recycled;
- City-wide materials that could be collected (as projected by pilot results);
- Percent material loss during processing;
- Net program material recycled; and
- Net overall percent increase in tons recycled.

The Eureka analysis estimated processing residuals from a national study conducted by Governmental Advisory Associates (GAA) in 2002. The estimates from GAA, as reported by Eureka, stated the average residual rate among the surveyed single-stream programs was 27.2 percent. Eureka further analyzed their pilot results with two alternative definitions of “material loss during processing”:

- Without including mixed glass in processing residuals; and
- With mixed glass as processing residuals.

The Eureka report states “Eureka Recycling does not consider the use of mixed glass as an aggregate material or daily landfill cover as a recycled material.”

R.W. Beck conducted a study for the American Forest and Paper Association (AF&PA) in October 2002. The results indicated that single-stream old newspapers (ONP) contained 65 percent more prohibitives when compared with ONP that came from dual-stream programs. Also, the single-stream residential mixed paper (RMP) had over 1.5 times more prohibitives than the dual-stream RMP.

Jaakko Pöyry Consulting (JPC) and Skumatz Economic Research Associates, Inc. (SERA) prepared a second report for AF&PA in January 2004. The results from this study, as summarized in the executive summary, indicated that “there is an increase of about one to three percentage points in net recycled tonnage after collection and processing” due to single-stream recycling programs.

The City of Fridley (Minnesota) amended its recycling contract with Allied Waste/Browning Ferris Industries (BFI) for dual-stream collection in 2004. The contract amendment provides for a revenue share formula that specifies an estimate of non-targeted materials (defined by the City of Fridley and BFI as “trash contamination”) as 3.47 percent:

The “trash contamination” composition estimate shall be based upon the Contractor’s audits from similar residential collection routes. The contractor must provide adequate supporting documentation for the trash contamination estimated figures from similar routes annually to the City, however, the City must approve any change to the trash contamination percentage during the term of this agreement. The City reserves the right to require the Contractor to conduct a City-specific composition analysis, including field sorts, as a future task within the Service Exchange Fund.”

The City of Shoreview (Minnesota) executed a recycling services contract with Waste Management, Inc. that provided for a maximum processing residuals rate of five percent for the City’s then dual-stream program. (The City of Shoreview has since converted to a single-stream method for curbside recyclable materials collection.) The 2001 contract included a number of relevant definitions and service provisions to make this maximum rate as practical as possible. (See Attachment A-3 for details.)

Policy Implications

Several key recycling and solid waste management policy questions are raised within the City of Roseville's pilot collection study and this analysis.

Role of the Cities in Minimizing Disposal of Materials Collected for Recycling -

Each local municipality has some role in assuring the materials collected for recycling by its contractor are indeed recycled to the maximum extent feasible. The negative public relations caused by materials unnecessarily disposed as waste are a major threat to the residents' trust that is essential in continuously encouraging, maintaining, and improving participation in municipal recycling programs. This is true regardless of collection method (i.e., dual-stream vs. single-stream).

There are a variety of optional procedures that a city can implement to maximize recycling and minimize unnecessary disposal of materials collected. These options may not be mutually exclusive and include:

- Tacitly encourage the contractor to maximize recycling.
- Work to provide clear, consistent city-published public education tools as to materials to be included for recycling and excluded (non targeted materials).
- During recycling service procurement (e.g., during development of request for proposals and contract negotiations, etc.):
 - Adopt clear definitions of terms, including “targeted materials”, “non-targeted materials”, and “processing residuals”;
 - Specify public education tools to be provided by the contractor and require that the city approve the education materials before they are distributed;
 - Consciously decide if the contractor shall provide a truck-side quality inspection function (i.e., will materials be rejected by the collection crew and education tags left in the curbside bin);
 - Specify a maximum processing residuals rate and an agreed upon measurement scheme for objectively monitoring this rate; and/or
 - Specify a liquidated damage charge to be imposed on the contractor if the maximum processing residual rate is exceeded.

Role of the Government in Minimizing Disposal of Materials Collected for Recycling –

Provision of standardized definitions, more research, and clear policy direction as to acceptable levels of process residuals would assist cities and haulers with the best available information about the processing residuals issue. For example, there is still little hard data available that characterizes the color-mixed, broken glass generated from MRFs in Minnesota. We still do not know how much single-stream collection and processing systems impact the relative amounts of mixed glass produced compared dual-stream systems.

Definition of “Recycling” Markets vs. Waste “Disposal” - In lieu of more clear policy direction, each city should establish its own policy for defining end uses that shall be considered “recycling” vs. “disposal”.

As the industry moves to more commingled collection systems (e.g., source separated to dual-stream; dual-stream to single-stream), more color-mixed, broken glass will be produced from the MRFs. Some parties advocate for only higher-value end use applications (e.g., glass bottles) to be defined as recycling. Others, including integrated waste management companies, will advocate for lower-value end use applications (e.g., aggregate for road base, alternative daily landfill cover, etc.) to be defined as recycling and not as disposal. This policy definition is critical to evaluating the effectiveness of commingled collection systems.

One potential policy position is that color-mixed, broken glass that is further processed (e.g., screened) so that it can be used as an aggregate supplement (e.g., meets MN/DOT class 7 aggregate specifications as road base) and therefore can be considered a legitimate commercial commodity could be considered a “recyclable”. Mixed broken glass that is not further processed and does not meet minimum specifications for use as an aggregate supplement (e.g., is significantly contaminated with non-glass debris), could be considered a “residual disposed” and therefore a “waste” and not a recyclable commodity. Exceptions to this determination could be requested by the MRF operator if suitable documentation is provided that demonstrates the color-mixed, broken glass is clean enough to be considered a commercial commodity with equal or better value compared to the virgin or other traditional materials used as aggregate for alternative daily cover.

Calculating Net Recycling Rates - There is a continuing need among the recycling industry to provide clear, standardized methods to define and calculate net recycling. Two components of the system should be treated independently: collection, and then processing. Collection effectiveness should measure the performance of the residents in complying with public education messages and the collection crews (if truck-side rejecting of non-targeted materials is employed). The “non-targeted materials rate” (in percent as collected and loaded on the truck) should define the effectiveness of collection.

The “processing residuals rate” (in percent of total inbound material) should define the effectiveness of the MRF in processing the materials. While related, if both rates are measured and reported independently, there can be more objective analysis and management controls implemented to improve quality.

Recommendations for Additional Study

This analysis was necessarily limited in scope. The following recommendations for additional study are derived from the many research questions raised by this analysis but not yet adequately addressed:

1. **Processing residuals from dual-stream systems** - The WM test at their Minneapolis MRF reported only on results from their single-stream systems. No comparable data has yet been made available on dual-stream

- systems. The metropolitan area counties and State of Minnesota could consider the need for a set of independent, parallel tests resulting in statistically reliable data that compares single-stream processing residuals to dual-stream processing residuals.
2. **Review of contracting provisions and implementation practices** - This analysis summarized recycling contract language used by the City of Shoreview in 2001. A survey of other metro area communities may reveal additional examples of other cities establishing “processing residuals maximums” in their recycling contracts. Finally, this research activity could help with the efforts to standardize definitions and monitoring procedures.
 3. **Review of MRF operator procedures to minimize processing residuals** - This analysis has only touched the surface of a much deeper set of operator policies and practices to minimize processing residuals and maximize clean, marketable recyclable products. A direct survey of MRF operators, both public and private, could help further itemize these policies and operations. The end result of this additional research could be to establish generic industry “best practices” recommendations.
 4. **Review of current end-use applications for mixed-color, broken glass** - There are many MRFs sending a variety of materials to landfills. Some of these materials are defined as “waste for disposal” and some are defined as “aggregate substitutes for alternative daily landfill cover”. There is a need to survey such current policies and practices by county, state, and private companies. This relatively simple research activity would help greatly to establish the current “baseline” for discussion about the effectiveness of the current systems in minimizing MRF process residuals.

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Waste Management/Recycle America Alliance, *Summary - Single-Sort Constituent Test*, October 18, 2003.

Attachment A-1

Primer on Definitions

One of the key barriers to professional discussion and dialogue about the nature of the problem and alternative solutions to increasing recovery from municipal residential recycling programs is a lack of standardized definitions. The following set of terms is proposed to the City and Ramsey County as a basis for such discussion.

"Non-Targeted Materials" - Materials that are defined by the municipality as not acceptable but yet are still included by residents in their curbside bins. Thus, this is a city-specific definition as determined by contract and/or public education tools communicating acceptable recyclables and non-acceptable materials. For the City's definition, see the Roseville web page <http://www.ci.roseville.mn.us/info/recycle/sort.htm> under "Don't include these items"

The Project Team also uses the term "Rejects as collected" for purposes of the Roseville composition analysis (R.W. Beck, *City of Roseville Recyclable Materials Sorts – Draft Data Analysis: Attachment A - Composition Analysis Categories*, March 23, 2005). The following sub categories were used as "Non-Targeted Materials" as collected and sorted for the City's composition analysis:

- Beer, Pop & Water Boxes
- Other Paper Trash
- Plastic Bags and Other Film Plastic
- Other Trash

The City and R.W. Beck also used the term "contaminants" in their recent draft reports to refer to non-targeted materials.

"Processing Residuals" - Materials that are disposed as mixed solid waste as an unwanted by-product after processing of recyclables at materials recovery facilities (MRFs). For example, paper trash items that are not acceptable by the MRF operator or contaminated to the point of rendering the items as not marketable.

"Contaminants in marketed product" - Outthrows and prohibitives as defined for specific commodities and grades by each end market (i.e., mills or other manufacturing plants that utilized processed recyclable materials). For example, glass is a prohibited contaminant in most end market specifications for newspaper bales from recovered paper suppliers.

The Institute for Scrap Recycling Industries (ISRI) defines a set of standardized specifications that many buyers and sellers in the metals, glass, paper, and plastics recycling industries use as a basis for more customized

contract specifications. For example, within the Paper Stock Industries chapter of the ISRI Scrap Specifications Circular 2004, the following terms are defined:

Outthrows - The term “Outthrows” as used throughout this section is defined as “all papers that are so manufactured or treated or are in such a form as to be unsuitable for consumption as the grade specified.”

Prohibitive Materials - The term “Prohibitive Materials” as used throughout this section is defined as:

- a. Any materials which by their presence in a packing of paper stock, in excess of the amount allowed, will make the packaging unusable as the grade specified.
- b. Any materials that may be damaging to equipment.

Attachment A-2

Additional Discussion of the WM Study at its Minneapolis MRF

Waste Management, Inc (WM) conducted a composition analysis at its Twin Cities Material Recovery Facility (MRF) located in Minneapolis. The study is entitled, Summary - Single-Sort Constituent Test, is dated October 18, 2003, and was provided to the Project Team.

Purpose of Study - The report provides summary information resulting from the sorting and analyses performed by WM at their Twin Cities MRF. The purpose for the test was to determine the resulting material constituents resulting from single-sort collection and processing.

Methodology - Single stream recyclables loads from fourteen (14) WM trucks from nine (9) different cities were stockpiled for the test on Friday, October 17, 2003. The total stockpile was 74.907 tons. The single stream recycling collection systems utilized the standard WM lidded carts. Recyclables were loaded into the truck using semi-automated or fully automated collection vehicles. The WM report states they ran the test on Saturday, October 18, 2003 as a single test batch, but using normal operating procedures for their Twin Cities MRF. Processed materials and residuals were collected and weighed to determine make-up. Operations and data collection were witnessed by Mr. Dave Kohorst, Financial Analyst, acting in an accounting role for the tabulation of data.

Findings - WM reported that the resulting “Residue Fraction of Processed Materials” from this test as 5.95 percent. The WM Twin Cities MRF is comprised of two sequential processing systems: the “single stream process system” (i.e., screens and sorting stations to recover paper) and “containers process system” to recover glass, cans and plastic products. The residue is derived from unrecoverable materials sorted from both systems, including bulky items, air classifier cyclone “fluff”, unmarketable grit, and other trash. It also included floor sweepings.

WM stated that unrecoverable materials were defined as materials not targeted for recycling at the Twin Cities MRF. These materials were comprised largely of plastic bags, bulky items and materials incorrectly placed in the recycling cart rather than the trash container by the resident. The WM study categorized these items as “residue” from plant operations, but should be better termed as “unrecoverable.”

The WM report provided a separate breakdown of products and process residue from both the single stream process system (i.e., “paper line”) and the container process system (“paper line”). Paper products represented 74 percent of the total input and the paper line produced about two percent residue of total input. Container products represented 21 percent of the total input and the container line produced about four percent residue of total input. (Approximations do not add to 100 percent due to Project Team rounding.) Color-mixed, broken glass was defined as a product by the

WM study and represented 11 percent of the total input. Color-sorted glass, in contrast, represented two percent of total input.

The WM study stated that:

“The Twin Cities MRF has set a production standard of 1.5 percent (average) or less for total outthrows and prohibitives for its newspaper grade with an action limit of 2 percent. Any deviation above 2 percent in the regular sampling of bales subjects the production staff to a number of remedial procedures entailing review of all operational functions. It also requires additional sampling until a production standard of less than 1.5 percent is met.”

Critical Review - The report provided to the Project Team was titled a “Summary” and no raw data, analytical methods or statistics were provided. Therefore, this memo is limited to review of the results as contained in the summary of test results.

There was no comparable sorting/analyses reported on recyclables from dual stream collection systems. Therefore, it is impossible for the Project Team to determine the net increase in process residue of single stream processing vs. dual stream processing.

From the collection methodology description (i.e., semi-automated or automated curbside vehicles), it is unlikely there was any truck-side quality inspection by the driver (i.e., no truck-side rejects by the driver of non targeted material). This is normal procedure for such lidded cart recycling collection systems, and therefore one may assume the collections were using normal operations.

Attachment A-3

Excerpts from the City of Shoreview Recycling Contract – Residuals Requirements

AGREEMENT FOR RECYCLING COLLECTION

This Agreement is made on the 1st day of January 2001, between the CITY OF SHOREVIEW, 4600 North Victoria Street, Shoreview, Minnesota 55126 (“City”) and WASTE MANAGEMENT INC., a Minnesota corporation, with its current local place of business at 775 Rice Street, St. Paul, Minnesota 55117 (“Contractor”).

4. DISPOSAL OF RECYCLABLES AND PROCESS RESIDUALS - Contractor shall use its best efforts to assure that all recyclables collected in the City are not placed in landfills or incinerated and are distributed to the appropriate markets for reuse. The Contractor shall dispose of no more than five (5) percent of material as process residuals as waste residual as part of normal recyclable materials processing operations. This process reject (residuals) amount shall be a maximum by weight as measured from total outgoing products shipped for the month, and shall be reported for any of the Contractor’s recyclables processing facilities receiving material from the City. The Contractor shall report actual percent process residuals disposed, and the disposal facility or facilities utilized for disposal, with each monthly billing statement. If the process residuals maximum is exceeded for any facility for any month, the report shall include the types and amounts of materials landfilled or incinerated, the reason for the landfilling or incineration, and the steps being taken by Contractor to avoid landfill or incineration.
5. LACK OF ADEQUATE MARKET DEMAND - In the event that the market for a particular recyclable ceases to exist, or becomes economically depressed that it becomes economically unfeasible to continue collection, processing and marketing of that particular recyclable, the City and the Contractor will both agree in writing that it is no longer appropriate to collect such item before collection ceases. Contractor shall pay the costs of all disposal of any item collected that is deemed not recyclable by Contractor and the City due to lack of adequate market demand. The City and Contractor shall specify a date in the said written agreement to cease collection of the recyclable item in questions. Contractor shall at all times be under a duty to minimize recyclables ending up in landfill or incineration. If such disposal becomes necessary, Contractor shall dispose of the materials at a facility specified in writing by the City or an alternative agreed upon by the City and the Contractor.

31. CITY RETAINS RIGHT TO SPECIFY RESIDENT PREPARATION INSTRUCTIONS - The Contractor agrees that it is the City's sole right to clearly specify the resident sorting and set-out requirements. The City shall publish and distribute, on an annual basis, the detailed recyclables preparation instructions for its residents. However, it agrees to confer with the Contractor prior to annual distribution.
33. LIQUIDATED DAMAGES - The Contractor agrees, in addition to any other remedies available to the City, the City may withhold payment from the Contractor in the amounts specified below as liquidated damages for failure of the Contractor to fulfill its obligations:
- F. Failure to report on changes in location of recyclables processing operations (as per Section 11 of the Agreement body) - \$250 per incident.
 - G. Exceeding the maximum process reject (residuals) rate (as per Section 4 of the Agreement body) - \$1,000 per exceedence (defined as a monthly total by weight over the specified maximum rate).
 - H. Failure to receive City written approval of changes to the "Two-Sort" collection/processing system prior to implementing any such change (as specified in Attachment A: Paragraph III.A.16) - \$5,000.
 - I. Failure to conduct annual composition analysis (as specified in Attachment A: Paragraphs III.A.17 and III.B.18) - \$100 per incident.
 - J. Failure to provide written description of the means to estimate relative amount of process residuals derived from the City's recyclables (as per Attachment A: Paragraphs III.A.18 and III.B.19) - \$100 per incident.

These amounts are liquidated damages for losses suffered by the City, and not a penalty.

EXHIBIT A
CITY OF SHOREVIEW
COMPREHENSIVE RECYCLING PROGRAM
SPECIFICATIONS

I. INTRODUCTION

These specifications define the requirements of the Comprehensive Recycling Program for the City of Shoreview.

II. DEFINITIONS

1. RECYCLABLES - means newsprint and inserts, unsorted glass bottles and jars (food and beverage containers), unsorted aluminum, steel, bimetal, and “tin” cans (food and beverage containers), unsorted small necked plastic bottles, magazines, corrugated cardboard and “mixed mail” (including household office paper and mail).
14. PROCESS RESIDUALS - means the normal amount of material that can not be economically recycled due to material characteristics such as size, shape, color, cross-material contamination, etc. and must be disposed as mixed municipal solid waste. PROCESS RESIDUALS does not include clean, separated products that are normally processed and prepared for shipment to markets as commodities but are of relatively low-value because of depressed market demand conditions.
15. MARKET DEMAND - means the economic and technical capacity of markets to use recyclable material to make new products.
16. MARKETS - means any person or company that buys (or charges) for recycling of specified materials and may include, but are not limited to: end-markets, intermediate processors, brokers and other recycling material reclaimers.

III. COLLECTION REQUIREMENTS

A. RESIDENTIAL COLLECTION

6. PROCEDURE FOR UNACCEPTABLE RECYCLABLES – If Contractor determines that a resident has set out unacceptable recyclables; the driver shall use the following procedure:
 - A. Contractor shall leave the unacceptable recyclables and leave an “education tag” indicating acceptable materials and the proper method of preparation.
 - B. The driver shall record the address and report the address to the City Recycling Coordinator at the end of each week.

16. TWO-SORT COLLECTION SYSTEM - The Contractor shall collect and process the residential curbside material within the form of a “two-sort” system whereby residents will be instructed to commingle two groups of materials: (1) all food and beverage containers, including glass, metal and plastic bottles/jugs; and (2) all paper fiber products, including newspapers, boxboard, magazines, mixed mail, catalogs, phone books and corrugated cardboard. The Contractor shall not make any changes to this “two-sort” collection/processing system without written approval of the City. Failure to receive City approval for any such changes to the “two-sort” collection/processing system prior to implementation for City collections or material processing shall be considered by the City as a breach of this Agreement subject to termination.
17. ESTIMATING MATERIALS COMPOSITION AS COLLECTED - The Contractor shall conduct at least one materials composition analysis of the City’s recyclables each year to estimate the relative amount by weight of each recyclable commodity by grade. The results of this analysis shall include: (1) percent by weight of each recyclable commodity by grade as collected from the City; (2) relative change compared to the previous year’s composition; and (3) a description of the methodology used to calculate the composition, including number of samples, dates weighed, and City route(s) used for sampling.
18. ESTIMATING PROCESS RESIDUALS - The Contractor shall provide a written description of the means to estimate process residuals derived from the City’s recyclables. This written description shall be reviewed and approved in writing by the City. This written description shall be updated by the Contractor immediately after any changes to the processing facilities used by the Contractor.

B. MULTI-UNIT DWELLING COLLECTION

18. ESTIMATING MATERIALS COMPOSITION AS COLLECTED - The Contractor shall conduct at least one materials composition analysis of the City’s recyclables each year to estimate the relative amount by weight of each recyclable commodity by grade. The results of this analysis shall include: (1) percent by weight of each recyclable commodity by grade as collected from the City; (2) relative change compared to the previous year’s composition; and (3) a description of the methodology used to calculate the

composition, including number of samples, dates weighed, and City route(s) used for sampling.

19. ESTIMATING PROCESS RESIDUALS - The Contractor shall provide a written description of the means to estimate process residuals derived from the City's recyclables. This written description shall be reviewed and approved in writing by the City. This written description shall be updated by the Contractor immediately after any changes to the processing facilities used by the Contractor.

Appendix B

Data Analysis of City of Roseville Recyclable Materials Composition Sorts

As part of the recycling technical assistance to Ramsey County, the project team of R. W. Beck and Dan Krivit and Associates (Project Team) analyzed the data collected from the City of Roseville's (City) three recyclable materials field sorts that were conducted in July, September, and October of 2004.

This appendix is divided into the following sections:

- Pilot Overview
- Study Design
- Results of the Data Analysis
- Summary

Overview

The objective of the Project Team's analysis was to compare the quantities of materials collected for the various recyclable materials collection methods. The City currently uses the dual stream (paper and containers) curbside collection method with 18-gallon bins collected every other week. In the pilot study, the Friday route was considered a control route in which the collection method did not change. The recyclable materials collection method for each of the pilot routes is shown below in Table 1.

Table 1
City of Roseville
Pilot Route Descriptions

	Monday	Monday	Tuesday	Wednesday	Thursday	Friday (Control)
Collection Method	Single Stream	Single Stream	Dual Stream	Dual Stream with Additional Education	Dual Stream with Larger Bin	Dual Stream
Frequency	Bi-weekly	Bi-weekly	Weekly	Bi-weekly	Bi-weekly	Bi-weekly
Bin/Cart Size	64-gallon cart	64-gallon cart	18-gallon bin	18-gallon bin	22-gallon bin	18-gallon bin

The pilot routes included various areas of the City and each route was approximately the same size (330 to 360 single-family homes).

Study Design

The study design included the following critical steps:

- Select the material categories;
- Define the recyclable materials sort protocol;
- Develop a Health and Safety Plan;
- Conduct the sampling and sorting events;
- Compile the collected data; and
- Develop the results using a statistical model.

Material Categories

The Project Team and City staff discussed and agreed upon the composition analysis categories for the recyclable materials sorts. During the sorting events, each sample of recyclable materials was sorted into thirteen categories listed below in Table 2. For reference, the definitions of the composition analysis categories can be found in Attachment B-1.

Table 2
City of Roseville
Composition Analysis Categories

1. Old Newspaper (ONP)	8. Glass Bottles and Jars
2. Household Office Paper and Mail (HOPM)	9. Plastic Bottles
3. Old Magazines/Catalogs (OMG)	10. Beer, Pop & Water Boxes
4. Phone Books	11. Other Paper Trash
5. Uncoated Old Corrugated Cardboard (OCC) and Brown Paper Grocery Bags	12. Plastic Bags and Other Film Plastic
6. Old Boxboard (OBB)	13. Other Trash (i.e., non-recyclable items such as twine, foam packaging, ceramics, mirrors, aerosol cans, medical waste, etc.)
7. Metal Cans	

Recyclable Materials Sort Protocol

The Project Team developed a recyclable materials composition sort protocol. The detailed composition protocol is included in Attachment B-2. The protocol addresses the following:

- Planning & Equipment/Facilities Preparation;
- Truck Weighing & Load Tipping Operations; and

- Sampling/Sorting Operations.

Health and Safety Plan

The Project Team developed a health and safety plan for the City's sorting staff and volunteers. The plan is included in Attachment B-3.

Sampling and Sorting Events

The sampling approach used to assess the recyclable materials composition needed to include an adequate number of representative samples to provide statistically meaningful results. In addition, this objective had to be balanced with the City's time, labor, and budget constraints. As a result, three one-week sorting events were scheduled, one (in July) before the pilot collection methods were introduced to residents, and two (in September and October) after the pilot collection methods were initiated.

Samples of recyclable materials, weighing at least two hundred pounds each consistent with American Society of Testing and Materials (ASTM) Standards, were randomly selected from the collection vehicles at the end of each collection day. (Details of the sampling procedure are discussed in Attachment B-2.) The number of samples sorted, the total pounds sorted, and the average pounds per sample from each collection method (single stream and dual stream) are shown below in Table 3.

Table 3
City of Roseville
Number of Samples Sorted

	Number of Dual Stream Samples	Total Pounds Sorted	Average Pounds per Sample	Number of Single Stream Samples	Total Pounds Sorted	Average Pounds per Sample
Before Pilot	22	4,708	214	-	-	-
During Pilot	26	7,105	273	8	2,269	284

Data Collection

Data sheets were completed during the sampling and sorting of the recyclable materials. The tare weight of the container, and the weight of the individual materials plus the tare weight, were recorded on the data sheets by the sort crew supervisor. The data sheets used in the study can be found in Attachment B-4.

Statistical Modeling

The data from the sorting events were entered into R. W. Beck's specially designed statistical model (Model). The Model has been developed in Microsoft Excel for easy accessibility and use. The Model statistically manipulates the data to calculate the mean, 90% confidence intervals, and standard deviation for individual material categories. In addition, the Model is structured to identify where specific samples could be considered statistical outliers.

The mean represents the mathematical average or average percent of material composing the recyclable materials stream. The confidence interval is an expression of accuracy. It provides the upper and lower limits of the actual mean for all the recyclables in each sample, based on the sorting and sampling of the materials. For example, the 90% confidence interval represents that there is a 90% level of confidence that the true population mean falls within the upper and lower bounds of the confidence interval. The 90% confidence interval is the generally accepted standard by the industry for solid waste and recyclable materials composition studies. In general, the more samples that are sorted, the narrower the confidence interval. The narrower the intervals, the less variability in the data. We believe it is critical when comparing the recyclable materials composition results that the confidence intervals are considered along with the mean percentages.

In addition, the total quantities of materials collected for each route were compiled during the sorting and sampling process. This data was analyzed separately to identify the mean quantities collected with the various collection methods and the applicable standard deviations.

Results of Data Analysis

The Project Team compared the results of the following recyclable materials collection methods:

- Comparison of the Monday dual stream collection before the pilot started to the Monday single stream collection during the pilot program.
- Comparison of the aggregated results of the single stream collection method to the aggregated results of the dual stream collection method.
- Comparison of the current dual stream, bi-weekly method (Friday control route) to the dual stream, weekly method (Tuesday).
- Comparison of the current dual stream, bi-weekly method (Friday control route) to the dual stream, bi-weekly method with additional education (Wednesday).
- Comparison of the current dual stream, bi-weekly method (Friday control route) to the dual stream, bi-weekly method with larger, 22-gallon bins (Thursday).
- Comparison of the aggregated results of the dual stream, bi-weekly collection method (Wednesday through Friday) before the pilot started to the results during the pilot program.

The results of each comparison are shown in several tables, along with the Project Team’s interpretation of the data.

The mean, and upper and lower 90% confidence intervals are provided along with a column titled “Statistically Significant Difference”. If there is a check mark in this column, it indicates that the ranges of the lower and upper confidence intervals between the two collection methods are statistically different. That is, there was no overlap in the percentages and therefore the results between the two methods reflect a statistically significant difference.

Comparison of the Monday Collection Routes

Two Monday collection routes were chosen by the City to be the pilot areas for the single stream collection method. The main difference between the two areas was the age of the housing stock. The first pilot route included older homes, typically with detached, single car garages and higher density than the second pilot route. The second route included newer homes, typically with attached, two stall garages, and lower density than the first pilot route.

For the comparative analysis shown below, the composition results of the two Monday routes during the pilot were combined into one data set for September and one data set for October.

Table 4
Comparison of Monday Routes – July and September

	Monday Dual Stream Routes ¹ July			Monday Single Stream Routes ² September			Statistically Significant Difference
		90% Confidence Interval			90% Confidence Interval		
Material Category	Mean	Lower	Upper	Mean	Lower	Upper	
Paper	57.9%	54.5%	61.3%	78.7%	75.0%	82.4%	
Metals	7.9%	7.3%	8.5%	2.8%	2.0%	3.6%	
Glass	19.7%	16.4%	23.0%	5.3%	4.4%	6.2%	
Plastic	10.7%	9.0%	12.4%	6.0%	4.8%	7.2%	
Contaminants	3.9%	2.1%	5.7%	7.1%	5.8%	8.4%	
Total ³	100%	n/a	n/a	100%	n/a	n/a	

¹ Eight samples were sorted from two Monday routes.

² Four samples were sorted from two Monday routes.

³ The totals may not equal the sum of the material categories due to rounding.

Table 5
Comparison of Monday Routes – July and October

	Monday Dual Stream Routes ¹			Monday Single Stream Routes ²			Statistically Significant Difference
	July			October			
		90% Confidence Interval			90% Confidence Interval		
Material Category	Mean	Lower	Upper	Mean	Lower	Upper	
Paper	57.9%	54.5%	61.3%	77.0%	74.0%	80.0%	✓
Metals	7.9%	7.3%	8.5%	2.4%	1.8%	3.0%	✓
Glass	19.7%	16.4%	23.0%	5.7%	4.3%	7.1%	✓
Plastic	10.7%	9.0%	12.4%	4.9%	4.1%	5.7%	✓
Contaminants	3.9%	2.1%	5.7%	9.9%	8.8%	11.0%	✓
Total ³	100%	n/a	n/a	100%	n/a	n/a	

¹ Eight samples were sorted from two Monday routes.

² Four samples were sorted from two Monday routes.

³ The totals may not equal the sum of the material categories due to rounding.

The upper and lower confidence intervals from both the September and October Monday single stream pilot routes were significantly different than those of the July (pre-pilot) dual stream route. The September and October Monday single stream pilot route results were quite similar, with no significant difference between confidence intervals.

Because the comparison of the “before” pilot Monday routes to the “during” pilot Monday routes reflected statistically significant differences for each of the categories, we calculated estimated quantities of materials. Table 6 shows the material compositions by weight, derived from applying the median percentages for each material category obtained from the recyclable material sorting events to the average of the pilot route truck weights for each of the Monday routes.

Table 6
Comparison of Material Compositions by Weight¹
Monday Routes

Material Category	Weight (Pounds)		
	July (Dual Stream)	September (Single Stream)	October (Single Stream)
Paper	3,879	9,165	9,327
Metals	529	326	291
Glass	1,320	617	690
Plastic	717	699	594
Contaminants	261	827	1,199
Total²	6,707	11,633	12,101

¹ The weights were estimated by applying the median percentages from the sorting events to the average of the pilot route truck tonnages.

² The totals are based on the average of two pilot routes for each month.

The results of comparing the material compositions by weight for the Monday collection routes include:

- The quantities of paper collected via the single stream method (September and October) increased compared to the quantities collected via the dual stream method (July).
- The quantities of metals, glass, and plastic decreased with the single stream collection method.
- The amount of contaminants collected via the single stream method was higher than the dual stream method.

No conclusions are drawn as to the magnitude of the differences by weight because the weights represent only the median percentages.

Comparison of Single Stream and Dual Stream Collection Methods

The results of the Monday single stream pilot routes were compared to the combined results of the Tuesday through Friday dual stream collection routes in September (Table 7) and October (Table 8) to compare the overall single stream results to the dual stream results.

Table 7
Comparison of Single Stream and Dual Stream Routes
September

Material Category	Single Stream (Monday) Routes ¹			Dual Stream (Tues–Friday) Routes ²			Statistically Significant Difference
	Mean	90% Confidence Interval		Mean	90% Confidence Interval		
		Lower	Upper		Lower	Upper	
Paper	78.7%	75.0%	82.4%	58.6%	53.5%	63.7%	✓
Metals	2.8%	2.0%	3.6%	6.6%	5.9%	7.3%	✓
Glass	5.3%	4.4%	6.2%	20.7%	14.4%	27.0%	✓
Plastic	6.0%	4.8%	7.2%	10.7%	7.6%	13.8%	✓
Contaminants	7.1%	5.8%	8.4%	3.5%	2.6%	4.4%	✓
Total ³	100%	n/a	n/a	100%	n/a	n/a	

¹ Four samples were sorted from the single stream routes.

² Twelve samples were sorted from the dual stream routes.

³ The totals may not equal the sum of the material categories due to rounding.

Table 8
Comparison of Single Stream and Dual Stream Routes
October

Material Category	Single Stream (Monday) Routes ¹			Dual Stream (Tues-Friday) Routes ²			Statistically Significant Difference
	Mean	90% Confidence Interval		Mean	90% Confidence Interval		
		Lower	Upper		Lower	Upper	
Paper	77.0%	74.0%	80.0%	63.9%	56.5%	71.3%	✓
Metals	2.4%	1.8%	3.0%	7.5%	5.5%	9.5%	✓
Glass	5.7%	4.3%	7.1%	16.4%	10.9%	21.9%	✓
Plastic	4.9%	4.1%	5.7%	8.6%	6.0%	11.2%	✓
Contaminants	9.9%	8.8%	11.0%	3.5%	2.5%	4.5%	✓
Total ³	100%	n/a	n/a	100%	n/a	n/a	

¹ Four samples were sorted from the single stream routes.

² Fourteen samples were sorted from the dual stream routes.

³ The totals may not equal the sum of the material categories due to rounding.

The upper and lower confidence intervals of the September and October Monday single stream pilot routes were significantly different than the September and October dual stream routes.

Because a statistically significant difference was found, the median percentages for each material category that were derived from the September and October recyclable material sorting events were applied to the averages of the pilot route truck weights to estimate material compositions by weight. The average estimated quantities from the September single stream (Monday) routes are compared to the average estimated quantities of the September dual stream bi-weekly routes (Wednesday through Friday) in Table 9.

Table 9
Comparison of Material Compositions by Weight¹
Single Stream - Dual Stream Routes
September

Material Category	Average Weight (Pounds)	
	Single Stream (Monday)	Dual Stream (Wed – Friday) ²
Paper	9,165	5,704
Metals	326	673
Glass	617	1,981
Plastic	699	1,140
Contaminants	827	366
Total	11,633	9,864

¹ The weights were estimated by applying the median percentages from the sorting events to the average of the pilot route truck tonnages.

² The weights from Tuesday's routes were excluded from the comparison because they represent weekly collection, whereas the Wednesday, Thursday and Friday routes provided more comparable data as they were collected bi-weekly.

The average estimated quantities from the October single stream (Monday) routes are compared to the averages of the October dual stream bi-weekly routes (Wednesday through Friday) in Table 10.

Table 10
Comparison of Material Compositions by Weight¹
Single Stream - Dual Stream Routes
October

Material Category	Average Weight (Pounds)	
	Single Stream (Monday)	Dual Stream (Wed – Friday) ²
Paper	9,327	5,599
Metals	291	637
Glass	690	1,695
Plastic	594	691
Contaminants	1,199	264
Total	12,101	8,886

¹ The weights were estimated by applying the median percentages from the sorting events to the average of the pilot route truck tonnages.

² The weights from Tuesday's routes were excluded from the comparison because they represent weekly collection, whereas the Wednesday, Thursday and Friday routes provided more comparable data as they were collected bi-weekly.

The results of comparing the single stream and dual stream collection methods in September and October include:

- The single stream routes yielded increased quantities of paper compared to the dual stream routes.
- The single stream routes generated less quantities of metals, glass and plastics than the dual stream routes.
- The quantities of contaminants in the single stream routes were higher than the quantities of contaminants found in the dual stream routes.

No conclusions are drawn as to the magnitude of the differences by weight because the weights represent only the median percentages.

Table 11 below shows a comparison of the four single stream routes to the six dual stream routes during the pilot (September and October).

Table 11
Comparison of Bi-Weekly Single Stream and Dual Stream Routes
Total Quantities Collected by Route During Pilot
(September and October)

Total Quantities Collected by Route			
Route	4 Single Stream Routes (Monday)	Route	6 Dual Stream Routes (Wed – Friday) ¹
Sept. Mon	10,365	Sept Wed	9,625
Sept. Mon Contrast	12,925	Sept Thurs	9,150
Oct Mon	9,925	Sept Fri	10,825
Oct Mon Contrast	14,300	Oct Wed	7,975
		Oct Thurs	10,600
		Oct Fri	8,075
Mean	11,879		9,375
Standard Deviation	2,087		1,214

¹ The weights from Tuesday's routes were excluded from the comparison because they represent weekly collection, whereas the Wednesday, Thursday and Friday routes provided more comparable data as they were collected bi-weekly.

As reflected above, on average the quantities of materials collected during the pilot from the single stream pilot routes were greater than from the dual stream pilot routes. However, the standard deviation reflects some overlap in the potential quantities likely to be collected using the two methods.

Comparison of the Current Dual Stream Bi-Weekly Method to the Dual Stream Weekly Method

Residents in the Tuesday pilot area were able to set out their 18-gallon bin weekly rather than every other week. The comparative results are shown below in Table 12.

Table 12
Comparison of Dual Stream Routes During Pilot
Weekly vs. Bi-weekly Collection

Material Category	Tuesday (Weekly) Route ¹			Friday (Bi-weekly) Route ² (Control)			Statistically Significant Difference
	Mean	90% Confidence Interval		Mean	90% Confidence Interval		
		Lower	Upper		Lower	Upper	
Paper	65.4%	62.5%	68.3%	59.5%	53.9%	65.1%	
Metals	7.4%	5.8%	9.0%	6.7%	6.0%	7.5%	
Glass	13.6%	8.3%	19.0%	22.2%	14.5%	29.8%	
Plastic	9.9%	7.7%	12.0%	8.6%	6.3%	10.9%	
Contaminants	3.7%	2.6%	4.9%	3.0%	2.5%	3.5%	
Total ³	100%	n/a	n/a	100%	n/a	n/a	

¹ Three samples were sorted from the Tuesday routes.

² Three samples were sorted from the Friday routes.

³ The totals may not equal the sum of the material categories due to rounding.

As shown in Table 12, the upper and lower confidence intervals for each of the material categories of the weekly dual stream collection routes were not significantly different than the bi-weekly dual stream (control) routes. Thus, the composition of the materials collected did not significantly change.

As for the quantities of materials collected, Table 13 below reflects the weights of the quantities collected for each route.

Table 13
Comparison of Dual Stream Bi-Weekly vs. Weekly Collection (Tuesday)
Total Quantities Collected by Route Before and During Pilot

	July (bi-weekly)	September (weekly)	October (weekly)
Total Quantities Collected (Tons)	8,150	5,650	4,925

It appears that on a monthly basis, the weekly collection would result in greater quantities collected than bi-weekly collection. However, because the data set is limited, we cannot draw a definitive conclusion without additional pilot data.

Comparison of the Current Dual Stream Bi-Weekly Method to the Dual Stream Bi-Weekly Method with Additional Education

The residents in the Wednesday pilot area received additional recycling educational materials while their collection method (dual stream) and frequency (bi-weekly) remained unchanged. The results are reflected below in Table 14.

Table 14
Comparison of Dual Stream Routes During Pilot
Bi-Weekly with Additional Education vs. Bi-Weekly Control

	Wednesday (Addt'l Educ) Route ¹			Friday (Control) Route ²			Statistically Significant Difference
Material Category		90% Confidence Interval			90% Confidence Interval		
	Mean	Lower	Upper	Mean	Lower	Upper	
Paper	56.4%	53.4%	59.5%	59.5%	53.9%	65.1%	
Metals	8.9%	7.8%	10.0%	6.7%	6.0%	7.5%	
Glass	18.3%	14.7%	21.8%	22.2%	14.5%	29.8%	
Plastic	12.3%	9.5%	15.1%	8.6%	6.3%	10.9%	
Contaminants	4.1%	3.8%	4.4%	3.0%	2.5%	3.5%	
Total ³	100%	n/a	n/a	100%	n/a	n/a	

¹ Three samples were sorted from the Wednesday routes.

² Three samples were sorted from the Friday routes.

³ The totals may not equal the sum of the material categories due to rounding.

As shown in Table 14, the upper and lower confidence intervals of the bi-weekly, dual stream with additional education collection routes were not significantly different than the bi-weekly dual stream (control) routes. Thus, the composition of the materials collected did not significantly change.

As for the quantities of materials collected, Table 15 below reflects the weights of the quantities collected for each route.

Table 15
Comparison of Dual Stream Bi-Weekly with Additional Education (Wed)
vs. Bi-Weekly Control (Friday)
Total Quantities Collected by Route During Pilot

	Wednesday (Addt'l Educ)	Friday (Control)
September	9,625	10,825
October	7,975	8,075
Mean	8,800	9,450
Standard Deviation	1,167	1,945

Comparison of the Current Dual Stream Bi-Weekly Method to the Dual Stream Bi-Weekly Method with Larger Bins

The residents in the Thursday pilot area received larger curbside recycling bins (22-gallon capacity compared to the original 18-gallon capacity bins). The new bins were also equipped with wheels. The collection method (dual stream) and frequency (bi-weekly) remained unchanged. The results are reflected below in Table 16.

Table 16
Comparison of Dual Stream Routes During Pilot
Bi-Weekly with Larger Bins vs. Bi-Weekly Control

Material Category	Thursday (Larger Bins) Route ¹			Friday (Bi-weekly) Route ² (Control)			Statistically Significant Difference
	Mean	90% Confidence Interval		Mean	90% Confidence Interval		
		Lower	Upper		Lower	Upper	
Paper	63.7%	53.8%	73.7%	59.5%	53.9%	65.1%	
Metals	5.8%	5.0%	6.6%	6.7%	6.0%	7.5%	
Glass	19.1%	12.6%	25.7%	22.2%	14.5%	29.8%	
Plastic	8.1%	4.8%	11.3%	8.6%	6.3%	10.9%	
Contaminants	3.3%	2.0%	4.5%	3.0%	2.5%	3.5%	
Total ³	100%	n/a	n/a	100%	n/a	n/a	

¹ Four samples were sorted from the Thursday route.

² Three samples were sorted from the Friday route.

³ The totals may not equal the sum of the material categories due to rounding.

As shown in Table 16, the upper and lower confidence intervals of the bi-weekly, dual stream with larger bins were not significantly different than the bi-weekly dual stream

(control) routes. As for the quantities of materials collected, Table 17 below reflects the weights of the quantities collected for each route.

Table 17
Comparison of Dual Stream Bi-Weekly with Larger Bins (Thurs) vs. Bi-Weekly Control (Friday)
Total Quantities Collected by Route During Pilot

	Thursday (Larger Bins)	Friday (Control)
September	9,150	10,825
October	10,600	8,075
Mean	9,875	9,450
Standard Deviation	1,025	1,945

Comparison of the Dual Stream Collection Method Before and During the Pilot Program

Table 18 below compares the results of the dual stream collection routes before the pilot was initiated (July) to the results from the control route (Friday) during the pilot program (September and October).

Table 18
Comparison of Bi-Weekly Dual Stream Routes¹
Before vs. During Pilot

Total Quantities (Tons) Collected by Route	July (Before)	September & October (During)²
Wednesday	6,000	8,800
Thursday	6,800	9,875
Friday	6,500	9,450
Mean	6,433	9,375
Standard Deviation	404	541

¹ The weights from Tuesday's routes were excluded from the comparison because they represent weekly collection, whereas the Wednesday, Thursday and Friday routes provided more comparable data as they were collected bi-weekly.

² Average of two routes (Sept. and Oct.) for each day.

The above results appear to reflect that more recyclable materials, by weight, were collected during the pilot compared to the same collection day before the pilot. Also, even though residents in the control route presumably were not aware of the pilot study, they did set out more recyclable materials during the pilot.

Table 19
Comparison of Dual Stream Routes
Before vs. During Pilot

Material Category	Tues-Friday Dual Stream Routes ¹ July (Before)			Tues-Friday Dual Stream Routes ² September & October (During)			Statistically Significant Difference
	Mean	90% Confidence Interval		Mean	90% Confidence Interval		
		Lower	Upper		Lower	Upper	
Paper	61.3%	52.7%	69.9%	61.5%	54.7%	68.2%	
Metals	6.6%	4.3%	8.9%	7.1%	5.6%	8.6%	
Glass	18.7%	13.1%	24.3%	18.4%	12.3%	24.4%	
Plastic	9.9%	5.4%	14.4%	9.6%	6.7%	12.5%	
Contaminants	3.5%	2.4%	4.6%	3.5%	2.6%	4.4%	
Total ³	100%	n/a	n/a	100%	n/a	n/a	

¹ Seven samples were sorted from the July dual stream routes.

² Thirteen samples were sorted from the dual stream routes.

³ The totals may not equal the sum of the material categories due to rounding.

The upper and lower confidence intervals of the dual stream routes during the pilot program were not significantly different than the dual stream routes before the pilot was initiated. Thus, the July composition results can be considered representative of dual stream collection for the City of Roseville.

Summary

The results of the comparative analysis of the pilot routes are summarized below.

Comparison of the Monday Collection Routes

The upper and lower confidence intervals from both the September and October Monday single stream pilot routes reflect a statistically significant difference when compared to those of the July (pre-pilot) dual stream route. Thus, the materials composition is projected to change when comparing single stream to dual stream collection.

When comparing the material compositions by weight for the Monday collection routes, the results include:

- The quantities of paper collected via the single stream method (September and October) increased compared to the quantities collected via the dual stream method (July);
- The quantities of metals, glass, and plastic decreased with the single stream collection method; and

- The amount of contaminants collected via the single stream method was higher than the dual stream method.

Comparison of Single Stream and Dual Stream Collection Methods

The upper and lower confidence intervals of the September and October Monday single stream pilot routes were significantly different than the September and October dual stream routes.

The results of comparing the single stream and dual stream collection methods in September and October include:

- The single stream routes yielded increased quantities of paper compared to the dual stream routes;
- The single stream routes generated less quantities of metals, glass and plastics than the dual stream routes; and
- The quantities of contaminants in the single stream routes were higher than the quantities of contaminants found in the dual stream routes.

On average, the quantities collected during the pilot from single stream collection routes were greater than from dual stream routes. However, more data sets are needed to draw definitive conclusions.

Comparison of the Current Dual Stream Bi-Weekly Method to the Dual Stream Weekly Method

The upper and lower confidence intervals of the weekly dual stream collection routes were not significantly different than the bi-weekly dual stream (control) routes. Thus, the materials composition is projected to remain similar.

It appears on a monthly basis that greater quantities of materials are likely to be collected with weekly collection as compared to bi-weekly collection. However, more data sets are needed to draw definitive conclusions.

Comparison of the Current Dual Stream Bi-Weekly Method to the Dual Stream Bi-Weekly Method with Additional Education

The upper and lower confidence intervals of the bi-weekly, dual stream with additional education collection routes were not significantly different than the bi-weekly dual stream (control) routes. Thus, the materials composition is projected to remain similar.

It appears that additional data sets are needed to draw any definitive conclusions as it relates to quantities set out for collection using the two approaches.

Comparison of the Current Dual Stream Bi-Weekly Method to the Dual Stream Bi-Weekly Method with Larger Bins

The upper and lower confidence intervals of the bi-weekly, dual stream with larger bins were not significantly different than the bi-weekly dual stream (control) routes. Thus, the materials composition is projected to remain similar.

It appears that additional data sets are needed to draw any definitive conclusions as it relates to quantities set out for collection using the two approaches.

Comparison of the Dual Stream Collection Method Before and During the Pilot Program

The upper and lower confidence intervals of the dual stream routes during the pilot program were not significantly different than the dual stream routes before the pilot was initiated. Thus, the July composition results are representative of dual stream collection for the City of Roseville.

Attachment B-1

Composition Analysis Categories

Paper Products

1. **Newspaper (ONP)** - Printed groundwood newsprint, including glossy and semi glossy advertisements and inserts typically found in newspapers.
2. **Household Office Paper and Mail (HOPM) - recyclable** - Also referred to as “Mixed Paper” or “Junk Mail”, paper that would be included in residential “mixed mail” or commercial “office” recycling programs, not including the grades identified above. Examples include: “junk” mail, printer paper, envelopes of all types, file folders and notebooks, card stock, key punch cards and computer printouts, financial statements, annual reports, other report-like documents, books (other than phone books), brightly colored paper, calendars, tablets with colored glue bindings, shredded paper, fax paper, onion skin paper, and Post-It Notes.
3. **Magazines/Catalogs (OMG)** - Magazines, catalogs including any “seasonal circular” catalog clearly recognized as such from direct mail (e.g., LL Bean, Nordstrom’s, etc.).
4. **Phone Books** - Clean telephone directories printed for or by telephone directory publishers.
5. **Uncoated Corrugated Cardboard (OCC) and Brown Paper Grocery Bags - recyclable** - Uncoated cardboard with a wavy core and **not** contaminated with other materials such as wax, plastic coating, Styrofoam, or tape, and all paper bags. Examples include: Large packing boxes for shipping electronics or appliances (even if coated with paint or ink); paper bags (including Kraft).
6. **Boxboard (OBB)** - Chipboard boxes **not** coated with wax, plastic or metal. Examples include: cereal boxes, other clean chipboard food containers, shirt boxes, and shoeboxes, egg cartons, and tissue roll cores.

Containers

7. **Metal Cans** - Steel/tin and aluminum food and beverage cans.
8. **Glass Bottles and Jars** - Food and beverage containers.
9. **Plastic Bottles** - Bottles with a neck including: soda bottles, milk and water jugs, and laundry product containers.

“Non-Targeted Materials” (Aka: “Trash...” Or “Rejects...” ...As Collected)

10. **Beer, Pop & Water Boxes** (i.e., “carrier stock”) - Used as “wet-strength”, coated boxboard. Includes 12-pack and 24-pack cartons used for cans of beer, pop, water, etc.
11. **Other Paper Trash** - All other non-recyclable paper; contaminated paper (i.e., paper used to dispose of chewing gum, soaked with food spills, sprayed with paint, covered in tape, OCC with Styrofoam attached); paper or boxboard coated with wax; tissue papers, napkins, cups, coffee filters, tea bags, wax paper, cellophane and plastic wrap, carbon paper, wallpaper, bathroom waste paper, photos, slides, transparencies. Includes “Fridge/Freezer Boxes” such as coated boxboard used for containing any food products sold in the store’s cold storage and kept in the home refrigerator and/or freezer. Includes, milk/juice boxes, frozen (store-bought) pizza boxes, butter margarine boxes, frozen dinners, frozen fruit/vegetable boxes, etc. Also includes “Pizza Boxes” such as any cardboard (non-fridge/freezer) pizza boxes that were clearly identified as “take out/delivered” or “store-bought”/frozen.
12. **Plastic Bags and Other Film Plastic** such as plastic wrap, film, etc.
13. **Other Trash** - All other non-recyclable items including: other scrap metal, rope, string, twine, cotton balls, tape, cups, silverware, trays, foam packaging. Includes “Non-Recyclables Glass/Ceramics” such as windowpanes, mirrors, bulbs of any type, dishes, glasses, pottery, ceramics. Also includes “Non-Recyclable Cans” such as aerosol cans, paint cans, motor oil containers, and gasoline containers. Also includes “Medical Waste” such as sharps (e.g., needles/syringes, razors), medicine containers, etc.

Attachment B-2

Recyclable Materials Composition Protocol

Planning & Equipment/Facilities Preparation

1. Notify Drivers and Operators

Confirm all logistics, schedules, roles, and responsibilities with affected individuals after receiving approval from their management (e.g., Waste Management (WM) drivers and City Public Works Department (PWD) skid-steer operator).

2. Secure All Equipment and Facilities

Secure commitments for all equipment (see Attachment A, “Sort Equipment Checklist”). Note that appropriate lead-time will be needed for approval, receipt and training for the operation of the: (a) City Police Department portable truck scale; and (2) the OEA platform scale. Appropriate lead-time will also be need for request, approval, and delivery of necessary roll-off boxes and 90-gallon carts from WM. We recommend the City ask WM to deliver roll-off boxes that are at least 40-yards in capacity.

3. Prepare City PWD Salt Shed

Sweep and barricade (if necessary) the City’s salt shed within the PWD yard. Identify designated sorting area and platform scale station area (removed from any vehicle traffic). Provide electrical power extension cords and cord protectors (if needed) for platform scale.

4. Set-Up Equipment

Arrange for delivery and positioning of roll-off boxes, 90-gallon carts, truck scale, and platform scale.

5. Record Tare Weights on Carts

Weigh and record the weight of empty 90-gallon carts to be used for sort categories.

Truck Weighing & Load Tipping Operations

The truck weighing and load tipping procedures written herein are for the maximum work effort for the BEFORE “two-sort” Monday pilot routes (i.e., two trucks). Most pilot routes will be collected by one truck, one route per day.

1st truck

1. Direct first truck onto (portable Police Dept.) truck scale

Record truck “TOTAL” gross weight on data sheet (see Attachment C, “Data Sheets”) [to come].

2. Direct truck to tip first category [either fiber or containers] into back of salt shed

Note load type, location in shed, and any unique characteristics (e.g., safety hazards) on data sheet.

3. Tarp load

Tarp the load (if needed) to keep separate from the second truck.

4. Direct first truck back to truck scale

Record truck “SUBTOTAL” weight on data sheet.

5. Direct first truck to tip second category into back of shed

Note load type, location in shed, and any unique characteristics (e.g., safety hazards) on data sheet.

6. Tarp load

Tarp the load (if needed) to keep separate from the second truck.

7. Direct first truck back to truck scale

Record empty “TARE” weight on data sheet.

2ND truck

Repeat steps #1 through #7 above as needed for 2nd truck (and for next day’s trucks/routes if multi-day storage is required).

We recommend directing the 2nd truck driver to tip away from the 1st truck loads, leaving some space between the piles. Also, direct the 2nd truck driver to tip the “paper” load near the 1st truck’s “container” pile to help differentiate piles if they get close and start commingling.

Sampling/Sorting Operations

1. Set Up Sorting Station

- Set up platform scale in nearby location away from vehicle and sorter traffic lanes.
- Set up sorting table(s).
- Place 4 to 6 plastic 55-gallon drums near the sorting table.
- Circle the sorting area with up to about fifteen (15), 90-gallon carts and appropriate number of 18-gallon recycling bins for smaller categories, (e.g. “Plastic Film”, and “Other Trash”).
- Place sort boards (to be provided by Dan Krivit) on or near each cart to distinguish the category for that cart (or carts).
- Assure sort crew has all necessary safety equipment.

2. Establish Sort Crew Assignments

- One (1) crew leader/data manager (keeper of the clipboard).
- One (1) assistant crew leader, reader of the scale for cart weights and empty cart tare weights.
- Two (2) to three (3) sorters/laborers.

3. Random Selection of Samples

The Project Team recommends the following procedure for random sampling:

1. Visually divide each sample load into 16 cells after the load is tipped onto the ground. Once tipped, the loads tend to be distributed in an elongated configuration similar to that shown in Figure 1 below.

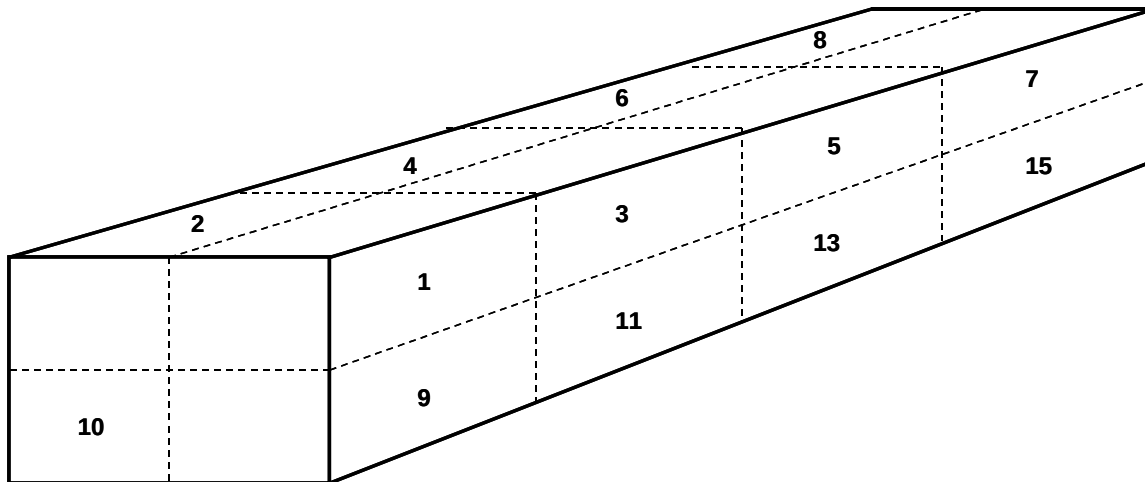


Figure 1 – The 16-Cell Grid as Applied to a Tipped Load¹

2. Instruct the loader operator to capture recyclable materials from two randomly selected cells in the grid – one from the top half of the load and one from the bottom half. These two cells should be randomly selected prior to sampling using a random number generator. The desired cell numbers should be written on each load's data sheet (see Attachment C).
3. Mix the recyclable materials extracted from the two cells on a hard, flat surface. Instruct the loader operator to mix the recyclables so as to distribute the various materials throughout the pile (i.e., first mix the recyclables back and forth in one direction, then take recyclable materials from a cross-section of the pile perpendicular to the mixing direction) to ensure a representative sample (see Figure 2 below).

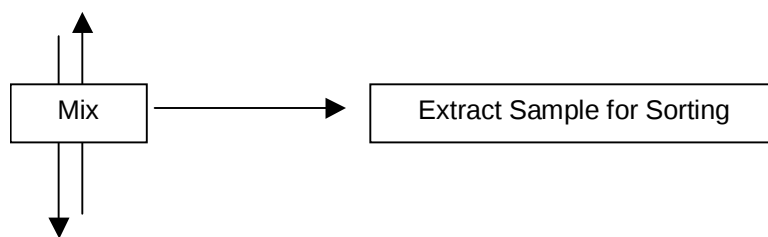


Figure 2 – Mixing and Extracting Waste

¹ The number of cells in this grid can be adjusted downward for small loads. For example, a small load can be divided into eight cells instead of 16 to ensure that a sufficient amount of recyclable materials (between 200 and 300 pounds per cell) is captured for sampling.

4. Select a sample of at least 200 pounds from the mixed pile. Place the sample into plastic 55-gallon barrels or onto a tarp for sorting.

The sampling procedures written herein are for the maximum work effort for the BEFORE “two-sort” Monday pilot routes (i.e., two trucks). Most pilot routes will be collected by one truck, one route per day.

1. Pull two random samples from the paper load from the 1st truck;
2. Pull two random samples from the container load from the 1st truck;
3. Sort samples to obtain composition by weight as per sort operations (Paper and Container Sorting) below; and
4. Repeat sampling steps #1 and #2 above for the 2nd truck’s paper and container loads.

4. Paper Sorting

- Due to the large amount (65% +) of old newspaper (ONP) compared to other paper categories, set up two or three ONP carts with sort board labels.
- Set up two carts for old corrugated cardboard (OCC) with sort board labels due to the bulky volume of this grade compared to other paper categories.
- Sort as much ONP as possible to clear out this bulky, majority paper grade. Debag ONP bundled in Kraft bags by emptying into appropriate ONP cart and placing empty Kraft bags into OCC/Kraft cart. All ONP inserts (e.g., Sunday flyers/circulars) should go into ONP cart.
- Weigh ONP carts when they become about 75% full. That is, DO NOT OVERLOAD with any paper grade (e.g., ONP, magazines, household office paper, etc.) to avoid lifting injuries.
- Sort as much OCC/Kraft as possible to clear out this bulky paper grade.
- Sort other minority paper grades (i.e., household office paper, magazines, boxboard, Beer/Pop/Water Boxes, Other Paper Trash, etc.).
- Sort down to a particle size of 1-inch plus. All particles smaller than 1-inch shall be swept up and categorized as “Other Paper Trash”.
- Weigh all carts/bins including gross and tare weights.
- Clean sort area and prepare for next sub-sample.

5. Container Sorting

- Label carts and sort into container categories: “Metal Cans”, “Glass Bottles and Jars”, “Plastic Bottles”, “Plastic Base and Other Film Plastic”, and “Other Trash”.
- Sort down to a particle size of 1-inch plus. All particles smaller than 1-inch shall be swept up and categorized as “Other Trash”.
- Weigh all carts/bins including gross and tare weights.

- Clean sort area and prepare for next sub-sample.

Weigh Carts & Bins; Record Data

Crew leader duties:

- Staff clipboard;
- Direct which carts to weigh in which order;
- Re-set scale to “zero” before each weight;
- Help lift heavy carts gently onto platform scale;
- Assign crew person to read gross scale weights and tare weights;
- Write weights onto data sheets on clipboard (repeat values back to reader for accuracy);
- Make appropriate qualitative notes;
- Take occasional photographs of “typical” samples and unusual items;
- After all data is recorded, approve tipping of cart or bin back into pile. No cart or bin shall be tipped back into pile without “O.K.” from crew leader; and
- Copy data sheets as soon as possible and store copies in separate file location.

Equipment/Facilities Clean-Up

1. Crew leader shall direct City PWD skid-steer operator to load all recyclables into roll-off box(es) as needed and as PWD operator is available;
2. Crew leader shall direct sort crew to use tarps to cover standing piles not loaded into roll-off;
3. Clean and store all carts and bins;
4. Store scale; and
5. Sweep sorting station and surrounding area.

Attachment B-3

Health and Safety Plan

1. Objective of this Plan

The objective of this plan is to identify the critical health and safety issues related to the sorting activities and the method used to train staff concerning these issues as well as accurate sorting procedures.

The personal safety and health of each staff person is a primary consideration of the Project Team. The prevention of occupationally-induced injuries and illnesses will be given high priority during the performance of sorting activities. The Project Team will provide industry standard equipment, training, and physical facilities necessary for maintaining the personal safety and health of all staff members. Along with this commitment, it is the responsibility of each and every staff person to contribute to his or her own and fellow worker's health and safety by learning and exercising safe work practices and complying with all requirements of this site safety plan.

2. Applicability

This site safety plan outlines and explains the various equipment, procedures and rules which have been designed to keep sorters safe and healthy during this study. Unsafe practices or behavior will not be tolerated.

3. Standard Operating Procedures

The basic procedure for sorters will be to identify different materials in a recyclable materials sample that has been placed on a waist-high sorting table and to place the materials in nearby appropriately labeled containers. Before receiving the materials on the table it will have been examined by the Site Supervisor (or an appropriately trained assistant) for household hazardous, hazardous, and infectious waste. This is considered the pre-sort and is very critical as related to site health and safety. After the material is sorted into the containers, the supervisor or an assistant will weigh the containers. After the containers are emptied, the next sample will be brought to the table and the sorting will begin again.

4. Location of Safety Equipment

The following items will be located near the sorting tables for immediate access:

- One 10# ABC Dry Chemical Fire Extinguisher
- Spill Containment Kit
- Protective Clothing

- First Aid Kit
- Portable Eyewash Unit
- Potable Water Supply

5. Employees and Personal Protective Equipment

5.1 Sorters and Work Zones

Based upon the amount of hazardous safety training and responsibility assumed for the study, various tasks have been assigned to staff.

5.2 Site Supervisor

The Site Supervisor is the site safety officer and the emergency coordinator. The Site Supervisor will be overseeing the entire work area and will be responsible for presorting the material samples for hazards before the sample is categorized by the sorters. The sorters may not approach the areas where unexamined samples are being stored or examined. In the event of a spill of hazardous material from a sample, the supervisor is responsible for cleanup of the spill or for calling the appropriate authorities.

5.3 Assistant Supervisor

The Assistant Supervisor will assist the Site Supervisor as necessary. The focus of the Assistance Supervisor's role is to facilitate the sorting process for the sorting crew.

5.4 Sorters

Sorters will sort and categorize the materials being sampled. In order to make the job as comfortable and safe as possible, a number of procedures and work locations will be defined. The materials will have been presorted by the Site Supervisor or Assistant Supervisor to remove the hazardous, household hazardous, and infectious waste, and the sorters will be limited to working only in the vicinity of the sort tables and taking breaks in a predetermined area.

5.5 Need for Personal Protective Clothing

Recyclable materials are not likely to contain hazardous or infectious wastes. However, hazardous items and substances may be encountered in close range, picked up by hand, or may have leaked from a broken container and mixed with the recyclable materials. These conditions could result in situations which could be hazardous to the health of the sorters conducting the study. For these reasons, it will be necessary for each sorter to wear the personal protective clothing that will be provided. This protective clothing is listed below.

- Hard hats and liners in the winter

- Safety glasses or goggles, or prescription safety glasses
- Organic vapor dust mask (if required by facility operator)
- White Tyvek full-piece suit (the suit's sleeves should be tucked inside the gloves so the ends of the sleeves don't drag in the materials samples)
- Nitrile gloves (cotton liners will be provided, optional)
- Steel-toed boots

5.6 Presorting Protection

Different levels of protection are required for different study activities, depending on the potential for exposure. In addition to the personal protective clothing listed previously for sorters, presorting the samples for hazardous, household hazardous, and infectious waste requires the wearing of a half-faced respirator. The Site Supervisor and Assistant Supervisor will be the only staff conducting the presorting and, preferably, have received safety training associated with wearing the additional respiratory protection.

5.7 Spills

In the unlikely event of a spill or a release of a hazardous substance in a quantity still manageable by on-site personnel, the Site Supervisor will wear a poly-coated Tyvek suite (yellow) with duct tape to seal the wrists and ankles, double gloves (nitrile gloves with inner vinyl gloves), and disposable vinyl overboots to protect against liquids. The Site Supervisor will also switch to a full-faced respirator.

5.8 Likelihood of Heat and Cold Stress

Because the study will be taking place inside a minimally heated area and outside, environmental factors are an important consideration in worker health and safety. Additionally, the personal protective clothing required for the study can aggravate situations caused by uncomfortable weather. A large Tyvek suit will be worn over layers of clothing. Frequent breaks will be encouraged in the event of extremely hot or cold weather. A work/rest schedule will be adapted to weather conditions. Also, water coolers and beverages will be provided throughout the sort.

5.9 First Aid for Heat and Cold Stress

The following are First Aid procedures for conditions caused by hot and cold temperature extremes that may be aggravated by required personal protective equipment:

5.9.1.1 Heat Exhaustion

- Caused by: Prolonged hot spell, excessive exposure, physical exertion.
- Symptoms: Profuse sweating, weakness, dizziness, and sometimes heat cramps; skin is cold and pale, clammy with sweat; pulse is thready and blood pressure is low. Body temperature is normal or subnormal. Vomiting may occur. Unconsciousness is rare.
- First Aid: Move to a cooler environment immediately. Provide rest and a cool drink of water or beverage like Gatorade. Seek medical attention if the symptoms are severe.

5.9.1.2 Heat Stroke (Heat Collapse) **Warning: Can Be Fatal**

- Caused by: Failure of the body to regulate its temperature because excessively warm weather and physical exertion has depleted it of fluids needed to perspire.
- Symptoms:
1. Weakness, dizziness, nausea, headache, heat cramps, heat exhaustion, excessive sweating; skin flushed and pink.
 2. Sweating stops (usually) and body temperature rises sharply. Delirium or coma is common; skin changes from pink to ashen or purplish.
- First Aid: Immediate medical care is needed; heat stroke is very serious. The body must be cooled soon. Move the victim to a cooler place, remove protective clothing, and bathe in cold water. Use extreme care and frequently check ABCs (airway, breathing, and circulation) if the person is unconscious.

5.9.1.3 Frost Nip/Bite

- Caused by: Cold air temperatures (especially if there is a wind) freezing the skin. Most often the exposed skin on the face, nose and ears is affected but prolonged cold may affect the hands and feet also.
- Symptoms:
1. A reddening of the skin.
 2. The area will blanch, or whiten, and there will be a stinging sensation. Frostbite should not be allowed to proceed beyond this stage. Seek a warm location immediately.
 3. The area will become white, with a waxy appearance at this point, and will go numb. Tissue damage can occur at this point and, if ignored, gangrene may set in.
- First Aid: Get indoors or to a warmer place immediately. Treat the frostbitten area with lukewarm water (103 to 107 degrees F); don't use hot water and absolutely do not rub the area with snow. If warm water isn't available, wrap the affected area in a warm, dry cloth. Drink a warm

liquid. Do not smoke or drink because both act to constrict blood vessels and will inhibit circulation in the area. If the frostbitten area blisters do not break them; see a doctor soon to check for infection.

5.10 Routine Decontamination

"Decontamination" is a procedure for removing, or "doffing," the personal protective equipment in a specified order to prevent the spread of contaminants. During breaks and at lunch it is important that sorters remove the equipment so as not to inhale or consume contaminants on the gear.

6. Recyclable Materials Handling Procedures

6.1 Presorting

Sorters categorizing the material samples and conducting the sorting will be wearing a level of protective clothing and respiratory equipment which will **not** allow them to work with an unexamined sample of recyclable materials. The Site Supervisor or another adequately-trained staff member will presort the sample, looking for hazardous, household hazardous, or infectious waste before it may be shoveled onto the sort table. If unsorted recyclable material samples are brought into the sorting building, sorters will stay near the sort tables and not sort the materials until told that it is ready.

6.2 Sorting Materials

Sorting and categorizing materials requires that it be picked up with the hands. Nitrile gloves with optional cotton liners will be provided to protect the skin from dirt and potential hazards, but they will not protect against sharp materials, which will certainly be in the samples. To avoid being cut or receiving a puncture wound, items will be picked from the surface of the piled recyclable materials.

Moving the materials to the containers used for categorizing and weighing the recyclable materials will be done with care. Sorters will station themselves at a single position near a table and sort for the family of materials identified on the barrels nearest their location. Sorters will be trained to avoid grabbing handfuls of like materials and will not run around the table to the barrels behind other workers. One could easily trip, be knocked down, hit with an item, or at the very least startle a fellow worker by being behind them when unexpected. Materials in other categories will be passed to fellow workers nearer those barrels. Throwing or tossing the recyclable materials will not be allowed.

Prior to initiating the sorting event, the Site Supervisor will provide each sorter with a list of the various material categories and their definitions. The Site Supervisor will review the materials to be sorted and address any questions about the various categories.

6.3 Lifting

It is likely that heavy barrels will need to be moved from the sort tables to the scale and then to a disposal area and that materials will need to be shoveled onto the tables. Sorters are required to be able to lift 25 pounds to apply for the position. Every effort has been taken to lessen the likelihood of a back injury because of the nature of the work, but every individual will need to keep their own health in mind. If a sorter has a previous back injury or if a barrel is too heavy to roll or slide, a dolly will be used, or someone else will be asked to move it. When shoveling materials onto the tabletop, sorters will be reminded not to load the shovel with more weight than they can comfortably lift.

The following tips will be used when lifting:

- Maintain the three natural curves of the spine by keeping the head high, chin tucked in, and back arched.

- Bend hips and knees.

- Use the diagonal lift (one foot ahead, one foot behind) to get the weight in close and maintain a wide, balanced base of support.

- Keep abdominal muscles tight when lifting to help support the back.

- Keep the load close to the body and stand up straight. Keep head up.

- Avoid twisting while lifting. Pivot after lifting, if changing direction.

- Avoid lifting anything heavy above the shoulders.

7. Procedure for Handling Hazardous Wastes

The materials composition study procedure has been designed so that sorters are not exposed to materials that have not first been screened for hazardous, household hazardous, or infectious waste. These materials are briefly defined and appropriate actions outlined for each in the following:

7.1 Hazardous

Hazardous: Materials that were improperly disposed of in municipal waste or recyclable materials; e.g., radioactive waste, toxic chemicals, explosives.

Action: If the presorters should miss a hazardous item in a materials sample and it is brought to the sorting table and found, work should immediately stop and the area should be cleared. The entire sample will be rejected and removed and, depending upon the nature of the hazardous item, the site coordinator will see to the proper disposal action or will call the appropriate emergency agency.

7.2 Household Hazardous

Household Hazardous: Materials commonly found in the home or work place which can be toxic, especially when discarded; e.g., paints, solvents, strong cleaners, pesticides.

Action: If a sorter becomes aware that something is spilled in the materials and hazardous--e.g., they smell a solvent or chemical odor—they will be advised to stop working, step away, notify the others at the table to stop work, and call the supervisor. If an unidentified chemical has apparently spilled on the materials, the sample will be rejected, the table cleaned, and a new sample brought in. Sorters will set aside items considered household hazardous waste (HHW) per the material category definitions. The Site Supervisor will be responsible for working with the facility staff to designate a location to place the HHW upon sorting the material for each sample.

7.3 Infectious Waste

Infectious Waste: Solid waste that might be able to transfer disease or infection to another person; e.g., extremely bloody medical items, syringes, or an indiscriminately discarded biomedical bag. These biomedical bags are often red in color and they have "infectious waste" or the biomedical symbol printed on them.

Action: If a hospital or veterinary bag or a similar medical waste is found, work will be stopped and the coordinator notified to remove the materials from the table. Single syringes are quite common in residential refuse and one of the major reasons hands should not be plunged blindly into samples. If a syringe is found, the sorter finding it should announce to other workers at the table "Syringe." The sorter will then move the syringe to the appropriate container in order not to accidentally poke themselves, another worker, or someone who may be coming up from behind.

8. Emergency Contingency Plan

The Site Supervisor will be the emergency coordinator. The Assistant Supervisor will be the emergency coordinator in the event that the supervisor is not available. The Site Supervisor is responsible for understanding and complying with the facilities' emergency contingency plan and will follow site procedures.

8.1 Emergency Eyewash Unit

An emergency eyewash unit or portable eyewash bottles will be located near the sort area. In the event that someone gets a foreign object in his or her eye, the victim's eyes should be flushed with water from the eyewash unit.

9. Summary

The Site Supervisor will follow the health, safety, and training procedures specified in this plan. All sorters will be familiar with the policy and procedures specified in the plan prior to initiating the sorting events.

Appendix A: Sorter Training Acknowledgment Form

A critical element of training personnel to sort materials is health and safety training. Before any work can begin, all sorting personnel are trained in safe procedures for handling and sorting materials. This training includes the following topics.

- Purpose of the recyclable materials composition sort
- Site layout
- Introduction to staff roles and responsibilities
- Sorters responsibilities
 - Punctuality
 - Rest
 - No drugs or alcohol
 - No smoking
 - Prescribed medications
- Sort Safety Procedures
 - Materials handling
 - Use of Personal Protective Equipment
 - Site Safety Equipment
 - Designated work and break areas
- Ergonomics
 - Safe lifting to avoid back stress
- Environmental Conditions
 - Heat Stress
 - Cold
 - Fatigue
- Injury Prevention
- Hazardous Wastes
- Bloodborne Pathogens
- Emergency Procedures
- Accident Reporting
- Training Sort

Acknowledgement

I acknowledge that the site supervisor or designee has discussed and explained the topics listed above, addressed any question I have about these topics, and conducted a training sort to demonstrate the safe handling and sorting of materials.

Signed _____ Date _____

Attachment B-4

Data Sheet

Sample I.D. # _____

Data Sheet
City of Roseville – Recycling Pilot Study

Date: _____
Day of Week: _____
Weather: _____

Time: _____
Route Name: _____
Driver Name: _____

Truck/Load Data: (fill out one column or the other)

2-Sort		Single Stream	
Truck weight "GROSS":		Truck weight "GROSS":	
Truck weight "SUB-TOTAL":		Empty "TARE" weight:	
Circle one:	(Paper or Containers)		
"NET WEIGHT" (Gross minus Sub-Total)			
Circle one:	(Paper or Containers)		
Empty "TARE" weight:			
Location of load:		Location of load:	
Unique characteristics/other notes on load tipped:		Unique characteristics/other notes on load tipped:	

Sample I.D. # _____

Total Sample Weight _____

Category Sort Data:

	<u>Gross Weight</u>	<u>Tare Weight</u>	<u>Net Weight</u>	<u>Notes: (e.g., any unique characteristics)</u>
1. Newspaper (ONP)				
1.a	_____	_____	_____	_____
1.b	_____	_____	_____	_____
1.c	_____	_____	_____	_____
1.d	_____	_____	_____	_____
1.e	_____	_____	_____	_____
1.f	_____	_____	_____	_____
2. Household Office Paper and Mail (HOPM)				
2.a	_____	_____	_____	_____
2.b	_____	_____	_____	_____
2.c	_____	_____	_____	_____
2.d	_____	_____	_____	_____
2.e	_____	_____	_____	_____
3. Magazines/Catalogs				
3.a	_____	_____	_____	_____
3.b	_____	_____	_____	_____
3.c	_____	_____	_____	_____
3.d	_____	_____	_____	_____
3.e	_____	_____	_____	_____
4. Phone Books				
4.a	_____	_____	_____	_____
4.b	_____	_____	_____	_____
4.c	_____	_____	_____	_____
4.d	_____	_____	_____	_____
4.e	_____	_____	_____	_____

Sample I.D. # _____

Category Sort Data:

	<u>Gross Weight</u>	<u>Tare Weight</u>	<u>Net Weight</u>	<u>Notes: (e.g., any unique characteristics)</u>
5. Corrugated Cardboard (OCC) & Brown Grocery Bags				
5.a	_____	_____	_____	_____
5.b	_____	_____	_____	_____
5.c	_____	_____	_____	_____
5.d	_____	_____	_____	_____
6. Boxboard				
6.a	_____	_____	_____	_____
6.b	_____	_____	_____	_____
6.c	_____	_____	_____	_____
6.d	_____	_____	_____	_____
7. Metal cans				
7.a	_____	_____	_____	_____
7.b	_____	_____	_____	_____
7.c	_____	_____	_____	_____
7.d	_____	_____	_____	_____
8. Glass Bottles and Jars				
8.a	_____	_____	_____	_____
8.b	_____	_____	_____	_____
8.c	_____	_____	_____	_____
8.d	_____	_____	_____	_____
9. Plastic Bottles				
9.a	_____	_____	_____	_____
9.b	_____	_____	_____	_____
9.c	_____	_____	_____	_____
9.d	_____	_____	_____	_____
10. Beer, Pop & Water Boxes				
10.a	_____	_____	_____	_____
10.b	_____	_____	_____	_____
10.c	_____	_____	_____	_____
10.d	_____	_____	_____	_____

Sample I.D. # _____

Category Sort Data:

	<u>Gross Weight</u>	<u>Tare Weight</u>	<u>Net Weight</u>	<u>Notes: (e.g., any unique characteristics)</u>
11. Other Paper Trash				
11.a	_____	_____	_____	_____
11.b	_____	_____	_____	_____
11.c	_____	_____	_____	_____
11.d	_____	_____	_____	_____
12. Plastic Bags and Other Film Plastic				
12.a	_____	_____	_____	_____
12.b	_____	_____	_____	_____
12.c	_____	_____	_____	_____
12.d	_____	_____	_____	_____
13. Other Trash				
13.a	_____	_____	_____	_____
13.b	_____	_____	_____	_____
13.c	_____	_____	_____	_____
13.d	_____	_____	_____	_____

Roseville Public Works, Environment and Transportation Commission Meeting Minutes

Tuesday, July 27, 2010, at 6:30 p.m.
City Council Chambers, 2660 Civic Center Drive
Roseville, Minnesota 55113

6. **Recycling Community Values Discussion (continued)**

Recycling Coordinator Tim Pratt summarized best value contracting approach for renewing the Recycling contract to provide more opportunities for evaluation, not entirely based on price; and provided an example that included performance structure, performance evaluation; current capability factors and other categories.

Tonight's discussion focused on the list developed by members of various community values they felt should be incorporated in an RFP for recycling services; to proceed in ranking scores based on their importance related to those values.

Initial categories grouped together by staff based on the bullet points were as follows:

<u>Collection</u> ▪ Local Vendor ▪ Clean, quiet ▪ Know the size and weight of trucks and their impact on streets ▪ Equipment doesn't use fossil fuel	<u>Contract</u> ▪ Return on Investment ▪ Money returned to City ▪ Flexibility in contracting ▪ Rewards for adding value
<u>Convenience</u> ▪ Easy to participate ▪ Is it better to separate or co-mingle? ▪ More materials picked up ▪ Help to minimize blowing of material	<u>Education</u> ▪ Frequent education of residents ▪ Community involvement ▪ Annual report on what happens to material
<u>Environmental Benefits</u> ▪ Wide range of material picked up and marketed to its highest and best use ▪ Materials are efficiently recycled (local markets, highest and best use for	<u>Additional Services</u> ▪ HHW collection that's easy ▪ Organics collection ▪ Businesses included ▪ Anticipate future markets and

materials) ▪ Experience with Zero Waste events ▪ Environmentally Preferred Purchasing (EPP)	new end products that would lead to collection of additional material ▪ Rewards for adding value
---	---

Members reviewed, both individually and corporately, the list and determined those items needing further clarification and/or combined with another category.

Discussions included intent of those values and overall benefits; environmental issues versus efficiencies of the program; preference that products entering the recycling stream become useful products at the end of the process; route efficiencies and frequency; need to establish a threshold for the RFP while allowing for flexibility and creativity among vendors; and keeping those options open for the benefit of the City and its residents.

Further discussion included the Commission's interest in collection of compost by vendors on bicycles; range of materials; collection criteria; environmental benefits; convenience of collection; service to businesses and multi-unit properties; separation of colored glass; need for the City Hall Campus and City-owned and/or operated facilities to initiate EPP; considerable interest of members in the ongoing educational aspects of a program for residents; knowledge of end markets by large and small vendors and closing the loop for sustainability; following the market of Roseville's recycled materials as part of the best value process; and how to determine the success of the recycling program based on participation by residents.

Additional discussion included business models of hauling companies as opposed to recycling companies; marketing as a goal of environmental stewardship; additional information needed from staff for review by the members to facilitate their desire to recommend and encourage the City Council to consider adopting a policy for implementing an EPP program in order to put value on the City's recycling program; identification by individual vendors of who they market materials to and whether the end use is sustainable or only a one-time re-use and points weighted according to how often materials can be recycled.

Further discussion ensued related to the need to pare the list to ensure it was not so detailed that it didn't address those significant items or become too complicated; environmental benefits of local or metropolitan area companies for curb-side pick-up as well as delivery of materials to their respective markets; with members paring the list and renaming categories of importance, based on a 100 point scale.

Items considered were short-and long-term benefits of various functions; reiterating the benefits of education and outreach on an ongoing basis for the public to fully participate in any recycling program; recognition of ever-improving technologies and building that flexibility the program and subsequent

contract terms; return on investment for the program and benefits to individual residents and the community as a whole; and ensuring that vendors be allowed to display their creativity through the best value process and financial motivations.

Further discussion included the core recycling program and whether it was imperative that curb-side organics collection be incorporated as part of that core program or would serve as an additional value component and showing initiative of respective vendors; and efficiencies evidenced in prices.

Mr. Pratt advised that City Manager Malinen had identified the makeup of the committee for reviewing proposals, consisting of one member of the PWET Commission; and reviewed the proposed timetable for responses and review and anticipated recommendation to the City Council in late September.

Member Stenlund nominated Chair DeBenedet to serve as the PWET Commission representative.

Recess

Chair DeBenedet recessed the meeting at approximately 7:59 p.m. and reconvened at approximately 8:07 p.m.

Members individually ranked categories on the revised table, and then compared those rankings and their rationale for that ranking.

At the conclusion of this significant discussion, with members agreeing on comprises and coordinating their individual ideals for the overall intent, members weighted the community values, through the assistance of and development by Member Vanderwall of a more cohesive schedule for weighting the functions as follows:

<u>Functional Area</u>	<u>Points</u>
Collection	60
Clean, quiet	10
Impact on street (size and weight of trucks)	15
Frequency of service	20
Ease of participation	20
Co-mingling?	15
More materials picked up – organic too	5
<i>Help to minimize blowing of materials</i>	
Materials are efficiently recycled (local markets, highest and best use for material)	10
<i>HHW Collection that's easy</i>	
<i>Businesses included</i>	
Rewards for adding value	5
<i>Anticipate future markets and new end products that would lead to collection of additional material</i>	

Outreach	30
Frequent education of residents	40
Community involvement	10
Annual report on what happens to material	50
Environmental Benefits	10
Wide range of material picked up and marketed to its highest and best use	
Experience with Zero Waste events	10
Equipment doesn't use fossil fuel	30
Environmentally Preferred Purchasing (EPP)	30
Local vendor-terminal location	30

Outreach

Member Stenlund noted that the annual report was of vital importance to him.

Member Vanderwall noted that the educational component versus community involvement was most important to him, meaning frequent education proactively lead by the vendor; with residents recycling correctly being recognized as an example or challenge to potential recyclers.

Member Vanderwall advised that he would e-mail the completed document to staff for distribution to all PWET members for one last review.



Beyond the Garbage Can

Ramsey County's
Solid Waste Master Plan
2011 - 2030



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Chapter I: Introduction

Background and History

Solid waste management planning and implementation in the metropolitan area is largely governed by statutes specific to the seven-county Twin Cities Metropolitan Area. Required by Minnesota statute, the solid waste planning process has comprised a periodic revision of the regional solid waste policy plan (Minn. Stat. §473.149), followed by a revision of county solid waste master plans to implement the regional policy plan (Minn. Stat. §473.803) since the 1980s.

Regional solid-waste planning was under the direction of the Metropolitan Council until 1994, when it shifted to the non-regulatory Office of Environmental Assistance (OEA), which was folded into the regulatory Minnesota Pollution Control Agency (MPCA) in the mid-2000s. The Metropolitan Solid Waste Management Policy Plan (Policy Plan) was developed and revised by the Metropolitan Council during the 1980s and 1991, by the OEA in 1997 and 2003, and most recently by the MPCA, which approved a revised Policy Plan in April 2011. The planning horizon for the Policy Plan and county master plans is 20 years, with revisions occurring about every 6 years. Certain items are required to be stated in 6-year increments.

Per Minnesota statute, county master plans and revisions to the plans are to be submitted to MPCA for approval within a specified time frame. As such, during the past two decades the master plans were submitted in the year following the completion of the Policy Plan revisions: 1992, 1998, 2004 and 2010. For this round of revisions, Ramsey County is required to submit a revised Master Plan by April 2, 2012.

Since 1992, county master plans have included a regional component, developed in a coordinated fashion through the Solid Waste Management Coordinating Board (SWMCB), such that parts of each county master plan have been regional in nature, and parts have been county-specific. In both 1998 and 2004, a regional master plan for SWMCB member counties was developed that consisted of the common regional elements, and each county's master plan was then written to be consistent with and serve to adopt the regional plan.

Why is the Master Plan Important?

As described above, Ramsey County has had a series of solid waste master plans dating back to the early 1980s. These plans have guided changes in solid waste management from being a system dependent on land disposal to one that integrates a variety of management strategies and performs at one of the highest levels in the nation. These plans have served as guidance to the counties, municipalities, the waste industry, and others as decisions are made about waste management. The master plans have come to be respected as setting clear policy direction for solid waste management, and provide a level of stability to a very dynamic system.

A historical example of this stability is found in the development of curbside recycling. In the early 1990s curbside recycling was in its infancy, and there was skepticism about its value and longevity. Ramsey County's master plans established clear policy direction, directing that municipalities would be responsible for collection of recyclables, that it is an expectation that such service become institutionalized, that long term funding sources for recycling be developed, and that certain goals had to be met. This direction established the clear role for curbside recycling, and was the basis for the service being a permanent fixture in the system.

Another important role of the master plan has been to address various risks. At its core, many of the changes in solid waste management over the past thirty years have been aimed at reducing risk to public health, safety and the environment. For example, the County's solid-waste plans have established policies, regulations, and services to reduce the hazardous character of waste. There is now significantly less hazardous waste in mixed municipal solid waste than there was in the past. This reduces a variety of risks, especially occupational health risks to waste-industry workers, property damage risks to waste-industry equipment, environmental risks related to disposal of waste, and health risks associated with environmental emissions.

The master plans have also addressed economic risks. Policies that assure markets for recyclables, delivery of waste to the resource recovery facility, and stable sources of recycling funding have assured that the system is financially stable. Further, the system as developed has reduced environmental liability risks for business and government in Ramsey County. While often overlooked as a benefit of solid-waste planning, this liability reduction is a hidden economic development tool that has saved millions of dollars over thirty years. (Recall that the cost of cleaning up closed old landfills in Minnesota is over half a billion dollars.)

In sum, the 20-year Ramsey County Solid Waste Management Plan is an important tool to protect public health and the environment, to reduce a variety of risks, and to stabilize the economics of waste management for residents and businesses.

Looking Ahead

The Policy Plan is neither law nor rule, but is established in Minnesota statute to guide system development. Within the Policy Plan are a number of requirements that county master plans must meet. Some key issues include:

- **Regional Governance:** The Policy Plan states that the MPCA and SWMCB will evaluate ways in which solid waste is currently governed to determine if and what changes are needed. The Plan goes on to outline key issues to be included in a regional governance study.
- **Greenhouse Gas Reductions:** Even though not required in Minnesota statute, the MPCA included reductions of greenhouse gases associated with waste management in the development of the plan.
- The Policy Plan sets specific quantifiable objectives to reduce land disposal of waste through 2030. The objectives are provided in five-year increments beginning in 2015, and include objectives for source reduction, recycling, organics recovery, resource recovery, and landfilling.

The chart below depicts the Policy Plan's percent* of total MSW objectives for 2010-2030:

Management Strategy	2010 Region Actual	2015 State Objective	2020 State Objective	2025 State Objective	2030 State Objective
Source Reduction & Reuse	-	1-2%	2-4%	3-5%	4-6%
Recycling	40%	45-48%	47-51%	49-54%	54-60%
Organics	4%	3-6%	4-8%	6-12%	9-15%
Resource Recovery	28%	32-34%	32-33%	30-31%	28-24%
Landfilled	28%	20%	17%	15%	9%

*2010 Regional Data Presentation to the SWMCB - June 22, 2011. Note: recycling does not reflect source reduction and yard waste credits.

Ramsey County supports the MPCA's objectives for source reduction, reuse, recycling, organics recovery, resource recovery and land disposal found in the 2010 Regional Solid Waste Policy Plan.

There are 8 key themes in the Policy Plan:

- Accountability: waste is everyone's responsibility, not just government's.
- Waste should be considered a resource, saving money, energy and reducing pollution.
- The solid-waste management hierarchy identified in state law should guide decision making.
- Generators of waste are responsible for the waste they produce.
- Government, in all its functions, generates waste, and should serve as a leader in properly handling waste.
- Product stewardship, which is a preventive approach to waste, and which creates shared responsibility, is a key future direction.
- Private-sector initiatives are key for the future, with State law giving preference to privately provided services.
- Greenhouse gas reductions can be met by handling waste appropriately.

Ramsey County Solid Waste Management Plan Revisions

The Ramsey County Solid Waste Management Plan will have two components: a regional component and local component. The regional component is developed jointly with Anoka, Carver, Dakota, Hennepin and Washington Counties, through the Solid Waste Management Coordinating Board (SWMCB). Each member of the SWMCB adopts an identical regional component to their plan. The local component includes policies and strategies that focus on County-specific activities.

Revisions to the draft Ramsey County plan assumed a 20-year planning horizon, and builds on the previous master plan, on-going and future work, and previous and new research. This draft plan offers a solid basis for moving Ramsey County's system toward the MPCA's short- and long-term objectives. Areas of emphasis in this plan – in an effort to more fully develop certain parts of the waste-management system – include:

- Organic waste management
- Non-residential recycling
- Municipally provided services, such as multi-unit recycling
- Demolition/construction waste reuse and recycling
- Communication, consultation and technical assistance
- Expanded hauler licensing for consistency and oversight of highest and best use of waste.

The reader will note throughout this document that some strategies are quite specific while others are vague. This reflects the recognition that we can't fully predict future conditions and the realization that there is value in leaving room for flexibility to ensure effectiveness in an ever-changing world. Detailed strategies pertain to areas in which the County has workplans in place and/or is committed to existing contractual language. The County will base future decisions aimed at meeting or exceeding State objectives identified in the Policy Plan on sound science, good judgment, best practices, consultation with state and local partners, and review of relevant data.

Public Engagement Process

Minnesota statutes require that Ramsey County appoint a solid-waste advisory committee to aid in the preparation and revision of the master plan. With more than 25 years experience in solid waste management planning, evaluation and regulation, Ramsey County has expertise in the topical areas of solid waste management, hazardous waste management, recycling systems, financing solid-waste systems and community outreach. Despite this expertise, the County needs and values the involvement of the community in the process to develop a strong document that will influence outcomes. In years past, a small number of participants provided input in a limited number of advisory committee meetings. With the rise in popularity of electronic media and the changing demographics of our community, the County requested permission from the MPCA to open participation and feedback opportunities to a wider audience through active community engagement.

The County's aim was that residents, waste-management professionals, and representatives of municipalities and other public entities, businesses and institutions would have a greater understanding of the integrated waste management system and how that system protects health and the environment and that these individuals would participate in the opportunity to comment on the Ramsey County master plan.

The County created a home webpage titled "Planning Beyond the Garbage Can" (www.co.ramsey.mn.us/ph/rt/planning_beyond_the_garbage_can.htm) which included opportunities for interested individuals to explore in-depth policy documents, participate in workshops and tours, provide feedback through email or surveys, and be updated regularly through our GovDelivery email service.

The County gathered feedback through in-person focus groups, electronic surveys, telephone surveys, in-depth interviews, postcard surveys, meetings with key stakeholders, email, and Facebook conversations. We proactively sought opportunities to provide information to audiences that may not be currently connected to our electronic communication channels, including seniors, ethnic communities and low-income families.

By the Numbers:

- 1,000+ website visits
- 275+ GovDelivery subscribers
- 1,000+ Twitter and Facebook followers
- 5 meetings with municipal recycling coordinators and managers
- 500+ business participants in survey, focus groups and/or in-depth interviews
- 475+ resident participants in survey and focus groups
- 85+ request-for-feedback letters to waste-management professionals
- 180+ request-for-feedback letters to businesses

We believe our new, open, and inclusive approach has added depth and breadth to the advisory committee process by involving a large group of individuals from diverse backgrounds in a continuous feedback loop over the course of the development of this master plan. As such, the plan reflects the needs of the community, not just the will of the experts.

Chapter II: Ramsey County Policies and Strategies

Overarching Policies

Overarching Policy 1: Product Stewardship

Ramsey County strongly supports a product-stewardship framework, also known as extended producer responsibility, which creates effective producer-led reduction, reuse and recycling programs, to address a product's lifecycle impacts from design through end-of-life management, without relying solely on state and local governments. Product stewardship has historically focused on products with a toxic or hazardous character, but should be focused broadly on other products, such as packaging. Such an approach can reduce the need for government programs to assure proper end-of-life management of discarded items. Ramsey County believes that the objectives in the Policy Plan are more likely to be met and sustained in an affordable manner only if a product-stewardship framework is implemented in Minnesota.

Overarching Policy 2: Objectives and Measurement

Minnesota spends a considerable amount of time and money to measure progress in solid-waste management. A recently completed analysis of data by the MPCA documents the inefficiency and ineffectiveness of these efforts. Ramsey County believes strongly in measuring performance of the system, but in a meaningful manner. Ramsey County urges the MPCA to fully implement changes in data gathering and evaluation that are more efficient and that will truly assist in meeting objectives. Further, the County believes that moving to a measurement system that focuses on a diversion goal from landfills would be a more sensible approach to performance measurement.

Overarching Policy 3: Credit for Yard Waste

Ramsey County provides convenient and effective services for residents to manage yard waste, including woody waste, and complies with the State ban on yard waste. While expensive, these services are extremely important in a fully urbanized County, and are an efficient way for residents to comply with State law, practice environmentally sound behavior, and engage in community. As the new Policy Plan moves the system more strongly into separate management of organic waste, the value of yard waste is changing significantly. The yard waste collected by Ramsey County will now be an important component of the solid-waste system, with leaves and grass serving as bulking agents for composting other organics. Further, the woody wastes collected serve as a renewable energy source, supporting the movement to reduce greenhouse gas emissions. Ramsey County believes that yard waste should be included in the State's performance measures associated with the solid-waste system and will work with the MPCA and the SWMCB to include yard waste in future performance measures so as to better reflect overall organics diversion activity within the region and the county, and to improve the ability of both to compare its progress to other areas across the country.

Ramsey County Collection and Land Disposal Policies

1. Ramsey County will use responsible waste management principles, and careful risk analysis, when arranging for land disposal of waste. Public entities in Ramsey County are expected to do the same.
2. Old dumps and landfills pose a variety of potential public health, safety and property risks. To mitigate these risks, Ramsey County will invest resources to inventory, monitor and, when necessary, take action.

Ramsey County Collection and Land Disposal Strategies

1. Ramsey County will work with the SWMCB to explore the expansion of regional hauler licensing to include non-MSW, recycling and organics haulers. This includes efforts to work collaboratively to develop a standard non-residential recycling data collection and reporting program.
2. Ramsey County will work with other entities to promote proper, convenient, financially accessible management of bulky materials, in order to reduce illegal dumping and burning and to improve neighborhoods by reducing nuisance situations. With regard to bulky waste, Ramsey County:
 - a. Supports a product stewardship approach in which some bulky items are best managed through shared responsibility by manufacturers, distributors, retailers, and consumers;
 - b. Encourages Resource Recovery Technologies (RRT) to continue the processing of bulky waste items that can be processed by equipment at the Newport Resource Recovery Facility;
 - c. Expects that municipalities that provide clean-up events or separate waste collection programs for residents assure that bulky waste items are separated and managed appropriately and in accordance with the hierarchy;
 - d. Will work with municipalities regarding optimum methods for collection and proper disposal of major appliances, electronics, tires, and other bulky waste items; and
 - e. Will work with the mattress industry, including manufacturers, wholesalers and retailers, to foster implementation of a mattress recycling program.
 - f. Will work with the MPCA, generators, retailers and recyclers of carpet to foster more recycling of carpet recycling program, while continuing to support a product-stewardship approach for carpet.
3. Ramsey County will work with the SWMCB to develop a model ordinance for municipalities to allow the bi-weekly collection of non-putrescible wastes in the event a municipality adds a weekly residential organics collection program.
4. Ramsey County will maintain its inventory of old dumps and periodically review the status of those sites. The County will evaluate selected old dump sites to determine if further investigation or other action is needed to protect the environment, including groundwater and surface water.

5. Ramsey County will work with other agencies if environmental or public-health issues related to old dumps arise. The County will take appropriate action to evaluate or mitigate health and environmental risks.

Ramsey County Communication and Technical Assistance Policies

1. Ramsey County will use communication and outreach as a key strategy to reach solid and hazardous waste goals.
2. Ramsey County will deliver robust outreach, promotion and education campaigns that motivate behavior change by individuals.
3. Ramsey County will strengthen partnerships with municipalities, community groups, ethnic organizations, the waste and recycling industry, and others to promote management of solid waste in accordance with this plan.
4. Ramsey County's waste-management campaigns will recognize the value of community expertise in the development and dissemination of campaign messages, and will use a wide variety of communication tools including traditional methods and emerging technologies.

Ramsey County Communication and Technical Assistance Strategies

1. Ramsey County will use interactive communication strategies, such as social media, that go beyond traditional methods of outreach, engaging community partners as active contributors in the process of increasing broad understanding of a socially desirable, environmentally sound and cost-effective solid-waste management system.
2. Ramsey County, working with targeted populations within the County, will develop and deliver culturally specific and appropriate marketing and education on waste management for both residential and non-residential generators. The "targeted" community will vary based on the topical area, changing community needs, and the extent to which the messages are aimed at specific ethnic groups.
3. The County will use appropriate expertise to bridge cultural and language communication needs related to understanding and accessing the waste management system.
4. Ramsey County will increase awareness of and commitment to environmentally sustainable practices in the workplace on the part of County employees. Strategies may include web-based campaigns, on-line tutorials, and/or in-person trainings, among others.
5. Ramsey County will work with public entities to share innovative public information messages and technical assistance to further waste management goals.
6. Municipalities are responsible for providing information specific to their programs to their residents. As a condition of receiving SCORE funds, municipalities must use elements of the County outreach, education and promotional program materials. Ramsey County will work jointly with municipalities in the development of messages and tools, including consistent promotion of the regional RethinkRecycling.com website, the Ramsey County 633-EASY

recycling/disposal telephone line, A-Z Recycling/Disposal Guide, and County yard waste and household hazardous waste program information.

7. Ramsey County will work with public and private entities, including schools, businesses, institutions, government agencies and non-profit organizations, to develop coordinated communication messages that minimize confusion members of the public may have related to traditional recycling and other solid waste management methods.
8. Ramsey County will assure that the County's waste communication programs for residential and non-residential waste generators are compatible and consistent with other programs in the region.
9. Ramsey County will provide the resources necessary to assure that its communications programs are appropriately designed, accountable, effective, and evaluated.
10. Ramsey County will work with Washington County and through the Ramsey/Washington County Resource Recovery Project to enhance education on solid waste issues for residential and non-residential generators.
11. Ramsey County will develop a range of outreach tools for residential and non-residential generators to use when seeking information and assistance on waste management issues. Every non-residential generator will be contacted at least twice each year, and every residential generator will be contacted at least four times per year, focusing on actions that can be taken to increase waste education and recycling.
12. Ramsey County will work with public entities, providing resources as appropriate, to increase education and awareness of away-from-home recycling opportunities in places such as parks, athletic fields and arenas and for special events such as festivals, family reunions, and parades.
13. Ramsey County will continue to fund Community POWER grants through the SWMCB, explore the development of a new volunteer Master Recycler Program, and explore other opportunities to create volunteer programs to assist with outreach.
14. Ramsey County will contract with University of Minnesota Extension to work with the Master Gardener program for education, outreach and technical assistance on proper yard management, tree and shrub management, proper handling of yard waste and certain aspects of household hazardous waste management.
15. Ramsey County will conduct outreach, technical assistance and consultation to enhance waste generator understanding of the role and benefits of waste processing and taking action to direct waste to a processing facility.

Ramsey County Cost and Finance Policies

1. Ramsey County will continue to use the County Environmental Charge (CEC) as a funding tool that also serves as an incentive for waste to be managed higher on the waste management hierarchy. The CEC applies to mixed municipal solid waste (MSW) and the County has the authority to, by ordinance, apply it to non-MSW waste as well.
2. Amendments to the Solid Waste Ordinance that change the CEC rates will include a notice period for generators and haulers before the rate change becomes effective, to give them the opportunity to adjust billing systems.
3. The policy related to the use of solid waste fund balance is as follows:
 - a. Pursuant to State law, solid waste fund balance may be used for purposes only described in the Solid Waste Master Plan.
 - b. Maintain the assignment of \$1,000,000 of fund balance tort liability associated with waste management activities.
 - c. Maintain the assignment of \$500,000 of fund balance for a recyclable market support fund.
 - d. Establish the following priorities for use of solid waste fund balance by Ramsey County, in this order:
 - a. One-time waste management related expenses, such as purchase or development of fixed assets or capital equipment;
 - b. Maintenance of waste-related capital equipment/sites; and
 - c. Operating expenses that present significant opportunities for meeting environmental goals.
 - e. The Department of Public Health, in consultation with the County Manager and Office of Budgeting & Accounting, will bring requests forward for new funding commitments through the Capital Improvement Program process and/or through the Requests for County Board Action process.
4. Ramsey County will consider the opportunity to use the CEC currently collected for resource recovery purposes for use in the County's efforts to shift resources and effort to higher levels of the waste management hierarchy, including waste and toxicity reduction, recycling and reuse, organic waste management, toxicity reduction, and other issues such as illegal dumping and innovative processing opportunities.
5. Ramsey County supports consistent, clear billing by the waste industry for residential and non-residential customers.

Ramsey County Cost and Finance Strategies

1. Ramsey County requires each municipality to be responsible for developing a long-term financing mechanism to fund its residential recycling and organics programs.
2. Ramsey County allows municipalities use of the County's statutory service charge authority, through joint powers agreements with the County, to collect a municipal recycling fee for the municipality that includes services for the management of recyclables and organic waste.
3. Ramsey County will work with local partners to conduct a review of waste and recycling billing practices to ensure consistent, clear billing.
4. Ramsey County will create a public entity grants program to provide funds to municipalities, school districts, and other local public entities (excluding the University of Minnesota, Metropolitan Council and the State of Minnesota) for the purpose of innovative programs to start or improve recycling and organics management.
5. Ramsey County will fund its internal waste management operations using the CEC, employing best-management practices and demonstrating leadership in waste management.

Emergency Debris Management

These policies and strategies serve as an addendum to Ramsey County emergency management plans, and are intended to interpret and complement those plans.

Ramsey County Emergency Debris Management Policies

1. Ramsey County will ensure that the clearance, removal and proper disposal of debris resulting from natural and man-made disasters, such as trees, sand, gravel, building components, wreckage, vehicles, household hazardous waste, and other personal property is carried out to reduce risks to public health, public safety and the environment.
2. During an emergency, reduction of risks to public health and safety are a priority. To that end, waste of a toxic or hazardous character should be managed separately and safely. Once that is assured, then Ramsey County encourages as much recycling of emergency debris as is technologically and economically feasible in any given response scenario.
3. Ramsey County Departments will work collaboratively and proactively to plan and prepare for emergency debris management that eliminates immediate threats to public health and safety, removes obstructions to emergency response activities, disposes of the debris in the most environmentally responsible manner as possible, and unifies the efforts of city, county, state and federal organizations for a comprehensive and effective response.
4. Ramsey County will include as part of its contract for HHW collection services a provision that allows for temporary collection of HHW generated from emergencies such as flooding and other storm damage.

Ramsey County Emergency Debris Management Strategies

1. In an emergency, Ramsey County may temporarily waive restrictions prohibiting C&D haulers from transporting MSW to enhance regional capacity to move materials as quickly as possible.
2. Ramsey County will assist municipalities in planning for management of emergency debris.
3. Ramsey County will provide, to the extent possible, technical assistance and other resources to manage household hazardous waste and yard waste to municipalities in support of emergency debris management.
4. Ramsey County will provide resources to convene municipalities to create coordinated plans for the clearance, removal and proper management of debris caused by a major debris-generating event, including the management of special wastes such as hazardous waste, household hazardous waste, major appliances, electronic waste and infectious wastes.
5. Ramsey County may temporarily waive restrictions prohibiting commercial service vehicles from delivering tree and shrub waste to County yard waste sites during and following an emergency in the event that municipalities are managing recovery of the material through contracted vendors.

6. Ramsey County will coordinate or perform environmental assessments as needed to establish, identify or analyze risk and to make debris management decisions.
7. Ramsey County may utilize its existing contract services for removal of tree and shrub waste from County yard waste sites at other locations in the event that an emergency warrants creation of additional marshalling yards for the debris.
8. Ramsey County will prepare and update an environmental health annex to its all-hazard response and recovery plan.

Ramsey County Evaluation and Measurement Policies

1. Ramsey County believes that measuring and reporting results is integral to managing solid waste. High quality data are important to identify gaps, acknowledge successes, make improvements, and support policy positions in solid waste management programs. Ramsey County supports accurate measurement of state, regional and county waste management progress, in order to improve overall accountability.
2. Ramsey County will provide required data to the State of Minnesota for the purpose of measuring progress toward achieving the objectives set forth in the Metropolitan Policy Plan. However, because measuring results depends on accurate data collected efficiently and consistently, and recognizing that current methods to collect solid waste data are inefficient, cumbersome, inaccurate and in need of revision, Ramsey County will focus on gathering and reporting data of high quality.
3. Ramsey County will provide the public with progress reports on solid waste management. Ramsey County supports more efficient methods to collect solid waste data, and will work with the MPCA, SWMCB and other entities to create data gathering and evaluation methods that are more efficient, consistent and accurate. Ramsey County will support the MPCA's efforts to develop tools for measuring solid waste management through hauler and facility licensing/permitting.
4. The chart below depicts the Policy Plan's percent* of total MSW objectives for 2010-2030. Recognizing that these are regional objectives, Ramsey County, working jointly with the SWMCB, will use these as targets as it carries out the strategies in this master plan.

Management Strategy	2010 Region Actual	2015 State Objective	2020 State Objective	2025 State Objective	2030 State Objective
Source Reduction & Reuse	-	1-2%	2-4%	3-5%	4-6%
Recycling	40%	45-48%	47-51%	49-54%	54-60%
Organics	4%	3-6%	4-8%	6-12%	9-15%
Resource Recovery	28%	32-34%	32-33%	30-31%	28-24%
Landfilled	28%	20%	17%	15%	9%

*2010 Regional Data Presentation to the SWMCB - June 22, 2011. Note: recycling does not reflect source reduction and yard waste credits.

Ramsey County Evaluation and Measurement Strategies

1. Ramsey County supports the regional plan, Policy Plan and MPCA's SCORE Implementation Report and legislative efforts to work collaboratively to develop a standard commercial recycling data collection program, as articulated in the 2011 – 2030 Regional Solid Waste Master Plan.

2. Ramsey County supports more efficient methods to collect solid waste data, and will work with the MPCA and SMWCB to implement recommendations in its SCORE implementation plan report to the Legislature, dated April 2011.
3. Ramsey County will continue to use, and will expect its municipalities, to use ReTRAC to record recycling program, contract and financial data.
4. Ramsey County will develop and implement a performance scorecard for municipalities to measure progress toward achieving recycling goals.
5. Ramsey County will use its regulatory compliance programs to gather data that assist in regulation and solid waste system management.
6. Ramsey County will gather and use information to design improvements to solid waste programs, including information gathered through focus groups and surveys aimed at residential and non-residential generators, as well as data on the access and use of telephone and web-based information available to residential and non-residential generators.
7. Ramsey County will prepare an annual report on solid waste activities within the County, and provide it to the public.

Ramsey County Non-MSW Management Policies

1. Because Ramsey County is fully developed, most new development is associated with demolition of old structures. Because of this, Ramsey County will give special attention to non-MSW that is generated within the County.
2. Ramsey County will apply the State hierarchy of waste management to non-MSW, and will develop strategies, regulations and programs to promote the management of non-MSW higher on the hierarchy, and to reduce health, safety and property risks associated with non-MSW.

Ramsey County Non-MSW Management Strategies

1. Ramsey County will work with the SWMCB to explore the expansion of regional hauler licensing to include non-MSW collectors.
2. Ramsey County will continue to regulate demolition activities through a pre-demolition inspection program, assuring hazardous building materials, including asbestos are properly identified, removed and managed from structures slated for renovation or demolition, and will partner with municipalities in the implementation of this program.
3. Ramsey County will provide technical assistance and consultation on topics including collection, contracting, management options and permit issues, to municipalities and other entities to encourage appropriate management of demolition, construction, and deconstruction materials.
4. Ramsey County will continue the Reuse, Recycle, and Renovate for Reinvestment (“4R”) Program on County Tax Forfeited structures, promoting deconstruction, building material salvage and recycling in renovation and demolition projects.
5. By 2015, Ramsey County will provide technical assistance and consultation supporting public entity procurement practices that encourage incorporation of deconstruction, building material salvage and recycling practices in government-let contracts such that projects achieve a minimum 75% diversion rate based on what can reasonably be recovered.
6. Ramsey County will specify the use of tear-off shingle scrap in paving projects and encourage other public entities to do the same.
7. Ramsey County will work with the MPCA and SWMCB to expand markets for materials associated with non-MSW and bulky waste, with special attention to wallboard and mixed biomass.
8. Ramsey County will continue to work to promote healthy homes through the reduction of health and environmental hazards associated with lead, mercury and other contaminants, as well as the proper management and abatement of public-health nuisances.

Organics (including Yard Waste)

Ramsey County Organics Policies

1. Ramsey County will work with local partners and consultants to divert organic materials from the residential and non-residential waste streams using a variety of organics management methods.
2. Ramsey County will use the EPA's food waste management hierarchy as guidance in making policy decisions about organic waste.
3. Separate management of organic waste is becoming a necessary component of waste management in Ramsey County. Ramsey County expects residents, businesses and institutions to make progress during the term of this plan to incorporate the separate management of organic waste, and recognizes that it is the responsibility of everyone in Ramsey County to meet that objective.
4. Ramsey County will lead by example, assuring that County property generating organic waste is designed and built for organics management, and that County organics management operations implement best-management practices.
5. Ramsey County will encourage the development of a market-driven approach to organic waste management, with strong participation by the private sector, and will consider regulatory approaches, to be determined based on up-to-date research as well as political and economic climate, if the market approach fails to meet objectives.
6. Ramsey County will work with municipalities, school districts, institutions, and other non-residential generators to assure that organics management opportunities are maximized.
7. Ramsey County will use its resources in a strategic manner to assure that residents and non-residents optimize organic waste-management opportunities, using outreach and education, planning and evaluation, regulation, financial incentives, technical assistance and consultation as necessary to accomplish organic waste-management objectives.
8. Ramsey County supports organic-waste collection options that allow for the bi-weekly collection of non-putrescible wastes.
9. Ramsey County supports reduction of soft-bodied yard waste through on-site management and reduction of tree and shrub waste through proper urban forestry practices.
10. Ramsey County will operate a system of yard-waste sites that are convenient, provided at no charge to site users, and only for residents of Ramsey County. Commercial yard-waste haulers, lawn services, and tree services are prohibited from using County yard waste sites.

Ramsey County Organics Strategies

1. Ramsey County municipalities shall offer residents the opportunity to recycle organic materials by the end of 2016.
2. The County will evaluate progress in meeting the State's policy plan objectives for organic waste management, as well as the level of service availability and the status of the market for organic waste management. Should the evaluation show that there is not significant progress towards enhancing organics collection by 2017, the County will explore the use of regulatory tools.
3. Ramsey County will develop and implement an outreach and education program, technical assistance and consultation program, and a targeted grants program for non-residential generators of organic waste and recyclables. The County will evaluate and may provide financial support to stimulate the market for non-residential organic waste management. Ramsey County will coordinate this program with Washington County through the Ramsey/Washington County Resource Recovery Project.
4. Ramsey County will work with the SWMCB to explore the expansion of regional hauler licensing to include organics haulers.
5. Ramsey County will work with other agencies and entities to identify and monitor current and emerging diseases and insect threats to the urban forest, including Emerald Ash Borer, which may affect the volume of yard waste managed at County yard-waste sites, and will respond as appropriate.
6. Ramsey County will continue to operate its system of seven yard-waste sites. The County will continue to accept soft-bodied yard waste at all sites and tree and shrub waste at four of the sites. The County will periodically review aspects of its yard-waste management system, which could lead to improvements in operation.
7. Ramsey County will provide compost and wood mulch, when available, at the yard-waste sites, at no charge to County residents. Ramsey County will provide access to compost and wood mulch, when available, to government agencies and other public entities, including community gardens. Saint Paul – Ramsey County Public Health will develop criteria to manage requests for finished compost and mulch from government agencies, community gardens, and public entities.
8. Ramsey County will work with other entities to promote availability of products such as backyard composting bins and rain barrels that provide sustainable approaches to managing organic waste and storm water.
9. Ramsey County will provide access to its property at the Frank and Sims yard-waste site called the "Big Urban Woods" through joint powers agreements with participating schools, for use as a School Forest. Ramsey County will work with the schools, the Department of Natural Resources, the University of Minnesota's Extension Service, and community groups to develop and maintain the property as a School Forest.

10. Ramsey County will allow community groups to use the yard waste sites to provide public service, and fundraising, that enhances public service, improves quality of service to County residents, promotes civic engagement, and encourages physical activity.

Ramsey County Processing Policies

1. Consistent with the State hierarchy, Ramsey County affirms processing of waste, for the purpose of recovering energy and recyclable and other beneficially useful materials, as the preferred MSW and non-MSW management method over landfilling for waste that is not reduced, reused, or separately recycled or composted. This policy applies both to waste generated throughout the county and specifically to MSW generated by public entities including contracts for organized collection of solid waste. Pursuant to State law, public entities in Ramsey County will assure that MSW that they generate or contract for is processed rather than land disposed.
2. Ramsey County supports the processing of waste in a manner that encourages waste reduction, reuse or recycling, including the separate management of organic waste.
3. Ramsey County supports a merchant approach for waste processing, in which the financial risk and benefit of owning and operating a waste-processing facility rests with the private sector.
4. As part of the merchant approach, Ramsey County expects the following objectives to be met by waste-processing facilities operated by the private sector that serve the County:
 - a. Waste haulers that serve Ramsey County will have access to processing facilities.
 - b. Public entity waste will be accepted at the lowest price offered at processing facilities.
 - c. Processing facilities will receive sufficient waste and tipping fee revenue to be sustained as a viable competitive solid waste management business.
 - d. Processing facilities will meet performance requirements established in law.
5. Ramsey County seeks to eventually eliminate any public subsidy, in the form of Processing Payments or Hauler Rebates, for waste processing. Recognizing that market forces are out of the County's control, some subsidy to assure continued waste processing may be needed.
6. In the event of a failure of the solid-waste market to support a merchant approach or other County environmental goals, Ramsey County will consider the following actions:
 - a. Seek to acquire the Resource Recovery Facility in Newport, to maintain its operation as a resource recovery facility – this includes consideration of public operation and the use of flow-control; and/or
 - b. Pursuant to action taken following the Public Collection study in 2001-2002, move forward with design of a public collection system for residential and commercial solid waste to achieve environmental goals and protect public health and safety; and
 - c. Intervene in the market and use public funds to encourage processing.

Ramsey County Processing Strategies

1. Until termination of the Processing Agreement for the Resource Recovery Facility in Newport at the end of 2012, Ramsey and Washington counties will coordinate resource recovery activities through the Ramsey/Washington County Resource Recovery Project.
2. Ramsey and Washington counties will continue to work cooperatively on specific waste management issues through a joint powers agreement after 2012 to enhance the efficiency of waste management services and assist in achieving regional goals in processing.
3. Until termination of the Processing Agreement for the Resource Recovery Facility in Newport and during merchant operations, Ramsey County will inform and work with municipalities and refuse haulers regarding methods to reduce delivery of unacceptable or non-processible materials to the Facility.
4. Ramsey County will work cooperatively with the Minnesota Pollution Control Agency as the State enforces provisions found in Minn. Stat. §473.848, requiring waste to be processed before land disposal. Ramsey County adopts the MPCA criterion for determining when MSW is unprocessable. That criterion is found in Appendix D of the Policy Plan, and reads, in part: "TCMA mixed MSW is unprocessable when all reasonably available capacity within the TCMA processing system is fully utilized at 100% of its operating capacity."
5. Ramsey County will continue to identify and evaluate waste processing issues, such as monitoring merchant operations and exploring new processing opportunities.
6. Ramsey County will work with public entities (as defined by Minn. Stat. §115A.471) and the MPCA to ensure MSW is delivered to a processing facility, including evaluating the amount of MSW generated by public entities, and the volume delivered for processing.

Ramsey County Recycling Policies

1. Ramsey County requires municipalities to assure recycling service is available to all residents at their place of residence, including multi-unit dwellings. Ramsey County encourages a level of service that will maximize residential recycling.
2. Recycling is a necessary component of waste management in Ramsey County. Ramsey County expects residents, businesses and institutions to incorporate recycling into the handling of discarded materials, and recognizes that it is the responsibility of everyone in Ramsey County to achieve State recycling goals.
3. Ramsey County will lead by example, assuring that County-occupied property is designed for recycling, that employees and users of County property have the opportunity to recycle, and that County recycling operations implement best-management practices.
4. Ramsey County will work with municipalities, school districts and other public entities to assure that recycling opportunities are maximized. The County will use outreach and education, planning and evaluation, regulation, financial incentives, technical assistance and consultation to accomplish recycling objectives.
5. Ramsey County will provide financial support to municipalities using State SCORE funds, when those funds are available, to support municipal recycling and related programs, subject to SCORE grant requirements.

Ramsey County Recycling Strategies – County-specific

1. Ramsey County will assure that all County-occupied property is designed or remodeled to include sufficient space for the collection of recycling and waste collection. In addition, Ramsey County will assure that all County-occupied properties offer employees and visitors the opportunity to recycle and dispose of waste.
2. Ramsey County will ensure that all County-occupied spaces have recycling programs in place in accordance with State law that include, at a minimum, paper, cardboard, glass bottles, metal cans and plastic beverage and food containers, as well as organic waste when it is present in sufficient volumes.
3. Ramsey County will annually pass through a portion of SCORE funds received by the County to municipalities on a per-capita basis to provide partial support of municipal recycling and related programs, subject to SCORE grant requirements. Each year, the County will allocate about the same share of the total SCORE funds it receives as was allocated to municipalities in 2004 (approximately 84%).

Ramsey County Recycling Strategies – Residential

4. Ramsey County requires each municipality to be responsible for developing a long-term financing mechanism to fund its residential recycling program.
5. Ramsey County allows municipalities use of the County's statutory service charge authority, through joint powers agreements with the County, to collect a municipal recycling fee for the municipality.
6. Municipalities must provide the following minimum levels of service: weekly or every-other-week collection, and collection of at least the following materials at curbside and multi-unit properties:
 - a. Mixed paper (e.g., mail, office and school papers)
 - b. Newspaper, inserts and phonebooks
 - c. Glossy paper (e.g., magazines and catalogs)
 - d. Corrugated cardboard (e.g., mailing boxes and moving boxes)
 - e. Paper board or boxboard (e.g., cereal boxes, shoe boxes, and boxes from toothpaste, medications and other toiletries)
 - f. Metal food and beverage cans
 - g. Plastic bottles (such as those for beverages, condiments, detergent, shampoo and body lotion)
 - h. Glass food and beverage containers.
7. Ramsey County expects municipalities to add materials to their collection streams as markets become available.
8. Ramsey County will develop and implement a performance scorecard for cities to measure their progress toward achieving recycling goals. Municipalities will work with Ramsey County to annually monitor progress in meeting recycling goals. Failure to meet stated goals will result in intensive collaboration with the County to identify and remedy gaps and, as a least-preferred consequence, will result in the County withholding SCORE grant funds.
9. Municipalities shall make their best effort to maximize collection and marketing of residential recyclable materials. Municipalities shall strive to avoid disruptions in established municipal recycling programs due to temporary difficulties in marketing specific materials.
10. Ramsey County will provide support to municipalities through the existing County Recycling Markets Support Fund and its guidelines.
11. If a municipality fails to demonstrate existing recycling service to all residents at their place of residence, including multi-unit buildings, the County will ensure provision of such service. In that event, the County will retain any portion of the municipality's SCORE grant sufficient to cover the County's cost to provide for that service, and will charge the appropriate party in the municipality for costs not covered by the municipality's SCORE grant.
12. Ramsey County will support municipalities in creating away-from-home recycling opportunities at locations such as parks, athletic fields, arenas, and recreation centers and at municipally sponsored events.

13. Ramsey County encourages and will support municipalities that work together to coordinate or consolidate recycling services, contracts, staffing, and outreach to increase recycling participation and quantities collected, save funds, develop expertise, and increase consistency and efficiency in service delivery
14. Ramsey County will offer technical assistance and consultation to public entities for recycling and other solid-waste issues, including offering contracted technical assistance to municipalities.

Ramsey County Recycling Strategies – Non-Residential

15. Ramsey County will collaborate with municipalities and others to perform a review of non-residential recycling services to determine levels of consistency, opportunities for co-collection with residential recycling, and other methods to increase collection of non-residential recyclables.
16. Ramsey County will review plans submitted by licensed food and beverage establishments, and ensure that licensees meet recycling requirements in the Food Protection Ordinance by Ramsey County. Ramsey County encourages Saint Paul and Maplewood to do likewise.
17. Beginning in 2012, Ramsey County will develop and implement a comprehensive non-residential recycling outreach program, including these elements:
 - a. outreach and education to increase awareness about recycling, including an east metro organics and recycling website targeting non-residential generators;
 - b. technical assistance and consultation, likely provided by one or more professional consultants, to assist non-residential generators in making decisions that maximize recycling; and
 - c. a targeted grants program for non-residential recycling.
18. Ramsey County will perform research, including an analysis of business-based GIS data, to identify and target non-residential sectors for organics and recycling outreach efforts. This research will highlight low-performing sectors as well as areas where outreach efforts are likely to achieve the greatest impact on higher recycling rates.
19. The County will evaluate and may provide financial support to stimulate collection and marketing of recyclables through grant programs with public entities.
20. Ramsey County will use the CEC as an incentive for non-residential recycling and will promote the financial benefits of non-residential recycling.
21. The County will evaluate progress in meeting the State's policy plan objectives for recycling, as well as the level of service availability. Ramsey County supports efforts to work collaboratively to develop a standard non-residential recycling data collection program. Should evaluation of non-residential recycling show that there is not significant progress towards enhancing non-residential recycling collection by 2017, the County will explore the use of regulatory tools.
22. Ramsey County will work with the SWMCB to explore the expansion of regional hauler licensing to include recycling haulers.
23. Ramsey County supports SWMCB and MPCA efforts to standardize computation of non-residential and residential recycling rates.

Regulation

Ramsey County Regulation Policy

1. Ramsey County will assure compliance with applicable laws, rules and ordinances related to the management of solid and hazardous waste, as required by Minn. Stat. Sec. 473.811.

Ramsey County Regulation Strategies

1. Ramsey County will implement its solid- and hazardous-waste compliance program focused on risk. Fees charged for regulated activities will be based on risk factors previously used by the County.
2. Ramsey County will require, as a condition of licensure, all waste haulers and transfer stations operating in the county to remove and properly manage any hazardous waste materials to assure that regulated hazardous waste is properly managed, and that regulated entities are aware of options that reduce the quantity and hazardous character of waste.
3. Ramsey County will work with the SWMCB to explore the expansion of regional hauler licensing to include non-MSW collectors as well as recyclers and organics haulers
4. Ramsey County will provide training, education and information to businesses and waste generators about hazardous waste collection and disposal options as well as information and technical assistance to waste generators and facilities regarding the management of hazardous wastes, reduction of the toxicity of materials, and the use of alternative products.

Ramsey County Source Reduction, Reuse and Conservation Policies

1. Recognizing that source reduction results from systemic change, such as product stewardship initiatives or price signals that favor reduced waste, Ramsey County believes that the MPCA must lead source reduction innovations and measurement.
2. Ramsey County will support actions to reduce waste in its own operations in order to conserve natural resources and energy, reduce or eliminate toxins, support recycling markets, and reduce the need for landfilling.
3. In order to protect both the environment and public health, and conserve natural resources, Ramsey County will promote and take actions that conserve energy and reduce greenhouse gas emissions. Ramsey County will also encourage the use of renewable energy including the recovery of energy from waste.
4. Ramsey County will engage in environmentally preferable procurement and other practices, as required in State law and in ways that are consistent with environmentally preferable procurement practices established by federal guidelines, and will consider environmental factors when making purchasing decisions.

Ramsey County Source Reduction, Reuse and Conservation Strategies

1. Ramsey County will encourage residential and non-residential generators to produce less waste.
2. Recognizing that the MPCA has the capacity to effect changes in waste behavior on a statewide basis, Ramsey County will participate with the MPCA in the development and implementation of strategies to reduce waste.
3. Ramsey County will share information and technical expertise with municipalities so that they can work to promote innovative and effective ways of reducing waste generated by residents and businesses.
4. Ramsey County will promote a variety of reuse opportunities to residential and non-residential generators, through vehicles such as outreach, education and promotion of reuse markets.
5. Ramsey County will cooperate with the MPCA in measuring waste reduction on a statewide and regional basis.
6. Ramsey County will take a comprehensive, sustainable approach to building design, construction and remodeling (including materials selection), as well as daily operating practices, taking into consideration energy efficiency, conservation and environmental impacts.
7. In support of the stated environmentally preferable purchasing policy, Ramsey County will develop a framework for purchasing that simply and easily guides the buyer within an organization toward environmentally preferable alternatives.

8. Ramsey County will work with municipalities and community partners to identify innovative ways to reduce waste generated at public events and venues, under the Green Gatherings model.

Ramsey County Toxicity Reduction Policies

1. Ramsey County supports a product stewardship approach in which products with a toxic or hazardous character are best managed through shared responsibility by manufacturers, distributors, retailers, and consumers. The County will implement residential collection systems only until product stewardship systems are reliably in place for toxic and hazardous materials.
2. Ramsey County will provide for household hazardous waste (HHW) management services at a level of convenience and financial accessibility to encourage proper management and that is compatible and consistent with other programs in the region, at the same time encouraging the reduction of the amount of HHW generated.
3. The Ramsey County HHW collection program will provide for management of HHW in a cost-effective manner that minimizes risks to public health, occupational health, property and the environment, and continues to share with the State of Minnesota the potential risks associated with managing HHW.
4. Ramsey County will contract with the private sector for HHW collection services, provided that doing so will protect public health and the environment and that cost and risk factors are similar to or more favorable than public operation of part or all of HHW collection services.
5. Ramsey County supports the use of less toxic products and materials in industries that use them for manufacturing and other business activities.

Ramsey County Toxicity Reduction Strategies

1. Ramsey County will provide and promote convenient collection of HHW at both a year-round facility and at collection events held at various sites during spring, summer and fall.
2. Ramsey County will periodically review the list of items currently or potentially acceptable at HHW sites, determine how these items should be collected and managed, and determine how management of specific materials should be paid for, with particular attention to:
 - a. wastes that pose hazards for residential waste collectors or processors;
 - b. products that are banned from use;
 - c. hazardous or problem materials for which there are not convenient private-sector collection options; and
 - d. wastes identified in statutory disposal restrictions.
3. Ramsey County will allow for the management of HHW that is inappropriately dumped at municipal or County facilities and properties, or is recovered during the abatement of public health nuisances, through its HHW program.
4. Ramsey County will manage its HHW and yard-waste sites in accordance with the Ramsey County Storm Water Management Plan.

5. Ramsey County will evaluate the opportunity for privately provided HHW collection services to be provided to a county-owned building.
6. Ramsey County will provide for a product reuse area at its year-round HHW facility.
7. Ramsey County will provide, through its HHW vendor, fee-for-service collection for very small quantity generators of hazardous waste.
8. Ramsey County will collect pharmaceutical waste through its HHW program until a product stewardship approach is implemented statewide.

Appendix I: Solid Waste Management System Description

Overview

Since 1980, Minnesota has taken a systems approach to waste management, built on the public health model of prevention. This approach intends to prevent pollution, conserve resources, protect health and the environment, and to not pass costs onto future generations. Minnesota law includes a hierarchy of preferred methods to manage waste, emphasizing prevention of environmental problems and protection of public health. The Waste Management Act of 1980 (*Minn. Stat. Section 115A.02, as amended*) identifies its (a) purpose and (b) the waste management hierarchy as:

(a) *It is the goal of this chapter to protect the state's land, air, water, and other natural resources and the public health by improving waste management in the state to serve the following purposes:*

- (1) reduction in the amount and toxicity of waste generated;*
- (2) separation and recovery of materials and energy from waste;*
- (3) reduction in indiscriminate dependence on disposal of waste;*
- (4) coordination of solid waste management among political subdivisions; and*
- (5) orderly and deliberate development and financial security of waste facilities including disposal facilities.*

(b) *The waste management goal of the state is to foster an integrated waste management system in a manner appropriate to the characteristics of the waste stream and thereby protect the state's land, air, water, and other natural resources and the public health. The following waste management practices are in order of preference:*

- (1) waste reduction and reuse;*
- (2) waste recycling;*
- (3) composting of yard waste and food waste;*
- (4) resource recovery through mixed municipal solid waste composting or incineration;*
- (5) land disposal which produces no measurable methane gas or which involves the retrieval of methane gas as a fuel for the production of energy to be used on-site or for sale; and*
- (6) land disposal which produces measurable methane and which does not involve the retrieval of methane gas as a fuel for the production of energy to be used on-site or for sale.*

The Minnesota Pollution Control Agency (MPCA) is responsible for establishing solid waste policy and planning in accordance with the Waste Management Act. The guiding document for the metropolitan area is the *Metropolitan Solid Waste Management Policy Plan 2010-2030* (Policy Plan) developed jointly by the MPCA and the Solid Waste Management Coordinating Board (SWMCB). The Policy Plan has the effect of law and sets the standards against which local solid waste plans are reviewed and approved. The vision and goals in the Policy Plan provide the foundation for both regional and county-specific solid waste master plans. The Policy Plan, the SWMCB regional master plan and the county master plans work in concert to assure that the solid waste system addresses the environmental and health goals established in law. Waste management plans are written, reviewed and approved by the MPCA. Ramsey County uses the goals and policies set forth in the Policy Plan to update its plan.

Waste is complex. Waste is much more than what most people think is garbage, refuse, or trash. Waste is anything that a household, business or institution no longer needs. Waste can be relatively harmless, or be toxic or potentially harmful. The State of Minnesota has crafted a variety of laws and rules that regulate trash so that risk to public health and the environment can be managed. For example, products that contain mercury are banned from the trash, and have to be managed separately. Wastes that are

toxic, corrosive, flammable and that are produced by businesses are strictly regulated by federal, state and local law. Because waste is complex, the “waste management system” is complex, and is actually a large number of smaller systems put in place to safely handle discarded materials.

Except for yard waste and household hazardous waste (HHW), the County does not directly collect, handle or manage waste. State law includes a preference for private-sector management of waste. Many entities, including for-profit-businesses and non-profits, provide a wide array of waste management services throughout Ramsey County. To help accomplish the goals set by the MPCA and the standards set by Minnesota law, and to assure protection of the environment, public health and safety, Ramsey County uses a variety of tools. Examples include:

- **Regulation**, such as adopting ordinances to establish standards, licensing of hazardous waste generators, waste haulers and solid waste facilities, assuring compliance through training and consultation, inspecting licensees, and taking enforcement action when necessary.
- Providing **direct services**, including yard waste sites operated by the County to allow residents to deposit yard waste at no charge.
- **Contracting for services**, such as the household hazardous waste service provided by Bay West to residents of the county, joint powers agreements to share services with other counties, or contracting with RRT for waste processing services.
- **Providing grants**, such as using SCORE funds from the state to provide grants to municipalities to assist the delivery of recycling services, or Community POWER grants to organizations within the County.
- **Financing** County activities with the County Environmental Charge which is designed to reflect the volume of waste generated and to encourage recycling.
- Reaching broadly across and deeply into the community to provide **educational opportunities and innovative communication tools**, focused on community and putting how-to information in the hands of businesses and citizens, with special emphasis on reaching communities with limited-English proficiency.
- Providing **consultation and technical assistance**, such as pollution prevention advice to businesses or working with schools on food waste recycling.

Demographics

Ramsey County is the smallest county geographically and the most densely populated in Minnesota. Its U.S. Census population was 511,035 in 2000 and 508,640 in 2010, and the number of households was 201,236 in 2000 and 202,691 in 2010. According to Metropolitan Council population forecasts, Ramsey County is the slowest growing of the metropolitan counties. While pockets of developable land remain, the vast majority of Ramsey County is fully developed. However, redevelopment continues to occur throughout the county.

Ramsey County’s population is becoming increasingly diverse in terms of race, culture, and language. Table 1 shows the population breakdown by race and ethnicity.

Table 1: Race and Ethnicity in Ramsey County, 2005-2009 Average*Source: American Community Survey 2005-2009 5-Year Average*

	Estimate	Percent
One race	487,199	97.4%
Two or more races	13,237	2.6%
White	380,709	76.1%
Black/African-American	45,018	9.0%
American Indian/Alaska Native	3,236	0.6%
Asian	48,273	9.6%
Native Hawaiian/Other Pacific Islander	83	0.0%
Other race	9,880	2.0%
Hispanic/Latino (any race)	31,745	6.3%

Ramsey County includes all or part of 19 communities, the largest of which is the City of Saint Paul. The 2010 Census population for the Ramsey County portion of all communities is shown below in Table 2. (Note: The Ramsey County Solid Waste Master Plan focuses on 17 communities. The cities of Blaine and Spring Lake Park, with almost all of their populations in Anoka County, are addressed in Anoka County's plan.)

Table 2: 2000 and 2010 Census Population for Communities in Ramsey County

Municipality	2000 Population	2010 Population
Arden Hills	9,652	9,552
Blaine (part)	0	0
Falcon Heights	5,572	5,321
Gem Lake	419	393
Lauderdale	2,364	2,379
Little Canada	9,771	9,773
Maplewood	35,258	38,018
Mounds View	12,738	12,155
New Brighton	22,206	21,456
North Oaks	3,883	4,469
North St. Paul	11,929	11,460
Roseville	33,690	33,660
St. Anthony (part)	2,348	3,070
Saint Paul	286,840	285,068
Shoreview	25,924	25,043
Spring Lake Park (part)	105	178
Vadnais Heights	13,069	12,302
White Bear Lake (part)	23,974	23,394
White Bear Township	11,293	10,949
RAMSEY COUNTY	511,035	508,640

Waste Generation

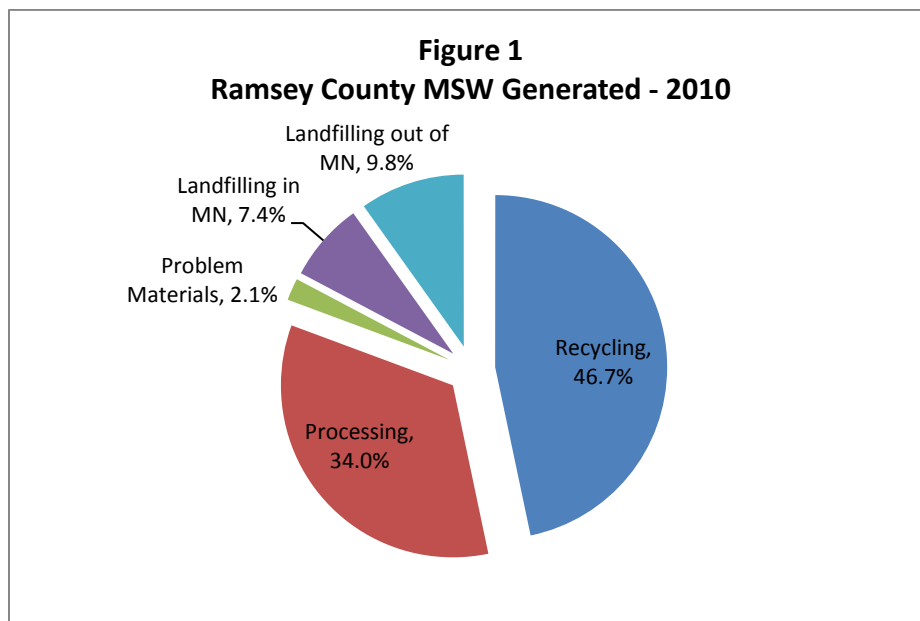
Waste is called many things – garbage, trash, waste, refuse, rubbish, solid waste – and is generated from many sources. Waste is classified into a few basic categories defined by state and federal regulations. Residential or municipal waste is generated by people where they live. Commercial or non-residential waste is generated by organizations such as businesses, schools, hospitals and malls. Industrial waste is generated during the manufacturing of products. Construction and demolition waste is generated by all of these sectors but is related to building, remodeling and demolition.

Much of the residential and non-residential waste generated is called mixed municipal solid waste or MSW for short. MSW includes recyclable materials and non-recyclable wastes that are generated through the normal course of a day.

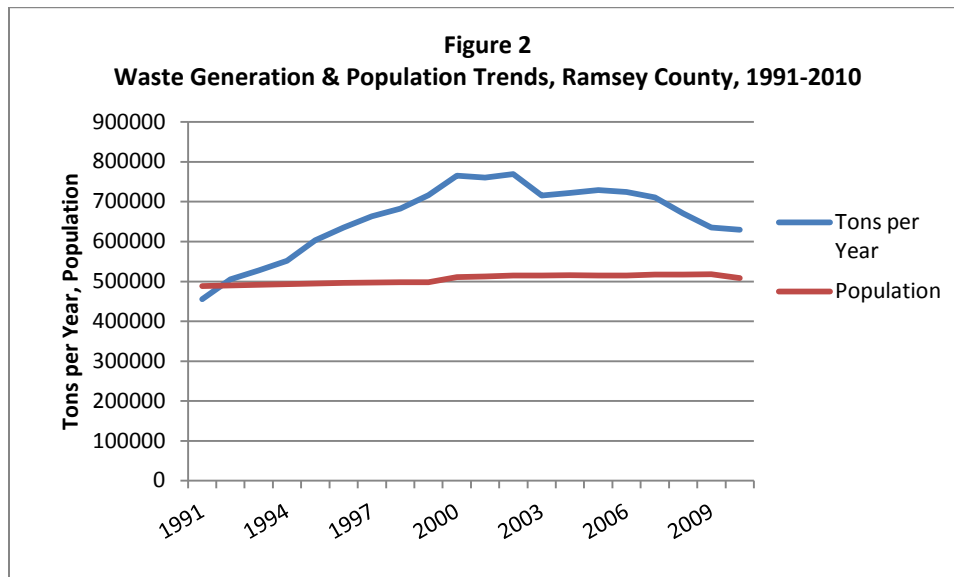
Ramsey County reported about 630,000 tons of MSW generated within the County during 2010. This total does not include an additional 68,000 tons yard waste managed at Ramsey County yard waste sites. Of the total, shown in Figure 1:

- 46.7% was recovered for recycling. The State of Minnesota awards a 3% credit for source reduction activities and a 5% credit for yard waste collection if counties meet certain criteria. These credits are applied to the total recycling number and increase the County's reported recycling rate to 54.7%.
- 34.0% * was delivered to the RRT-Newport waste processing facility. Most was converted to refuse- derived fuel (RDF) after metals were removed for recycling.
- 2.1% was separately managed as problem materials. These materials are not recycled, and not processed at an MSW facility. Problem materials include tires, used oil and white goods (stoves, washers, etc.).
- 17.2% was landfilled as unprocessed waste. 9.8% of this waste was delivered to landfills outside of Minnesota and 7.4% to landfills within Minnesota. This total does not include any waste delivered to RRT-Newport.

*The percentage changes to 35.2% when recycled metals at RRT-Newport are included. However, this material is already included in the 46.7% recovered for recycling.



Typically, waste generation has grown faster than population. Each person in Ramsey County produces about 7 pounds of waste (including recyclables) at home and at work or school each day. The recent downward trend can be attributed, in part, to the downturn in the economy (see Figure 2).



Waste Reduction and Reuse

Ramsey County encourages waste reduction in its technical assistance, outreach and marketing activities. The County uses a variety of methods in its extensive efforts to provide information to the public on waste reduction and reuse, as well as other solid waste management issues. Print materials, electronic media, training, phone service and partnerships are the core delivery methods.

Ramsey County offers financial and staff support to Community POWER (Partners On Waste Education and Reduction) through the Solid Waste Management Coordinating Board (SWMCB). Staff members are part of a team to develop Environmentally Preferable Practices (EPP) policies and educate people on options to reduce what they buy. Through the Ramsey/Washington Counties Resource Recovery Project, Ramsey County works with Second Harvest Heartland to significantly expand food rescue with emphasis on larger grocery stores. Food rescue means that healthy and safe food can be redirected to organizations feeding people instead of throwing the food in the trash.

As an organization, Ramsey County:

- Purchased an electronic document management system to reduce paper usage.
- Supports an Earth Action Challenge for employees.
- Hosts a joint team between the City of Saint Paul and Ramsey County to evaluate opportunities to buy more environmentally preferable products and enhance contract specifications.
- Distributes a joint Ramsey County/City of Saint Paul newsletter focused on purchasing, Green Alternatives, quarterly to all City and County staff. Staff members participate in the GREEN Group, convened by the Minnesota Pollution Control Agency (MPCA) to network and coordinate activities around EPP.
- Partners with organizations to provide the opportunity for interested residents to purchase backyard composting bins for food waste and yard waste.

- Created and marketed the reusable transport packaging program with other metropolitan counties.
- Promotes and provides funding for reuse opportunities, including the Twin Cities Free Market.
- Is partnering with the ReUse Alliance pilot project funded by the MPCA for one year to establish measurement tools for reuse.

Waste Collection

Metropolitan counties licensed 230 waste haulers to collect and transport MSW in 2010. Of these, 21 waste hauling firms are based in Ramsey County. Ramsey County issued operating licenses to an additional 65 waste haulers based in other counties.

Ramsey and Washington counties track waste generated in both counties and delivered to RRT-Newport's processing facility. For waste generated in the two counties during 2010 and delivered to RRT-Newport, the largest three waste hauling firms collected and delivered 56% and the ten largest haulers collected and delivered 87%.

Municipalities in Ramsey County require people who generate waste – both at home and at work – to contract for regular waste collection service. Residents in five communities in Ramsey County are served by organized collection. Organized collection means that the city or township arranges for waste collection for all of its residents, or at least all single-family residential properties, by contract with one or more waste haulers. Little Canada, North St. Paul, Vadnais Heights, White Bear Lake, and White Bear Township have organized collection. The other residents and all businesses, industries, and institutions are served by open collection, also known as “subscription service.” This type of collection means that waste generators contract directly with a waste hauler of their choice.

Waste haulers take MSW directly to RRT-Newport, to a transfer station, or to a landfill. Waste generators can also haul their own waste to transfer stations in the county, RRT-Newport, or to transfer stations or landfills in other counties.

Facilities and Hauler Rates

There are three solid-waste facilities open to the public for disposal of solid waste in Ramsey County: J & J Recycling, Inc, Twin City Refuse & Recycling Transfer Station, Inc, and Veolia ES Vasko Solid Waste, Inc. Information on the rates and charges for these three facilities is included in annual license applications submitted to the Department of Public Health, demonstrating that they adhere to statutory volume-based fee requirements. There are three transfer stations in Ramsey County not open to the public (Veit, Keith Krupenny and Ray Anderson & Sons). As they are not open to the public, there is no schedule of rates and charges.

Ramsey County does not collect data on rates and charges for licensed waste haulers that serve residential and commercial waste generators. Several municipalities gather this information for residents within their community. Five municipalities in Ramsey County have contracted for both residential refuse and recycling collection for more than 20 years: Little Canada, North St. Paul, Vadnais Heights, White Bear Lake, and White Bear Township. Table 3 reflects prices residents paid in 2011 for curbside collection of refuse and recycling, and any other base services that all residents served under the collection contract were required to pay for. (Prices for optional services are not included.) Rates shown include all applicable services when residents choose 30-38 gallon, 60-68 gallon, or 90-96 gallon refuse collection service levels (other rates, such as for unlimited service or a senior rate, are not included). The State Waste Management Tax (9.75%) and Ramsey County Environmental Charge (28%

for residential) are included. Note that rates are shown per month, but actual billing may be on a different basis. Note that Maplewood, which already contracts for recycling collection, has also approved a contract for refuse collection for which service will begin in late 2012.

Table 3: 2011 Rates by Service Level for Municipalities in Ramsey County that Contract for Residential Refuse and Recycling Collection

Municipality	Total Monthly Price for Base Services			Base Services Included in Addition to Refuse and Recycling Collection
	30-38 Gallon	60-68 Gallon	90-96 Gallon	
Little Canada*	\$18.10	\$20.98	\$25.01	Bulky items/appliances; holiday tree
North St. Paul	\$21.91	\$23.48	\$26.49	Bulky items/appliances; holiday tree
Vadnais Heights	\$18.01	\$20.94	\$25.01	Bulky item; holiday tree
White Bear Lake	\$12.04	\$17.71	\$24.09	-
White Bear Township**	\$20.22-\$22.45	\$21.79-24.52	\$25.19-\$28.42	Bulky items/appliances; holiday tree; yard waste

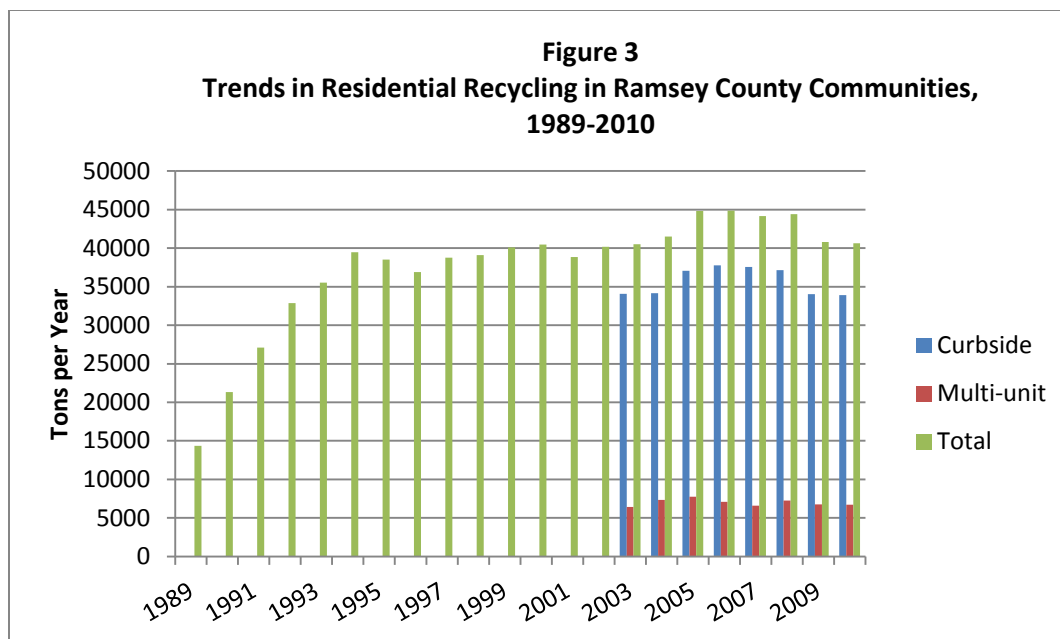
*Reflects rates paid by most residents.

**Range reflects residents providing their own garbage containers vs. cart provided by hauler.

Recycling

In 1990, Ramsey County introduced a system to assure residents the opportunity to recycle and since that time has had a stable and growing residential recycling program. Most municipalities contract with one or more haulers or recycling collectors to provide curbside service. Two municipalities (Mounds View and St. Anthony) provide for curbside service by an ordinance requiring licensed waste haulers to provide a specified level of recycling service to their customers.

For multi-unit housing, some municipalities provide service to using the same contract as for curbside recycling, some require by ordinance that licensed waste haulers provide recycling service, and some rely on arrangements by building management through ordinance requirements. All municipalities provide for collection of at least four broad materials (e.g., paper/cardboard, metal, plastic, glass, textiles), at least every other week. As shown in Figure 3, curbside recycling tonnage has been relatively stable at around 40,000 tons per year for about a decade.



Municipal recycling programs use SCORE grants* and long-term financing mechanisms to fund residential recycling programs. The County is able to offer SCORE grants to cities to support a basic level of service for residential recycling. Each municipality maintains long-term financing mechanisms for recycling. Six cities have a joint agreement with Ramsey County for the collection of a municipal recycling fee while the other cities collect funds through other means such as utility bills.

**SCORE grants originate from the SCORE (Select Committee on Recycling and the Environment) program administered by the Minnesota Pollution Control Agency, and funded by the State Waste Management Tax assessed on garbage bills.*

The vast majority of recycling activity in the non-residential sector occurs by private-sector arrangement. Most commercial waste haulers in the County offer some kind of recycling service to their customers, although the types of materials collected and collection arrangements vary significantly. A number of material brokers and businesses specializing in recycling services also provide recycling options for a wide variety of materials. There are specialty recyclers as well, such as confidential records destruction firms that recycle paper, metal recyclers, electronic recyclers, and carpet recyclers.

The Twin Cities are fortunate to be home to manufacturing firms that use recycled materials as feedstock for new products. From the Rock-Tenn paper mill to Anchor Glass, there are local markets for many of the recyclable materials generated in Ramsey County. Since the mid-1980s Ramsey County has assumed a role in helping guarantee market availability for recyclable materials collected in municipal programs. After providing a County recycling center from 1984 – 2000, the County has provided this role through a Recycling Market Support Fund to assume some of the risk faced by municipalities in collecting and marketing recyclables. The County also provides on-going technical assistance for recycling available to municipalities. In addition, the County supports the Minnesota Pollution Control Agency’s efforts to develop new, local recycling markets.

The County Environmental Charge (CEC - see “Cost and Finance” below) was partly developed as an incentive, especially for non-residential waste generators (businesses, schools, colleges), to increase recycling. Both traditional recyclables and organic waste are exempt from the CEC when recycled. With the development of the CEC in 2003, Ramsey County through the Ramsey/Washington Counties Resource Recovery Project greatly expanded work on food waste and organics management to provide

consulting, outreach services and information to organic-rich entities.

Initiated by Ramsey County, GreenGatherings offered an exceptional opportunity for a public-private partnership to reduce waste and increase recycling during the Republican National Convention and has resulted in the development of a comprehensive guide to help planners for events of all sizes learn why going green matters and what could work for them. Resources include planning guides, tips and case studies. The partnership was significant as it allowed an increase in awareness and collection of traditional recyclable materials and organic waste at special events and festivals. Businesses are encouraged by County staff to adopt Environmentally Preferable Practices (EPP) and to access resources such as MnTAP, Waste Wise and the Resourceful Waste Management Guide to enhance recycling programs.

On-going efforts to increase recycling within Ramsey County as an organization include:

- “3 Ways You Can Help Ramsey County be an Environmental Leader” is provided for new employee orientation.
- Information on recycling systems in several county buildings is provided on the intranet.
- Earth Action Challenge education campaign is offered for County employees.
- Recycling is available at all Ramsey County facilities including parks, beaches, golf courses and ice arenas.
- County departments purchase recycled products – from paper to motor oil to road aggregate.

Organic and Yard Waste Management

Organic Waste Management

Upon introduction of the County Environmental Charge, Ramsey and Washington counties greatly expanded their joint efforts to increase the diversion of food waste and other organics from the trash. Organic waste is defined in state law but is commonly thought of as kitchen scraps. Through the Resource Recovery Project (RRP), Ramsey County provides outreach services and increased information to organic-rich businesses and institutions. Since 2003, the RRP has retained both staff and consultants who provide extensive outreach services – especially to schools. Services focus on food waste since it is easy to understand and to separate from garbage.

Food Rescue through Second Harvest Heartland

In 2008, the RRP and Second Harvest Heartland (SHH) entered into a grant agreement to significantly increase the quantity of edible, perishable foods recovered from deli, dairy, meat, produce, and bakery departments in major grocery store chains to feed hungry people. As a result, the quantity of food waste recovered by SHH within the County has steadily increased.

K-12 Schools

The RRP continues to work with K-12 schools in both Ramsey and Washington counties, providing technical assistance and liaison services for the implementation of food waste recovery and recycling systems. Food waste recycling can result in cost savings when coupled with “right-sizing” of garbage collection to reduce pick-up frequency and/or container size.

Ramsey County highlights include:

Roseville Area Schools

Recycling throughout the schools continued and a “How to” recycling DVD was prepared for other schools and districts to use as an educational tool.

Saint Paul Public Schools (SPPS)

All SPPS elementary and many middle and high school facilities recycle food waste. 1,691 tons of food waste were collected in SPPS in 2010.

White Bear Lake Schools

Both middle schools began food waste recycling and both high school campuses continue to recycle the kitchen food waste.

Research

To more fully understand the opportunities and barriers relates to the development of an organics-management system, the Resource Recovery Project (RRP) commissioned a number of studies of organic waste generators. The first, “An Integrated Organic Waste Management System: From the Perspective of Commercial Waste Generators, 2010” analyzes anaerobic digestion as a new organic waste management concept from the perspective of commercial waste generators located in Ramsey and Washington counties by exploring logistics of daily operations, types of upfront costs, and changes in the configuration of waste management services. The second, “Organic Materials from Commercial Establishments: A Supply Assessment, 2010” contains preliminary estimates of quantities of commercial organic materials not currently recovered by other programs that may be available as feedstock for an anaerobic digestion facility. It also characterizes the types of commercial establishments that may be sources of targeted organic materials such as food scraps and non-recyclable paper. Both are available on the RRP website.

Yard Waste Management

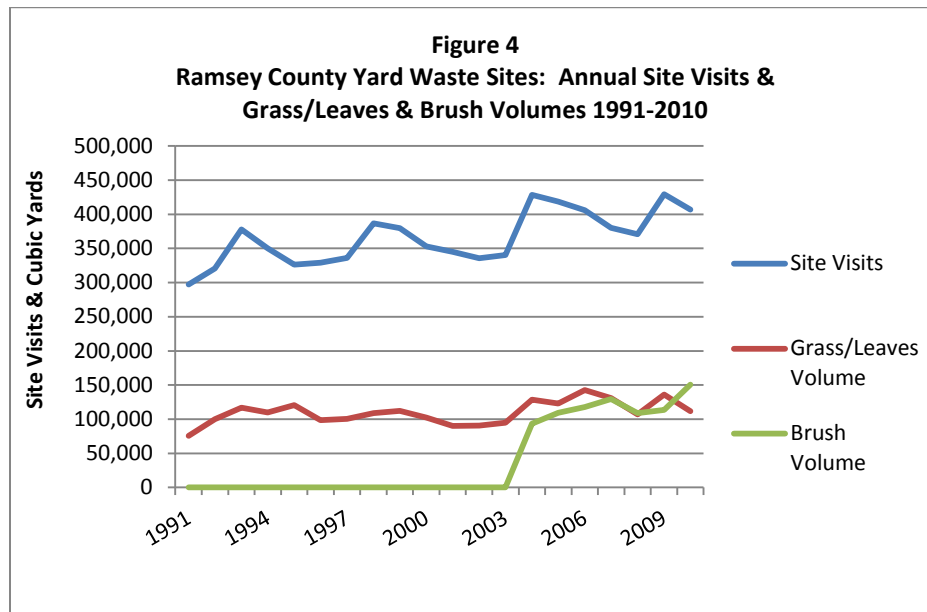
State law prohibits yard waste from being put in the trash or being disposed of in a landfill or resource recovery facility. Yard waste is defined in law to include leaves, grass clippings, garden waste, and tree and shrub waste. A combination of public and private systems provides generators of yard waste with several management options.

Ramsey County operates a network of seven yard waste collection sites. Begun as neighborhood or municipal sites during the 1980s, the sites became exclusively operated by the County after the statutory yard waste ban went into effect in 1990. The sites are open 38 hours per week, five days per week, from April through November, weather permitting, and are also open one weekend per month during winter. Each site has at least one site monitor present, employed by the County, to direct and assist residents and to prevent illegal dumping. There are no user charges at the sites. The County composts leaves at one site and distributes finished compost to all sites for residents to take. Compost is also made available for community gardens.

Beginning in 2004 the County began accepting tree and shrub waste from residents at four of the seven sites. The material is processed into wood mulch, most of which is combusted to produce energy. Wood mulch is also provided to residents.

Figure 4 presents the annual number of visitors to the Ramsey County sites, and the estimated volume of yard waste, both leaves/grass and brush (tree and shrub waste) received, from 1991 through 2010. On average the sites receive about 400,000 site visits annually and about 125,000 cubic yards of yard

waste and 120,000 cubic yards of brush. The estimated annual cost of operation and maintenance of the yard waste sites is \$1.3 million.



The County encourages residents to reduce the amount of yard waste and brush they generate through changes in turf and tree management (e.g., leaving grass clippings on the lawn and avoiding excessive fertilization), backyard composting, and proper selection, planting, and care of trees and shrubs. The University of Minnesota's Extension Service, through a contract with the Department of Public Health, provides information on lawns, trees and gardens to residents, primarily through the Master Gardener program.

Private and Municipal Sites and Transfer Stations

For a fee, residents and businesses may deliver yard waste to private yard waste sites and solid waste transfer stations located both within and outside the county. Rates charged may vary by site, by type of material, and by quantity. Residents of the City of Roseville may, at no charge, bring leaves to a City compost site in spring and fall.

A number of communities, including both municipalities and neighborhood community councils in Saint Paul, have offered residents opportunities to dispose of tree and shrub waste at municipally sponsored cleanup events or other locations. Typically, but not always, a fee is charged.

Yard Waste Collection at Home

The vast majority of residents are served by waste haulers offering separate collection of yard waste, including tree and shrub waste. Rates vary: increasingly haulers are charging for season-long pickup although some charge for individual pickups. In the five communities with organized trash collection, residents are offered yard waste pickup, either as an optional cost or as part of the contracted service. Haulers typically specify preparation requirements, and some place limitations on the quantity collected per stop. Some lawn services and tree services also provide collection of yard waste.

Waste Processing and Landfilling

The Ramsey/Washington County Resource Recovery Project (RRP) traces its history to a landfill that polluted groundwater in the late 1970s. The two counties jointly managed this landfill. After the pollution was discovered, county commissioners decided that there must be a better way to handle waste. This led to recovering energy from waste, and later to joint work on waste education and organics recovery. Processing waste to recover materials and energy is one of many tools in the waste management hierarchy used to reduce risk to health and the environment.

In 1987, both counties entered into a 20-year agreement with Northern States Power Company, and later NRG Energy, Inc., to process waste into fuel (known as refuse-derived fuel or RDF) and recover metals from waste to sharply reduce the amount of waste being landfilled. As the 20-year agreement with NRG Energy, Inc. was drawing to a close, the counties saw an opportunity to further explore a shift to less government involvement and a more market-based approach for the delivery and processing of waste at the Newport facility. The counties have worked with Resource Recovery Technologies, Inc. (RRT), through a 6-year Processing Agreement since 2007. In accordance with the processing agreement, RRT has the responsibility to secure waste by contracting with haulers and to continue production of RDF. The RRP places a heavy emphasis on minimizing the counties' dependence on landfills.

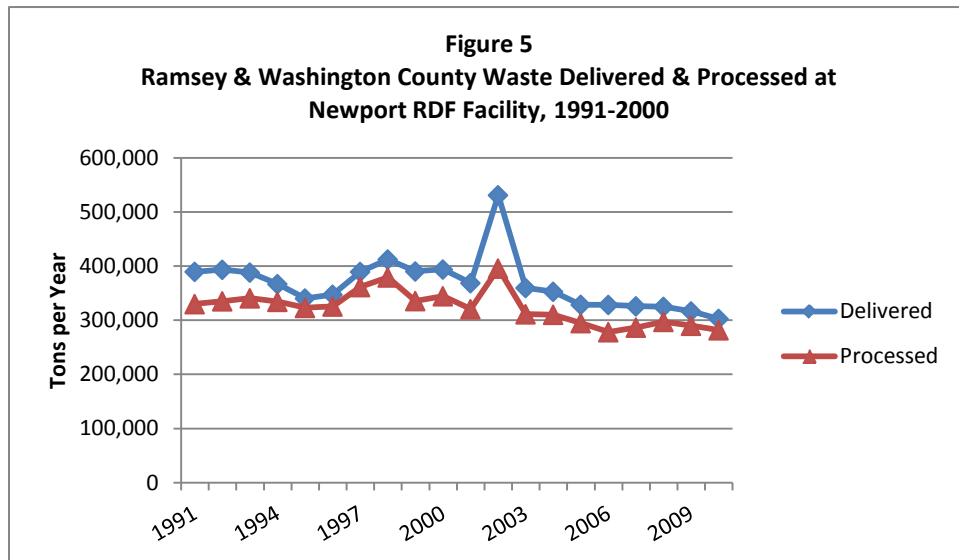
Since 1987, most of the waste generated in Ramsey and Washington Counties that hasn't been recycled has been delivered to the Resource Recovery Facility in Newport, Minnesota. Most of the waste is delivered by licensed waste haulers, but citizens also deliver waste to the facility. The RDF produced at RRT-Newport is delivered to Xcel power plants in Red Wing and Mankato and sometimes to Great River Energy in Elk River. Metals are recycled locally. The remaining residue is landfilled.

Currently, waste delivered to the Resource Recovery Facility is weighed at the scale house, dumped onto the tipping floor, and fed into one of two processing lines. An oversized bulky waste shredder is used as needed to shred items too large to be processed directly through the processing lines. Non-processible waste (as defined in the Service Agreement) and waste delivered in excess of processing capacity is transferred to a landfill. Small amounts of other materials, such as car batteries and tires, are sometimes found in the waste and separated by RRT for proper management. Waste is shredded in a large hammermill, ferrous metals are removed by magnets, aluminum is removed with an eddy-current separator, and the waste is sorted using a series of screens and blowers. The result is four waste streams: 1) RDF, primarily composed of lightweight materials; 2) ferrous metals recovered for recycling; 3) aluminum recovered for recycling; and 4) residue, comprising the remaining materials.

The Processing Agreement between the RRP and RRT requires RRT to manage and make available to residents of the two counties a location for depositing waste. Residential waste has been accepted at the Newport facility since the facility's inception. (Prior to 2009 RRT also provided for a drop-off site for citizen waste at the St. Paul Transfer Station; RRT's arrangement with the transfer station terminated in 2009.) A total of 1,081 tons of citizen waste was received in 2010, compared to 1,051 tons in 2009. Under the Processing Agreement, RRT is responsible for contracting with waste haulers for a supply of waste, assuring that at least 280,800 tons per year of waste are under contract, and meeting certain performance guarantees. RRT has entered into contracts with 79 haulers through 2012 and has met the minimum tonnage requirement.

In 2010, a total of 303,703 tons of waste from Ramsey and Washington counties was delivered for processing by haulers and citizens. This tonnage is a slight decrease from the 2009 amount of 317,589 tons. The long-term trends in both waste delivered and processed is shown in Figure 5. RRT-Newport is

considered a “merchant facility,” and can freely market its services. RRT is also able to secure waste from other counties which helps improve economic efficiencies. The total deliveries received at the facility, including waste from other counties, were 392,633 tons, a slight increase from 2009 amount of 391,329.



There are two performance guarantees in the processing agreement. The first guarantee is to process 85% of the Ramsey/Washington waste that RRT accepts. This was met by processing 91.5% in 2010. The second guarantee is to recover 85% of the waste processed as RDF or secondary materials (ferrous and aluminum). This guarantee was met by recovering 95.5% in 2010.

The other performance-related goal is to receive at least 280,800 tons per year from Ramsey and Washington counties. RRT received 303,703 tons from haulers and citizens.

Landfilling

There are no operating landfills in Ramsey County. Some MSW generated in Ramsey County is delivered as unprocessed waste to landfills, located in Minnesota, Iowa and Wisconsin. Certain wastes from RRT-Newport are delivered to landfills (non-processible wastes, excess waste that bypasses the processing lines, and residue from the processing lines). A variety of non-MSW wastes generated in the county are also landfilled.

Dump Inventory

Since 1988 Ramsey County has maintained an inventory of old dump sites to locate, identify, describe and document active and inactive solid waste disposal facilities, and dump sites in Ramsey County. The inventory includes known sites developed before regulations were in place, sites that operated under permits or other approvals and are now closed, solid waste disposal sites on the State Superfund list, and illegal dump sites. There are about 300 sites in the inventory, approximately 25 of which are sites that were at some time issued a permit or license to operate by a municipality, Ramsey County, or the MPCA.

Hazardous Waste Management

Ramsey County emphasizes toxicity reduction to manage risks associated with waste. Proper management of hazardous materials can reduce health, safety, environmental and property risks. Federal law requires businesses that generate wastes to analyze that waste to determine if it is

hazardous. A waste is hazardous if it meets certain chemical or toxicity standards established in federal regulations. If wastes are corrosive, reactive, ignitable, toxic or lethal, or are listed for some reason, then they are required to be handled in a cradle-to-grave regulatory system. This regulatory system requires the wastes to be specially packaged, transported, handled and disposed, with a paper trail that follows the waste.

Most states regulate businesses that are considered “large quantity generators” (more than 2640 gallons of waste produced per year) or “small quantity generators” (264 gallons to 2640 gallons of waste produced per year). In those states, businesses that produce less waste are not strictly regulated, and it is more likely that hazardous waste from those businesses will end up in municipal solid waste. Minnesota, however, regulates all business generators including “very small quantity generators” (less than 264 gallons of waste produced per year) to assure that hazardous wastes do not enter MSW. The MPCA is charged with regulating hazardous waste in Minnesota. Ramsey County is required by Minnesota law to license generators, inspect facilities and enforce hazardous waste regulations.

Hazardous Waste Generators and Facilities

Ramsey County licenses and inspects all businesses that generate and manage hazardous waste. In 2010 that was over 1,900 businesses, with 1,400 inspections. Ramsey County operates a volume-based fee system – license fees are structured to create an incentive for businesses to produce less hazardous waste.

Hazardous waste education for generators and other businesses through the Hazardous Waste Business Assistance program is a non-regulatory resource for businesses. Over 40 training sessions serving more than 750 people were held in 2010. In addition, *The HazWaste Quarterly*, a newsletter filled with useful tips and news, is sent to all licensed hazardous waste generators and 103 additional individuals. The website is regularly updated and in 2010 there were 1171 subscribers to the electronic version of *The HazWaste Quarterly*. Staff fielded nearly 3100 phone calls from businesses and conducted 257 site visits in 2010.

Pre-demolition Program

Because Ramsey County is fully developed, almost all new construction in Ramsey County is preceded by demolition of some sort. The pre-demolition inspection program, created in 2008, addresses the need to identify, remove and properly manage hazardous materials prior to building demolition. This program is the first of its kind in Minnesota. The program encourages deconstruction, salvage and recycling. The regulatory standard for demolition contractors creates consistency, reduces the toxicity of wastes disposed, protects occupational exposure to hazards and reduces landfilling of wastes. Ramsey County staff work closely with local building and zoning officials and place a priority on integrating the pre-demolition program requirements within existing permitting processes. In 2010 the program worked on 169 demolition projects, and, as a result over 101,000 pounds of hazardous materials and problem materials were properly handled and kept out of landfills. The success of the program has been rooted in the collaborative relationships between the contractors, city staff, county staff and waste managers.

Auto Salvage Yard Initiative

Staff initiated a collaborative compliance effort with the auto industry in 1996, which resulted in a significant improvement overall in compliance and adoption of Best Management Practices. The mercury-switch removal program piloted at auto salvage yards in Ramsey County is a national model.

Hospital Health Care initiative

Staff initiated regional work with health care institutions on proper management of hazardous, solid,

and infectious waste. The collaborative compliance effort with the industry has resulted in significant changes and improvements in how waste, especially hazardous waste, in health care settings is managed. Over 30 trainings sessions have been attended by 1378 industry representatives and government inspectors.

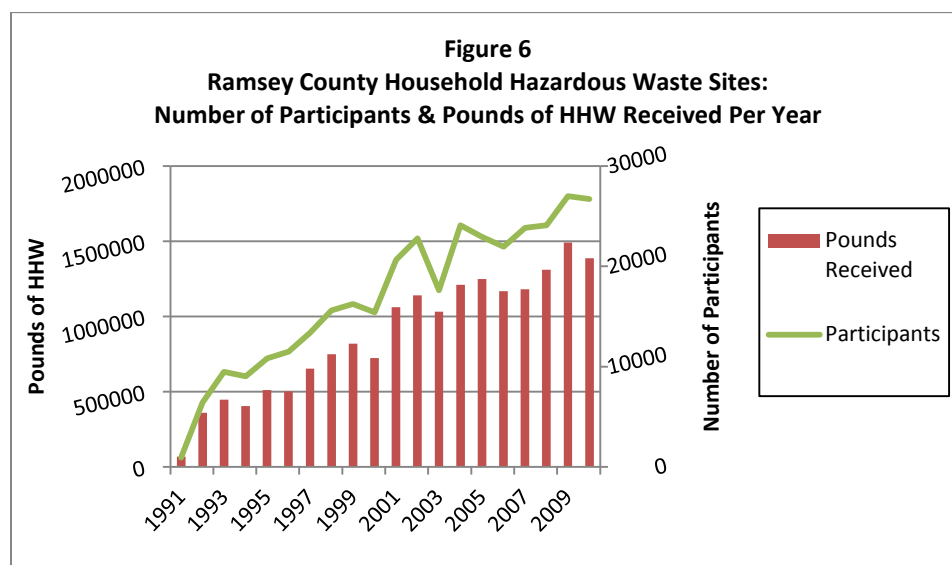
Mercury-Free Zone

All public schools and several private schools in Ramsey County enrolled in the now-defunct Mercury-Free Zone program. 121 pounds of mercury was removed from Ramsey County schools before it could become a health problem.

Household Hazardous Waste (HHW) Collection

Products used to clean kitchens and bathrooms, maintain cars and homes, and control rodents and insects contain harmful materials. When these products containing harmful materials are no longer needed, they are considered “household hazardous waste.” Ramsey County offers collection sites to prevent harm to human health and the environment.

Year-round drop-off site for HHW is located in the heart of Ramsey County, just north of downtown Saint Paul. Mobile collection sites are offered from spring to fall in Saint Paul, Roseville, Maplewood and Arden Hills. Used oil is collected year-round in Arden Hills. Participation in these programs continues a long-term upward trend, as shown in Figure 6 below.



Use of both the mobile and permanent HHW sites requires an individual to bring proof of residency, such as a driver's license or utility bill. For safety and convenience, technicians unload the HHW from private vehicles. Periodically people delivering waste to the HHW sites are asked to complete a short survey in order to help improve the HHW program.

Banned From Disposal

Certain common household items are banned from disposal in regular garbage because they contain toxic materials. Recycling opportunities for residents exist through community clean-ups, HHW collection and many private companies. Businesses are required to manage the following wastes under regulation:

- Electronic waste or “E-waste” containing a cathode ray tube such as TVs and computers
- Major appliances (washers, dryers, refrigerators)
- Fluorescent lamps and bulbs

- Batteries (includes mostly rechargeable ones) containing lead acid, mercuric oxide, silver oxide, nickel-cadmium or other rechargeable batteries (vehicle and cell phone batteries)
- Motor oil, brake fluid, power steering fluid, transmission fluid, motor oil filters, or motor vehicle antifreeze
- Mercury and mercury-containing devices such as thermostats, thermometers, electric switches, appliances, gauges, medical or scientific instruments, or electric relay or other electrical devices from which the mercury has not been removed for reuse or recycling

Non-MSW Management

"Non-MSW" is a term encompassing solid waste materials that are not managed as municipal solid waste. Non-MSW includes materials determined by the State to be problem materials (e.g., treated wood) and certain items specifically excluded from the statutory definition of MSW or otherwise managed as separate waste streams (e.g., agricultural waste, ash, construction debris, demolition debris, industrial waste, sludges, street sweepings).

Management of non-MSW occurs primarily through private sector services. Some materials are collected by haulers specializing in transporting particular waste materials, while some others may be collected by MSW haulers or delivered by the generator directly to a collection, transfer, or management facility.

Ramsey County participated in the development of several studies on non-MSW, including:

- Construction, Demolition, & Industrial (CD&I) Waste, 2006. This report was prepared by SWMCB, MPCA, and AMC's Solid Waste Administrators Association and focuses on what can be recovered for recycling or other productive use.
- Phase II of CD&I, 2008. This study focuses on wallboard, shingles, biomass fuel from construction and demolition debris, and mixed glass.

In addition, Ramsey County worked with many other entities on a successful effort encouraging the Minnesota Department of Transportation to adopt a permissive specification for the use of tear-off shingle scrap in hot mix asphalt.

Ordinances

Local ordinances pertaining to garbage, recycling, and other solid waste issues are found in numerous city and County codes and ordinances. A listing of local ordinances relevant to this Plan can be found in Appendix II.

Communication

Ramsey County has always placed a high value on connecting to the community in a variety of ways. The primary goals of our communication methods are to first raise awareness and subsequently influence behavior change to reduce waste, increase recycling and properly dispose of municipal solid waste.

A variety of approaches are utilized to reach multiple audiences and engage community partners. Based on surveys and other community feedback, people want to receive information in a variety of ways, including:

- 633.EASY Recycling and Disposal Hotline – for people who do not have a computer or prefer to speak to a person. Answered 24 hours a day, 7 days a week, provides clear and accurate information, interpreters available.
- A to Z Disposal Guide – for people who have access to and prefer a computer.

Many methods and tools are used to connect with members of the Ramsey County community including:

- GreenGatherings website for guidance on recycling at events
- “Going Green Guide”
- Collaboration with SWMCB on RethinkRecycling.com
- The web-based “A to Z Disposal Guide”
- “The HazWaste Quarterly” is sent to all hazardous waste generators
- Community Power grants
- Messages on electronic signs and dasher boards at County arenas
- Notification of website revisions automatically sent to subscribers
- Sponsorships on TPT to promote RethinkRecycling.com and other messages
- In cooperation with Washington County through the Resource Recovery Project:
 - ❖ Postcards sent to residences and businesses with recycling messages
 - ❖ Web ads
 - ❖ Provide funding for on-site presentations at the Resource Recovery Facility for schools and community groups
 - ❖ Provide targeted outreach on solid waste issues to residents of both counties
 - ❖ Provide Trash Trunks for checkout by individuals and community groups

Culturally Specific Outreach

Cultural consultants are on contract to ensure the provision of culturally appropriate outreach and communication to the Hmong, Hispanic/Latino and Somali communities. Numerous discussion and focus groups have been held within the Hmong, Hispanic/Latino and Somali communities in order to learn more about each community’s communication needs.

In 2011, a large partnership with Hmong businesses located in the Hmong Village on the East Side of Saint Paul centered on capturing food waste and recycling for cans and bottles. 10,000 Spanish-language calendars to provide information about HHW were developed and distributed. And a total of 230 households participated in a special HHW collection event held at Our Lady of Guadalupe Church in Saint Paul. The event was heavily promoted to the Hispanic/Latino community through direct mail postcards, newspapers and radio.

Culturally specific education is delivered through presentations, events, newspaper, radio and printed handouts. The 633.EASY Recycling and Disposal Hotline offers interpretation service residents who have limited proficiency in English.

Partnerships

Ramsey County partners with cities, district councils and watershed districts to deliver consistent messages to residents.

Ramsey County partners with Washington County through the Ramsey / Washington County Resource Recovery project to enhance education on solid and hazardous waste issues to residential and non-residential generators.

Health education staff members work directly with municipalities recycling coordinators to provide technical assistance, assist with outreach, and coordinate events that include recycling and waste reduction activities. In addition, these same staff work with recycling coordinators and district councils to increase recycling at multi-unit residential buildings through the distribution of recycling bags, facts sheets, posters and education sessions.

Ramsey County, in coordination with the Solid Waste Management Coordinating Board (SWMCB), funds education efforts at the grassroots level through the Community POWER grant program.

Through regional partnerships, Ramsey County is able to leverage education tools and resources to share with its residents and businesses.

Evaluation

Feedback from the community is an important tool when designing, implementing and evaluating a communication program. Ramsey County conducts surveys of residential and non-residential generators every other year to identify opportunities for program changes and to measure changes in attitudes and behavior. In 2010 the residential survey included cell-phone users. The residential survey results showed that many people want to receive their information online and that residents want to be able to recycle when they are away from home. In response, we are providing recycling bins to cities and other public places, like athletic fields and community centers.

Cost and Finance

Solid waste programs and services in Ramsey County depend on a blend of public and private initiatives to manage waste. This blend complicates any discussion of financing, as much of the money that funds private waste management programs is not reported to the County. Those elements under the purview of Ramsey County are described below.

Expenses

Ramsey County uses the proceeds from the CEC to fund its solid and hazardous waste management programs, which includes a variety of services, such as

- mandated planning, evaluation and reporting,
- outreach, promotion and education,
- direct services, such as yard waste sites and household hazardous waste services,
- business waste assistance services,
- technical assistance and consultation to municipalities, school districts and other public entities,
- certain regulatory activities not funded by license fees (such as old dump inventory and evaluation, solid and hazardous waste dumping complaints, pre-demolition inspections) ,
- resource recovery services,
- sustainability programming,
- research and evaluation, and more.

Each of these activities is related to a strategy or policy in the Master Plan.

Revenue Sources

Ramsey County relies on several revenue sources to pay for waste management services. Major sources include:

SCORE Grant

The State of Minnesota assesses a Solid Waste Management Tax on certain waste management activities. This tax goes into the Minnesota's general revenue fund, but a portion of this amount is provided to counties in the form of SCORE grants. Eligible expenses include waste reduction, recycling, problem materials management, public information and education, technical assistance, litter prevention, and MSW processing.

Local Recycling Development Grant

Landfills in the metropolitan area must collect a surcharge on waste tipped at those facilities and remit those funds to the State. Per statutory formula, a portion of those proceeds becomes Local Recycling Development Grants for metropolitan counties.

License Fees

Ramsey County licenses waste haulers, solid waste and hazardous waste facilities, and commercial hazardous waste generators. License fees collected are used for solid and hazardous waste compliance programs administered by the County. Ramsey County Board policy states that license fees must cover the cost of operating the regulatory program, including indirect administrative costs.

Household Hazardous Waste Program Contracts

Ramsey County has an agreement with Xcel Energy for reimbursement of costs associated with collecting and managing fluorescent lamps through the County's HHW program. Ramsey County is also a party along with other SWMCB counties in the region's Reciprocal Use Agreement, which entitles the County to be reimbursed by another county for costs associated with serving a resident of that county.

County Environmental Charge

Ramsey County implemented the County Environmental Charge in 2003. The County Environmental Charge (CEC) appears on hauler bills for all customers of garbage services in Ramsey County. The CEC also applies to residents and others bringing their own garbage to a solid waste transfer station in Ramsey County. The CEC replaced the Waste Management Service Charge that was collected on the property tax bill.

The CEC applies only to services to collect, transport, process or dispose of mixed municipal solid waste generated in Ramsey County, including equipment rental. The CEC does not apply to wastes that are separated for recycling or composting and delivered to facilities where they are recycled or composted. And unlike the State's Solid Waste Management Tax, the CEC does not apply to waste services for construction and demolition waste, medical/infectious waste, or certain types of industrial waste.

The CEC is more visible to generators than the old property tax-based service charge, especially generators who do not pay a property tax but do pay a garbage bill. The increased visibility can provide a greater incentive to look at options for managing waste differently. Generators get a better picture of how much it really costs to manage the garbage they create because costs are presented in one place, rather than some costs on the garbage bill and some costs on the property tax statement. Also, the CEC is more closely related to volume of waste than the old property tax-based service charge because haulers charge customers according to how much garbage they pick up. CEC funds are used for the Resource Recovery Project and for other solid waste programs.

Appendix II: Ordinances

Ramsey County ordinances relevant to this plan include:

- Administrative Ordinance
- Food Protection Ordinance
- Hazardous Waste Management Ordinance
- Public Health Nuisance Ordinance
- Solid Waste Ordinance

Municipal ordinances pertaining to garbage, recycling, and other solid waste issues are found in the following municipal codes and specific ordinances (provisions related to setting specific fees and to clandestine drug labs have generally not been included).

Arden Hills

- Chapter 03, License and Regulations
- Chapter 06, Nuisances and Offenses: including Section 660, Garbage, Refuse, and Recycling, and other provisions
- Chapter 07, Recreation
- Chapter 13, Zoning: Section 1320, District Provisions; Section 1325, General Regulations
- Chapter 14, Property Maintenance Code
- Chapter 15, Erosion and Sediment Control

Falcon Heights

- Chapter 14, Businesses: Article VIII, Refuse Haulers
- Chapter 22, Environment: Article II, Blight
- Chapter 38, Solid Waste
- Chapter 105, Buildings and Building Regulation: Article III, Housing Code
- Chapter 107, Stormwater Management: Section 107.8, Approval Standards
- Chapter 113, Zoning: Section 113.240, Accessory Buildings and Structures; Section 113.370, Exterior Storage

Gem Lake

- Ordinance No. 43K, Zoning Ordinance
- Ordinance No. 45, Garbage and Refuse
- Ordinance No. 83, Housing Maintenance Code
- Ordinance No. 86, Nuisance Ordinance

Lauderdale

- Title 4, Health and Sanitation: Chapter 2, Garbage and Refuse; Chapter 6, Health and Safety; Nuisances
- Title 8, Public Works: Chapter 4, Stormwater Management; Chapter 5, Illicit Discharge Ordinance
- Title 9, Building Regulations: Chapter 11, Rental Housing Licensing Provisions

Little Canada

- Chapter 600, Public Health and Welfare: 601, Nuisance Ordinance

- Chapter 800, Regulated Activities and Businesses: 809, Mixed Municipal Solid Waste and Recyclable Materials Storage and Collection
- Chapter 900, Zoning Code: 903, General Provisions; 928, Stormwater Management Ordinance
- Chapter 1400, Garbage, Rubbish and Trash: 1401, Burning Regulations

Maplewood

- Chapter 14, Businesses and Licensing
- Chapter 18, Environment
- Chapter 20, Fire Prevention and Protection
- Chapter 30, Solid Waste Management
- Chapter 44, Zoning

Mounds View

- Title 500, Business License Regulations
- Title 600, Public Health and Safety: Chapter 603, Garbage and Rubbish; Chapter 607, Nuisances
- Title 900, Public Ways and Property: Chapter 909, Parks and Recreation
- Title 1000, Building Regulations
- Title 1100, Zoning Code: Chapter 1103, General Building Requirements; Chapter 1110, Mobile Home District; Chapter 1120, Planned Unit Developments
- Title 1300, Flood Control Regulations: Chapter 1303, Construction Site and Land Disturbance Runoff Control

New Brighton

- Chapter 7, Buildings
- Chapter 9, Fire Protection and Prevention
- Chapter 11, Garbage and Trash
- Chapter 13, Housing
- Chapter 14, Land Excavation and Reclamation
- Chapter 17, Nuisances
- Chapter 19, Parks and Recreation
- Chapter 31, Stormwater Utility
- Zoning Code: Chapter 4, Residence Districts; Chapter 6, Industrial Districts; Chapter 7, Planned Developments

North Oaks

- Title 9, General Regulations: Chapter 93, Health and Safety, Nuisances
- Title XV, Land Usage: Chapter 151, Zoning Code

North St. Paul

- Chapter 32, Boards and Commissions: Environmental Advisory Commission
- Chapter 33, City Policy on Abandoned Property
- Chapter 55, Solid Waste, Recycling, and Composting
- Chapter 56, Sanitary and Storm Sewer System Utilities
- Chapter 91, Fire Prevention and Protection
- Chapter 92, Parks and Lakes: 92.02, Littering
- Chapter 94, Street and Sidewalks: 94.57, Dumpsters, Roll-offs or Similar Waste Receptacles
- Chapter 98, Nuisances
- Chapter 130, General Offenses: 130.19, Offenses Involving Public Health and Safety

- Chapter 152, Structures and Premises Maintenance and Occupancy Code
- Chapter 154, Zoning Regulations
- Ordinance 702, Establishing Regulations Concerning Unattended Collection Bins

Roseville

- Chapter 402, Solid Waste Collection
- Chapter 403, Recycling
- Chapter 407, Nuisances
- Chapter 409, Residential Composting
- Chapter 502, General Offenses
- Chapter 701, Parks and Recreation
- Chapter 803, Storm Water Drainage, 803.03, Storm Water Illicit Discharge and Connections
- Zoning: Chapter 1005, Commercial and Mixed Use Districts; Chapter 1006, Employment Districts; Chapter 1008, Park and Recreation District; Chapter 1011, Property Performance; Chapter 1017, Shoreland, Wetland and Storm Water Management

St. Anthony

- Chapter 50, Storm Water and Sanitary Sewers
- Chapter 92, Health and Safety, Nuisances
- Chapter 93, Parks and Recreation
- Chapter 97, Fire Prevention and Protection
- Business Regulations: Chapter 111, Licenses, Permits and the Like: Mobile Home Parks; Haulers of Garbage, Refuse, Recyclables, and Yard Waste; Licensing of Multiple Dwellings
- Chapter 130, General Offenses: Garbage and Solid Waste Offenses
- Land Usage: Chapter 150, Buildings, Housing, and Construction; Chapter 152, Zoning Code; Chapter 153, Storm Water Management

Saint Paul

- Building and Housing: Chapter 32, Collection of Municipal Solid Waste for Residential Properties and User Charge; Chapter 34, Minimum Property Maintenance Standards for All Structures and Premises; Chapter 45, Nuisance Abatement
- Zoning Code: Chapter 65, Land Use Definitions and Development Standards: 65.300, Public Services and Utilities (includes yard waste sites); 65.400, Commercial Uses (including retail sales and services; limited production, processing and storage); Industrial Uses (including infectious waste facilities; metal shredders; recycling processing centers; solid waste compost facility; solid waste transfer station); 65.900, Accessory Uses
- Zoning Code: Chapter 66, Zoning District Uses, Density and Development Standards (e.g., yard waste sites, recycling processing centers)
- Health, Sanitation, and Disease: Chapter 210, Disposing of Contaminated Articles, Prohibition
- Garbage and Rubbish: Chapter 221, Littering by Contractors
- Public Health, Safety and Welfare: Chapter 236, Environmental Preservation: Plastic Packaging
- Licenses: Chapter 357, Solid Waste; Chapter 408, Recycling Collection Center/Recycling Processing Center; Chapter 429, Infectious Waste

Shoreview

- Chapter 200, Development Regulations: Section 205, Development Districts; Section 206, Site Development and Architectural Design Standards; Section 209, Environmental Standards; Section 210, Nuisance; Section 211, Property Maintenance Standards

- Chapter 400, Public Property and Improvements: Section 401, Recreation Areas
- Chapter 500, Municipal Utilities: Section 502, Municipal Sanitary Sewer System
- Chapter 600, General Regulations: Section 602, Open Burning; Section 607, Residential Recycling Service Fees;
- Chapter 700, Licensing: Section 703, Solid Waste Haulers

Vadnais Heights

- Building Code: Chapter 48, Apartment - Multiple Dwelling (except Duplex and Triplex); Chapter 53, Residential and Rental Housing
- Sewers: Chapter 59, Municipal Sanitary Sewer System
- Garbage and Rubbish: Chapter 121, Disposal of Refuse for Commercial, Industrial, and Residential Property of More Than Eight Dwelling Units; Chapter 121A, Disposal of Refuse for Residential Property of up to Eight Units in a Single Building; Chapter 122, License Requirements for Collectors Under Chapter 121; Chapter 123, Dumps, Sanitary Landfills and Filling of Land; Chapter 124, Unlawful Removal of Recycling Material
- Public Nuisances: Chapter 181, Nuisances Affecting Health, Safety, Comfort or Repose; Chapter 183, Nuisances Affecting Peace and Safety
- Public Safety, Health, Morals, and Welfare: Chapter 146, Burning Control; Chapter 147, Various Offenses

White Bear Lake

- Departments: Chapter 402, Municipal Sewer System
- Public Health, Welfare and Sanitation: Chapter 501, Garbage Collection; Chapter 502, Minimum Housing Standards; Chapter 505, Curbside Recycling Scavenging; Chapter 507, Refuse and Recyclables Collectors; Chapter 509, Composting
- Public Ways and Property: Chapter 905, Parks and Open Space
- Business Regulations: Chapter 1114, Rubbish Haulers and Junk Dealers
- Zoning: Chapter 1302, General Provisions

White Bear Township

- Ordinance 16, Nuisances
- Ordinance 22, Dumping
- Ordinance 31, Refuse
- Ordinance 35, Zoning Code
- Ordinance 45, Parks, Open Space, and Recreational Areas
- Ordinance 47, Housing Maintenance
- Ordinance 66, Compost Sites

Appendix III: Acronyms

C&D	Construction and Demolition Waste
CII	Commercial/Industrial/Institutional
CSI	County Supporting Initiative
EPP	Environmentally Preferable Purchasing
HERC	Hennepin Energy Resource Company
HHW	Household Hazardous Waste
MPCA	Minnesota Pollution Control Agency
MSW	Mixed Municipal Solid Waste
RCRA	Resource Conservation and Recovery Act
RDF	Refuse-Derived Fuel
RRT	Resource Recovery Technologies
RRP	Resource Recovery Project
SCORE	Select Committee on Recycling and the Environment
SWMCB	Solid Waste Management Coordinating Board
VSQG	Very Small Quantity Generator
WMA	Waste Management Act

Appendix IV: Definitions

Banned Materials	Wastes that are statutorily banned from disposal with MSW – yard waste, e-waste, HHW, appliances, tires, used motor oil, etc.
Bulky Waste	A subset of MSW; Household items and other discarded materials that, due to their dimension and weight, are typically not collected as part of the regular trash and recycling or for which there is a separate fee, such as furniture, carpeting and mattress. Excludes major appliances and e-waste.
Collection	The aggregation of waste from the place at which it is generated and includes all activities up to the time the waste is delivered to a waste facility. (Minn. Stat. §115A.03, Subd. 5)
C & D Waste	Term referring to construction waste and demolition debris.
Commercial	As in “commercial waste” or “commercial recycling.” Refers to non-residential sources, including businesses, government facilities or operations, institutions, schools, non-profit organizations, community activities, etc. Interchangeable with “non-residential.”
Commingled Recycling	Placing two or more source-separated recyclable materials in the same container for recycling
Composting	The controlled microbial degradation of organic waste to yield a humus-like product. (Minn. Rules §7035.0300)
Construction Debris	Waste building materials, packaging, and rubble resulting from construction, remodeling, repair, and demolition of buildings and roads. (Minn. Stat. § 115A.03, Subd. 7)
Curbside Collection	Collection of waste (garbage, recyclables, yard waste, etc.) from residences at the point of generation
Demolition Debris	Solid waste resulting from the demolition of buildings, roads, and other man-made structures, including concrete, brick, bituminous concrete, untreated wood, masonry, glass, trees and tree trimmings, rock, plastic building parts, and other inert waste materials, but not including asbestos wastes.
Designation	See <i>Waste Flow Designation</i> .
Disposal	The discharge, deposit, injection, dumping, spilling, leaking, or placing of any waste into or on any land or water so that the waste or any other constituent thereof may enter the environment or be emitted into the air, or discharged into any waters, including ground waters. (Minn. Stat. 115A.03, Subd. 9)
Electronic Waste (or “e-waste”)	E-waste or electronic waste includes the following items: • Cathode-ray tube or CRT - "Cathode-ray tube" or "CRT" means a vacuum tube or picture tube used to convert an electronic signal into a visual image. • Computer - "Computer" means an electronic, magnetic, optical, electrochemical, or other high-speed data processing device performing logical, arithmetic, or storage functions, but does not include an automated typewriter or typesetter, a portable handheld calculator or device, or other similar device. • Computer monitor - "Computer monitor" means an electronic device that is a cathode-ray tube or flat panel display primarily intended to

	display information from a central processing unit or the Internet. Computer monitor includes a laptop computer. • Covered electronic device - "Covered electronic device" means computers, peripherals, facsimile machines, DVD players, video cassette recorders, and video display devices that are sold to a household by means of retail, wholesale, or electronic commerce. • Peripheral - "Peripheral" means a keyboard, printer, or any other device sold exclusively for external use with a computer that provides input or output into or from a computer. • Video display device - "Video display device" means a television or computer monitor, including a laptop computer, that contains a cathode-ray tube or a flat panel screen with a screen size that is greater than nine inches measured diagonally and that is marketed by manufacturers for use by households. Video display device does not include any of the following: (1) a video display device that is part of a motor vehicle or any component part of a motor vehicle assembled by, or for, a vehicle manufacturer or franchised dealer, including replacement parts for use in a motor vehicle; (2) a video display device, including a touch-screen display, that is functionally or physically part of a larger piece of equipment or is designed and intended for use in an industrial; commercial, including retail; library checkout; traffic control; kiosk; security, other than household security; border control; or medical setting, including diagnostic, monitoring, or control equipment; (3) a video display device that is contained within a clothes washer, clothes dryer, refrigerator, refrigerator and freezer, microwave oven, conventional oven or range, dishwasher, room air conditioner, dehumidifier, or air purifier; or (4) a telephone of any type unless it contains a video display area greater than nine inches measured diagonally.
Environmentally Responsible Purchasing (procurement)	Intentionally choosing products or services that promote pollution prevention, waste reduction, or reuse; purchasing products that can be easily recycled; buying recycled-content products; or making other purchasing decisions that are better for the environment when compared to other, typically more traditionally purchased, products or services.
Flow Control	See <i>Waste Flow Designation</i> .
Generation	The act or process of producing waste. (Minn. Stat. §115A.03, Subd. 11)
Generator	Any person who generates waste. (Minn. Stat. §115A.03, Subd. 12)
Hazardous Waste	Any refuse, sludge, or other waste materials or combinations of refuse, sludge, or other waste materials or discarded materials, or a combination of refuse or discarded materials, in solid, semisolid, liquid, or contained gaseous form, which because of the quantity, concentration, or chemical, physical, or infectious characteristics may: a) cause or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitation reversible illness; or b) pose a substantial present or potential hazard to human health or the environment when improperly

	treated, stored, transported, or disposed of, or otherwise managed. Categories of hazardous waste materials include, but are not limited to explosives, flammables, oxidizers, poisons, irritants, and corrosives. Hazardous waste does not include source, special nuclear, or by-product material as defined by The Atomic Energy Act of 1954, as amended. (Minn. Stat. §116.06, Subd. 11)
Hierarchy	See <i>Waste Management Hierarchy</i> .
Household Hazardous Waste (HHW)	Waste generated from household activity that exhibits the characteristics of or that is listed as hazardous waste under Minnesota Pollution Control Agency rules, but does not include waste from commercial activities that is generated, stored, or present in a household. (Minn. Stat. §115A.96, Subd. 1)
Industrial (Solid) Waste	Solid waste resulting from an industrial process, manufacturing, service activity, or commercial activity that is managed as a separate waste stream. (Minn. Stat. §115A.03, Subd. 13a) It does not include wastes regulated as hazardous wastes.
Infectious Waste	Laboratory waste, blood, regulated body fluids, sharps, and research-animal wastes that have not been decontaminated. (Minn. Stat. § 116.76, Subd. 12)
Integrated Solid Waste Management	A solid waste management system in which various waste management methods are used to manage waste (e.g., waste reduction, reuse, recycling, composting, resource recovery, landfilling, etc.), depending upon the characteristics of the waste and often according to a waste management hierarchy.
Joint Powers Agreement	A legally binding agreement between two or more governmental entities. It is a tool for intergovernmental action on, for example, solid waste management activities.
Landfill (land disposal facility)	A waste facility permitted by the Minnesota Pollution Control Agency that is designed or operated for disposing of waste on or in the land. (Defined as “disposal facility” in Minn. Stat. § 115A.03, Subd. 10)
Landfill Abatement	Actions that avoid landfilling of waste, such as waste reduction, recycling, or resource recovery.
Landfill Surcharge	A surcharge applied to waste tipped at landfills; can include State, county, and local surcharges.
Leachate	Liquid that has percolated through solid waste and has extracted, dissolved, or suspended materials from it. (Minn. Rules §7035.0330, Subd. 56)
Local Recycling Development Grant	Funds administered by the Minnesota Pollution Control Agency (MPCA) and allocated to metropolitan counties for the planning, development, and operation of recycling and yard waste composting programs. Local Recycling Development Grant funds are distributed from the Metropolitan Landfill Abatement Account.
Major Appliances	Also commonly referred to as “white goods.” Includes items banned by State law from disposal with solid waste (clothes washers and dryers, dishwashers, hot water heaters, heat pumps, furnaces, garbage disposals, trash compactors, conventional and microwave ovens, ranges and stoves, air conditioners, dehumidifiers, refrigerators and freezers). (Minn. Stat. §115A.03, Subd. 17a)

Materials Recovery Facility	Facility designed for centralized sorting, processing, and/or grading of collected recyclable materials for marketing.
Medical Waste	Commonly used term referring to infectious waste from medical facilities or procedures.
Metropolitan Landfill Abatement Account	Established under Minn. Stat. Sec. 473.844, an account created to fund projects that result in landfill abatement in the metropolitan area. Part of the proceeds from a State landfill surcharge on waste tipped at metropolitan area landfills is deposited into this account.
Minnesota Pollution Control Agency	State agency responsible for overall environmental quality of the state, primarily through enforcement of State rules, issuing of permits, and education for compliance. The Governor appoints commissioner.
Mixed Municipal Solid Waste (MSW)	Garbage, refuse, and other solid waste from residential, commercial, industrial, and community activities that the generator of the waste aggregates for collection, but does not include auto hulks, street sweepings, ash, construction debris, mining waste, sludges, tree and agricultural wastes, tires, lead acid batteries, used oil, and other materials collected, processed, and disposed of as separate waste streams. (Minn. Stat. §115A.03 Subd. 21)
Multi-family	Multi-family (or “multi-unit”) residential dwellings are considered residences, not commercial establishments, for purposes of this plan.
Multi-unit	Multi-unit (or “multi-family”) residential dwellings are considered residences, not commercial establishments, for purposes of this plan.
Non-MSW	Solid waste that is not managed as part of the MSW stream. Typically thought of as those items specifically excluded from MSW in the statutory definition of MSW, as well as other wastes such as non-hazardous industrial waste, C&D waste, infectious waste, and other separately managed solid waste streams.
Non-processible Waste	Waste brought to a resource recovery facility but which cannot be mechanically processed due to its physical characteristics or potential harmful effects.
Non-putrescible Waste	Solid wastes which are not capable of being decomposed by micro-organisms with sufficient rapidity as to cause odors, gases, attraction of vectors or other offensive conditions. (By contrast, putrescible wastes are a subset of organic wastes that tend to biodegrade very rapidly, such as food scraps.)
Non-residential	Refers to places other than where people live, such as businesses, government facilities or operations, institutions, schools, non-profit organizations, community activities, etc. Interchangeable with “commercial.”
Open Collection	A solid waste collection system in which multiple waste haulers or collectors compete for collection accounts in the same geographical area.
Organics	Organics is an overarching term for wastes that can be reused, processed and recycled and includes yard waste (leaves, grass, tree and shrub waste and other plant waste), household vegetable/kitchen scraps, commercially generated food waste, food manufacturing/production by-products, produce and meat trimmings, plant waste, and soiled, non-recyclable paper.

Organized Collection	A system for collecting solid waste in which a specified collector, or a member of an organization of collectors, is authorized to collect from a defined geographic service area or areas some or all of the solid waste that is released by generators for collection. (Minn. Stat. §115A.94, Subd. 1)
Policy Plan	The Metropolitan Solid Waste Management Policy Plan, a regional policy plan for solid waste management in the Twin Cities metropolitan area, adopted by the Office of Environmental Assistance (OEA) as required under Minn. Stat. Sec. 473.149. The Solid Waste Management Coordinating Board (SWMCB) and Office of Environmental Assistance jointly developed the current Policy Plan, adopted in October 1997.
Pollution Prevention	Eliminating or reducing at the source the use, generation, or release of toxic pollutants, hazardous substances, and hazardous wastes. (Minn. Stat. §115D.03, Subd. 8.)
Problem Material	Material that, when it is processed or disposed of with mixed municipal solid waste, contributes to one of the following results: 1) the release of a hazardous substance, or pollutant or contaminant, as defined in section 115B.02, subdivisions 8,13, and 15; 2) pollution of water, as defined in section 115.01, subdivision 5; 3) air pollution, as defined in section 116.06, subdivision 3; or 4) a significant threat to the safe or efficient operation of a solid waste processing facility. The four conditions are further defined in (Minn. Stat. §115A.03, Subd. 24a).
Processible Waste	Acceptable waste brought to a resource recovery facility that may be mechanically processed using the existing technology at the facility.
Processing	The treatment of waste after collection and before disposal. Processing includes but is not limited to reduction, storage, separation, exchange, resource recovery, physical, chemical, or biological modification, and transfer from one waste facility to another. (Minn. Stat. §115A.03, Subd. 25) For purposes of certification of unprocessed waste, per Minn. Stat. §473.848, “storage,” “exchange,” and “transfer” are excluded.
Product Stewardship	The concept that all parties who have a role in producing, selling or using a product, including material suppliers, manufacturers, retailers and consumers, assume responsibility for the environmental impacts of a product throughout its life-cycle. These include impacts from the selection of raw materials, the design and production processes, and the use and disposal of the product.
Public Entities	Any unit of State or local government, including counties, cities, towns, metropolitan agencies and districts, special districts, school districts, or any other general or special purpose unit of government in the state. (Minn. Stat. §115A.471) With regard to certain public entity procurement standards established in Minn. Stat. §16B.122, “public entities” also includes any contractor acting pursuant to a contract with a public entity.
Ramsey/Washington County Resource Recovery Project	See <i>Resource Recovery Project</i>
Reciprocal Use Agreement	An agreement among counties to allow residents of one county to use certain services (e.g., household hazardous waste collection) provided by another county that is party to the agreement.

Recyclable Materials (Recyclables)	Materials that are separated from mixed municipal solid waste for recycling, including paper, glass, plastics, metals, automobile oil, and batteries. Refuse-derived fuel or other material that is destroyed by incineration is not a recyclable material. (Minn. Stat. § 115A.03, Subd. 25a)
Recycled-content	Used to describe a product that contains recycled materials. Often further clarified as to “post-consumer” recycled content and/or “pre-consumer” or “post-industrial” content. “Post-consumer” refers to a finished material that would normally have been discarded as solid waste, having completed its life cycle as a consumer item (Minn. Stat. §16B.122, Subd. 1c; and Minn. Stat. §115A.03, Subd. 24b), but instead was used to manufacture a recycled-content product. “Post-consumer” is typically thought of as those recyclable materials collected from residents and businesses in recycling programs. “Pre-consumer” or “post-industrial” typically refer to recyclable materials that come from manufacturers and product converters, including damaged or obsolete products, overruns, and trimmings. These materials have not yet completed a life cycle as a consumer item.
Recycling	The process of collecting and preparing recyclable materials and reusing the materials in their original form or using them in manufacturing processes that do not cause the destruction of recyclable materials in a manner that precludes further use. (Minn. Stat. §115A.03, Subd. 25b)
Refuse-derived Fuel	The product resulting from techniques or processes used to prepare solid waste by shredding, sorting, or compacting for use as an energy source. It consists of lighter weight materials such as paper products, with most metals, glass, and other non-combustible materials removed.
Residuals, Residue	Waste materials remaining after processing waste for the separation and recovery of materials or energy.
Resource Conservation	Preserving raw materials, energy, water, or other materials for future use.
Resource Recovery	The reclamation for sale, use, or reuse of materials, substances, energy, or other products contained within or derived from waste. (Minn. Stat. § 115A.03, Subd. 27) Resource recovery is typically used to refer to the recovery of energy and usable materials during the processing of mixed municipal solid waste.
Resource Recovery Facility	A waste facility established and used primarily for resource recovery, including and appurtenant facilities such as transmission facilities and transfer stations primarily serving the resource recovery facility. (Minn. Stat. §115A.03, Subd. 28)
Resource Recovery Project (RRP)	A joint powers agreement between Ramsey and Washington Counties to protect and ensure the public health, safety, welfare and environment of each county’s residents and businesses through sound management of solid and hazardous waste generated in each county and collaboration on many waste management activities. Additionally, the RRP has an agreement with Resource Recovery Technologies through 12.31.12 for the purpose of processing waste through resource recovery.
Reuse	The practice of avoiding disposal of material that would become solid waste were it not put to use again in its original form.

SCORE	Acronym for “Select Committee on Recycling and the Environment,” a State task force appointed by the Governor in the 1980’s to recommend strategies for supporting recycling in Minnesota. “SCORE” is commonly used to refer to State grant funding to counties to support local source reduction and recycling programs.
Separately Managed Wastes	Waste materials that are managed as discrete waste streams, such as lead-acid batteries, recyclables, or infectious wastes.
Service Charge	Under the authority granted in Minn. Stat. §400.08 and §473.811, subd. 8a, a fee collected for services rendered by a county or by extension through joint powers agreements, by municipalities of the County.
Solid Waste	Garbage, refuse, sludge from a water supply treatment plant or air contaminant treatment facility, and other discarded waste materials and sludges, in solid, semisolid, liquid, or contained gaseous form, resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include hazardous waste; animal waste used as fertilizer, earthen fill, boulders, rock; sewage sludge, solid or dissolved material in domestic sewage or other common pollutants in water resources, such as silt, dissolved or suspended solids in industrial waste water effluents or discharges which are point sources subject to permits (in federal law), dissolved materials in irrigation return flows; or source, special nuclear, or by-product material as defined by The Atomic Energy Act of 1954, as amended. (Minn. Stat. Sec. 116.06, Subd. 22)
Solid Waste Management Coordinating Board (SWMCB)	A board formed under a Joint Powers Agreement, consisting of two Commissioners from each of the six metropolitan counties, plus two ex-officio members: the Director of the Minnesota Office of Environmental Assistance and the Commissioner of the Minnesota Pollution Control Agency. SWMCB is established to coordinate solid waste planning and programming on a regional basis.
Solid Waste Management Tax	A percentage tax collected by the State for management services for MSW and non-MSW (specifically construction waste, infectious waste, and industrial waste). Services subject to the tax include collection, transportation, processing, and disposal. Service providers (such as haulers and landfill operators) who directly bill generators or customers are responsible for collecting and remitting the tax. The rate in 1998 is 9.75% for residential generators and 17% for commercial generators.
Source Reduction	An activity that prevents generation of waste or the inclusion of toxic materials in waste, including: (1) reusing a production in its original form; (2) increasing the life span of a product; (3) reducing material or the toxicity of material used in production or packaging; or (4) changing procurement, consumption, or waste generation habits in smaller quantities or lower toxicity of waste generated. (Minn. Stat. §115A.03, Subd. 36b)
Source Separation	Separation of recyclable, compostable, or other materials by the waste generator prior to collection.
Source-separated Compostable Materials	"Source-separated compostable materials" refers to materials that: (1) are separated at the source by waste generators for the purpose of preparing them for use as compost; (2) are collected separately from mixed municipal solid waste, and are

	governed by the licensing provisions of section 115A.93; (3) are comprised of food wastes, fish and animal waste, plant materials, diapers, sanitary products, and paper that is not recyclable because the commissioner has determined that no other person is willing to accept the paper for recycling; (4) are delivered to a facility to undergo controlled microbial degradation to yield a humus-like product meeting the agency's class I or class II, or equivalent, compost standards and where process residues do not exceed 15 percent by weight of the total material delivered to the facility; and (5) may be delivered to a transfer station, mixed municipal solid waste processing facility, or recycling facility only for the purposes of composting or transfer to a composting facility, unless the commissioner determines that no other person is willing to accept the materials. (Subd. 32b.MS 1994 [Renumbered subd 32d])
Source-separated recyclable materials	Recyclable materials, including commingled recyclable materials, that are separated by the generator.
Sustainable Building	The Minnesota Office of Environmental Assistance defines a "sustainable building" as one that is healthy and comfortable for its occupants and is economical to operate. It conserves resources (including energy, water, raw materials and land) and minimizes the generation of toxic materials and waste in its design, construction, landscaping, and operation. A green building also consider historic preservation and access to public infrastructure systems, as well as the entire life cycle of the building and its components.
Tipping Fee	The fee charged by solid waste facilities to waste haulers, collectors, or other parties for the privilege of depositing or "tipping" waste.
Toxicity	Under Minn. R. 7045.0131, toxicity is one of the six characteristics of hazardous waste. Contaminants of concern include heavy metals, such as lead or mercury, volatile organic compounds, such as benzene or chloroform, semi-volatile organic compounds, such as pyridine or nitrobenzene, and pesticides/herbicides, such as endrin or lindane.
Toxicity Reduction	Term used to refer to efforts to reduce the toxic or hazardous character of the waste stream.
Transfer Station	An intermediate waste facility in which waste collected from any source is temporarily deposited to await transportation to another waste facility. (Minn. Stat. §115A.03, Subd. 33)
Unacceptable Waste	Waste that is not acceptable at a resource recovery facility under the terms of the service agreement.
Volume-based (Weight-based) Fees	A graduated pricing system for waste collection services in which the fees increase for larger quantities of waste collected.
Waste	Solid waste, sewage sludge, and hazardous waste. (Minn. Stat. §115A.03, Subd. 34)

Waste Flow Designation	A requirement by a county or waste management district that all or any portion of the solid waste that is generated within its boundaries or any service area thereof be delivered to a processing or disposal facility identified by the district or county. (Minn. Stat. §115A.81, Subd. 2)
Waste Management	Activities which are intended to affect or control the generation of waste and activities which provide for or control the collection, processing and disposal of waste. (Minn. Stat. §115A.03, Subd. 36)
Waste Management Hierarchy (Order of Preference)	A ranking of waste management methods or of preference practices in the order in which they are the preferred method or practice. Informally referred to as the “waste management hierarchy.” Minn. Stat. §115A.02 establishes the following order of preference for waste management: 1) waste reduction and reuse; 2) waste recycling; 3) composting of yard waste and food waste; 4) resource recovery through mixed municipal solid waste composting or incineration; 5) land disposal which produces no measurable methane gas or which involves the retrieval of methane gas as a fuel for the production of energy to be used on-site or for sale; and 6) land disposal which produces measurable methane gas and which does not involve the retrieval of methane gas as a fuel for the production of energy to be used on-site or for sale.
Waste Management Act	Chapter 115A of State Statutes which governs waste management activities in the State of Minnesota. Adopted in 1980 and amended by subsequent legislation. Some other sections of State Statutes also affect solid waste management, but are technically not part of the Waste Management Act.
Waste Reduction	See <i>Source Reduction</i> .
Yard Waste	Soft-bodied garden wastes such as leaves, lawn cuttings, and weeds, and other waste such as shrub and tree waste, and pruning clippings. (Minn. Stat. §115A.03, Subd. 38)

Appendix V: Regional Solid Waste Master Plan

Solid Waste Management Coordinating Board

2011-2030 Regional Solid Waste Master Plan



Anoka County
Carver County

Dakota County
Hennepin County

Ramsey County
Washington County

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The Solid Waste Management Coordinating Board

2011-2030 Regional Solid Waste Master Plan

*Reviewed by SWMCB and sent to Member Counties:
December 14, 2011*

SWMCB Chair:

Commissioner Victoria Reinhardt

Ramsey County

SWMCB Vice-Chair:

Commissioner Joseph Harris

Dakota County

SWMCB Board Members:

Commissioner Jim Kordiak

Anoka County

Commissioner Matt Look

Anoka County

Commissioner Tom Workman

Carver County

Commissioner Jim Ische

Carver County

Commissioner Kathleen Gaylord

Dakota County

Commissioner Peter McLaughlin

Hennepin County

Commissioner Jan Callison

Hennepin County

Commissioner Janice Rettman

Ramsey County

Commissioner Gary Kriesel

Washington County

Commissioner Lisa Weik

Washington County

SWMCB Ex-Officio Members:

Division Director David Benke

MPCA

*For more information about the Regional Solid Waste Master Plan,
please contact the SWMCB at:*

*477 Selby Avenue, St. Paul, MN 55102
651-222-7227*

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The Solid Waste Management Coordinating Board

2011-2030 Regional Solid Waste Master Plan

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Introduction

A. The Need for a Regional Master Plan

The 2011-2030 Regional Solid Waste Master Plan (referred to as the Regional Master Plan throughout this document) is the long-term, regional planning document for managing the six-county metropolitan area's solid waste. It is intended to respond to the vision and objectives described in the state's 2010-2030 Metropolitan Policy Plan (hereafter referred to as the Policy Plan). The Regional Master Plan was prepared by the Solid Waste Management Coordinating Board (SWMCB), a joint powers board comprised of Anoka, Carver, Dakota, Hennepin, Ramsey, and Washington counties, in consultation with the Minnesota Pollution Control Agency (MPCA). The Master Plan was prepared to fulfill the requirements of Minn. Stat. §115A.46 and §473.803.

This Regional Master Plan continues the legacy of adopting a strong regional approach to solid waste planning. The six metropolitan counties, through the SWMCB, jointly prepared this document in consultation with other solid waste stakeholders. Ultimately, the intent of the regional approach is to establish a common regional vision and set of goals that can support the collective and individual needs of counties within the SWMCB region (hereafter referred to as the Region).

B. Priorities within the Regional Master Plan

The Regional Master Plan provides regional and partnership strategies across a wide array of solid waste management areas that are important to the State and Region, and every area will receive attention during the years ahead. However, with public resources significantly strained across every level of government, the SWMCB also recognizes that the prioritization of solid waste management initiatives is of the utmost importance. In accordance with the vision outlined in the Policy Plan, the SWMCB will concentrate its policy focus on preventing waste before costs need to be incurred to manage it. For waste that cannot be prevented, significant opportunities for improvement specifically exist in the areas of recycling and organics recovery, and the SWMCB will therefore explore a variety of management strategies in these areas to improve upon the status quo. Finally, forging stronger partnerships with other solid waste stakeholders (public, private and non-profit) offers opportunities to reach metropolitan-area solid waste objectives in the most cost efficient manner possible, and the SWMCB will serve as a primary forum through which collaborative initiatives can take hold.

C. The Contents of the Regional Master Plan

The Regional Master Plan is divided into the following five sections:

- *Introduction:* Explains the impetus behind the development of the Regional Master Plan and highlights the SWMCB's priorities for solid waste management in coming years.
- *About the Regional Master Plan:* Describes how the Regional Master Plan was developed and what entities contributed to that effort, outlines how a reader should view the Regional Master Plan alongside other state, regional and local solid waste management planning documents, and describes key components of the Policy Plan that are integrated into the strategies in the Regional Master Plan.
- *Description of the Existing System:* Provides data about the various aspects of the Region's solid waste management system, citing the most recent data available at the time of Regional Master Plan publication (either 2010 or 2009 depending upon the specific solid waste topic) so that readers have a baseline from which to better assess regional and partnership strategies.
- *Regional Coordination:* Discusses three elements (cost and finance, governance, measurement and accountability) of the Region that fundamentally differ from the programmatic elements of solid waste management but are nonetheless contributors to regional effectiveness.
- *Regional Strategies:* Outlines regional and partnership strategies by specific programmatic element (communications and outreach, land disposal, non-MSW management, organics recovery, processing, recycling, regulation, source reduction, toxicity reduction) for improving solid waste management in the Region. Strategies under "The SWMCB will" header indicate that the Region and its member counties will assume leadership for driving progress with support from the State; strategies under the "In Partnership with the MPCA, the SWMCB will" header indicate that the State has a leadership responsibility with support from the Region and its member counties.

About the Regional Master Plan

Master Plan Development and Implementation

A. Developing the Regional Master Plan

Following MPCA approval of its updated Policy Plan on April 6, 2011, the SWMCB and its member counties began a one-year process to update the Regional and individual county Master Plans that directly respond to the Policy Plan's vision and objectives. The Regional Master Plan, developed by the SWMCB, provides an overall regional vision and includes high-level regional and partnership strategies to enhance solid waste management during future years.

The Regional Master Plan should not be viewed as a standalone document, but instead as part of an integrated set of planning materials that includes the Policy Plan, the individual county Master Plans and the current edition of the SWMCB workplan. Together these documents provide a statewide, regional and county-specific view of the solid waste management landscape alongside long-term visions and short-term strategies that will enable the Region to fully achieve its solid waste management objectives.

B. Input during the Regional Master Plan Development Process

The following entities were involved in the development of the Regional Master Plan by providing valuable input during specific points in the process:

- *The SWMCB:* Provided overall strategic guidance during the development process, reviewed a final draft of the Regional Master Plan and then sent a recommendation to SWMCB member counties to approve the Regional Plan concurrently with its individual Master Plan. Finally, once the Regional Master Plan and all individual county plans were approved, the SWMCB submitted the Regional Master Plan with the individual county Master Plans to the MPCA.
- *Member Counties of the SWMCB:* Coordinated individual county strategies with region-wide strategies, reviewed and officially approved the county's individual plan and the region-wide Master Plan.
- *Staff of the SWMCB:* Brainstormed potential regional strategies, evaluated progress on regional strategies from the 2004 Regional Master Plan, coordinated efforts with MPCA staff, and shared county best practices that could offer benefit to other counties in the Region.
- *The MPCA:* Provided comments during the development process both through its seat on the SWMCB board and through interactions with SWMCB staff,

offered insight into future state priorities and discussed partnership opportunities to achieve Policy Plan Objectives.

- *Public Input:* Provided comments to the SWMCB during a public meeting on November 14, 2011. Those comments were then integrated into the final version of the Regional Master Plan that was reviewed by the SWMCB during December 2011.

C. Implementing the Regional Master Plan

The SWMCB intends that the Regional Master Plan be a document that, in concert with other state, regional and local planning documents, guides the vision and work of the SWMCB. The SWMCB will therefore annually consult the regional and partnership strategies in the Regional Master Plan to measure progress toward Policy Plan objectives and to guide the prioritization of the coming year's SWMCB workplan. Workplan strategies will therefore be specific initiatives derived from the foundational strategies set forth in the Regional Master Plan, and by following this multi-stage system of prioritization and year-end analysis, the SWMCB can, in partnership with the MPCA, transparently improve solid waste management outcomes throughout the Region.

About the Regional Master Plan

Master Plan Framework

The framework for the regional strategies found in this Regional Master Plan is built around a regional vision, key themes, a solid waste management hierarchy and policies that are outlined in the Policy Plan. For background purposes, the following is a brief overview of the key tenets of the Policy Plan:

A. Vision

The Policy Plan is designed to assist all stakeholders in reaching the State's objectives for solid waste management. In all of its related efforts, SWMCB will follow the Policy Plan's vision for sustainability:

A sustainable community minimizes waste, prevents pollution, promotes efficiency, reduces greenhouse gas emissions, saves energy and develops resources to revitalize local economies. The integrated waste management system is an essential component of the infrastructure of a sustainable community. Solid waste must be managed by technologies and methods that support sustainable communities and environments. The solid waste management hierarchy, with its associated objectives of protecting the State's air, land, water, and other natural resources and the public health, is central to attaining the twin objectives of sustainability and solid waste management, because it emphasizes source reduction and reuse over land disposal (2010 Metropolitan Solid Waste Policy Plan page 6).

B. Key Themes

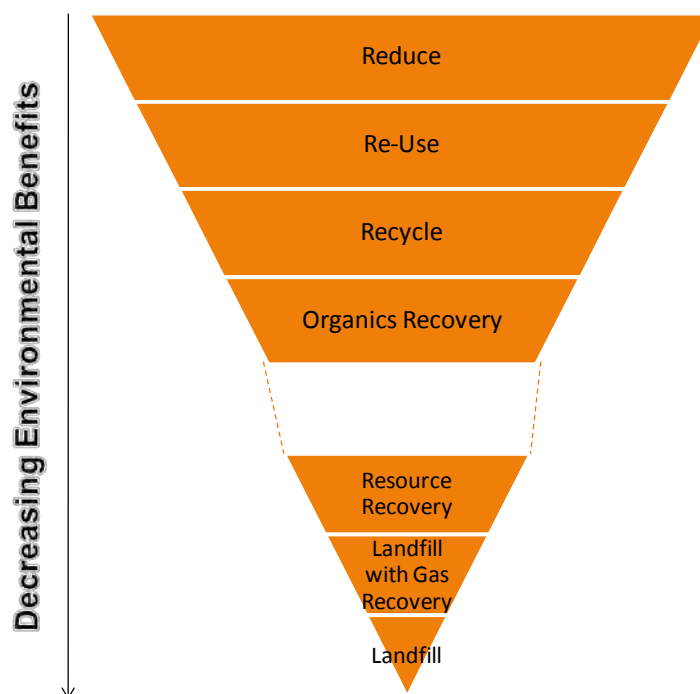
The following key themes underlie all solid waste management recommendations within the Policy Plan and are also incorporated into the vision of this Regional Master Plan (2010 Metropolitan Solid Waste Policy Plan pages 6-7):

- Accountability
- Waste as a resource
- Solid waste management hierarchy
- Generator responsibility
- Government as a leader
- Product stewardship
- Private sector initiative

C. The Solid Waste Management Hierarchy

The solid waste management hierarchy focuses efforts at the top, where environmental benefits are most significant. A benefits “gap” is depicted between the upper end of the hierarchy (source reduction, reuse, recycling, and organics recovery) and the lower end (resource recovery and landfilling). Throughout the Regional Master Plan, the SWMCB will refer to the solid waste management hierarchy and the Region’s belief that solid waste should be managed at the highest possible level on the hierarchy (*2010 Metropolitan Solid Waste Policy Plan page 2*):

State of Minnesota Solid Waste Management Hierarchy of Preferred Management Practice



D. Policy Plan Objectives and Policies

The following objectives and policies within the Policy Plan provide a foundation from which Regional Master Plan strategies are developed (*2010 Metropolitan Solid Waste Policy Plan pages 7-9*):

Goal 1: Protect and conserve. Manage waste in a manner that will protect the environment and public health, reduce greenhouse gas emissions, and conserve energy and natural resources.

Policy 1: *Reduce greenhouse gases and conserve energy and resources. Reduce greenhouse gas emissions and promote energy and resource conservation through integrated solid waste management.*

Policy 2: *Promote toxicity reduction. Reduce the hazardous character of waste and assure proper management of hazardous waste.*

Policy 3: *Promote renewable energy and conservation. Promote actions that conserve energy, and will encourage the use of renewable energy, which includes recovering energy from waste.*

Policy 4: *Manage waste now. Manage solid waste in a manner that will minimize environmental, financial, and public health burdens on future generations.*

Policy 5: *Protect public health. Ensure public health is protected by reducing waste, recycling and composting (or other organics management) a majority of the waste, and through the proper disposal of what remains.*

Goal 2. Integrate the parts. Manage waste in an integrated waste management system in accordance with the hierarchy to minimize landfilling, while emphasizing reducing waste generation and toxicity and increasing reuse, recycling, and source-separated organic waste management.

Policy 6: *Support the waste management hierarchy. Manage waste in accordance with the preferred methods in the waste management hierarchy.*

Policy 7: *Implement regional waste management goals. Manage solid waste in accordance with the numerical targets identified in the Metropolitan System Plan, Part Three.*

Policy 8: *Hold parties accountable for results. Whether public or private, hold the operators of any solid waste system segment responsible for meeting the goals of this Plan.*

Goal 3. Manage waste cost-effectively and internalize future costs. Manage waste in a cost-effective manner that maximizes environmental benefits and minimizes long-term financial liability and be priced to provide incentives that encourage waste to be managed as high as possible on the waste hierarchy.

Policy 9: *Promote efficiencies and cost effectiveness and reduce environmental costs. Promote efficiencies and cost effectiveness and reduce environmental costs in the delivery of integrated solid waste*

management services, including minimizing risk and managing for long-term care of landfills.

Policy 10: *Promote effective governance. Promote governance of solid waste management that results in the implementation of the WMA, resulting in: pollution prevention and decreased land disposal; the fair allocation of costs and liabilities; the efficient provision of services; the promotion of innovation; the fostering of private initiative and new technologies; and the provision of services that meet the diverse needs within the region.*

Goal 4. Share responsibility. Allocate responsibility and costs for the environmentally sound management of waste equitably among those who use or benefit from the system, including producers, retailers, consumers, government, citizens, and the waste industry.

Policy 11: *Promote generator and producer responsibility. Generators and product producers share responsibility for waste produced, and costs for waste disposal should be borne in the present by producers and generators and not deferred to future generations.*

Policy 12: *Drive better waste management through incentives, visible costs and effective pricing signals. Provide incentives for waste reduction and recycling, separate management of organic wastes, and resource recovery through pricing of solid waste management services. Costs should be visible to, and understandable by those paying for system services.*

Description of the Existing System

A. Introduction

This section of the Regional Master Plan provides a current description of waste management in the SWMCB Region. Sources of data and information include the 2010 SWMCB Data Report, 2009 Annual Results Report (Annual Report) and the 2010-2030 Metropolitan Solid Waste Management Policy Plan (Policy Plan). The Annual Report can be viewed at www.swmcb.org, and contains detailed existing system descriptions, data, graphs, and charts for toxicity reduction, recycling, processing, landfilling, non-MSW, and hazardous waste management, consolidated for the Region. Annual Report data is referenced as "Region". The Policy Plan can be found at www.pca.state.mn.us. Policy Plan data is referenced as the "metropolitan area" because it combines the Region with data from Scott County.

B. Detailed Description of Existing System

The waste management infrastructure in the Region is comprised of private and public entities that collect, transport, recycle, compost, recover, and landfill materials generated by residents, businesses, and institutions. The Region licenses approximately 240 waste hauling businesses, operating about 1,600 vehicles to collect and transport Municipal Solid Waste (MSW). Waste haulers that collect and transport non-MSW, recycling or organic wastes are not regionally licensed. Collection services are generally provided to residents in two ways: by subscription, in which a resident contracts with an individual hauler for service, or by municipal contract. There are no county-organized collection services for the non-residential sector, although some small businesses have access to smaller, organized collection programs. In all instances Minn. Stat. §115A requires waste haulers to provide volume-based pricing services to customers. Finally, after collection, MSW is delivered to a transfer facility or directly to a solid waste recycling, composting, processing, or disposal facility.

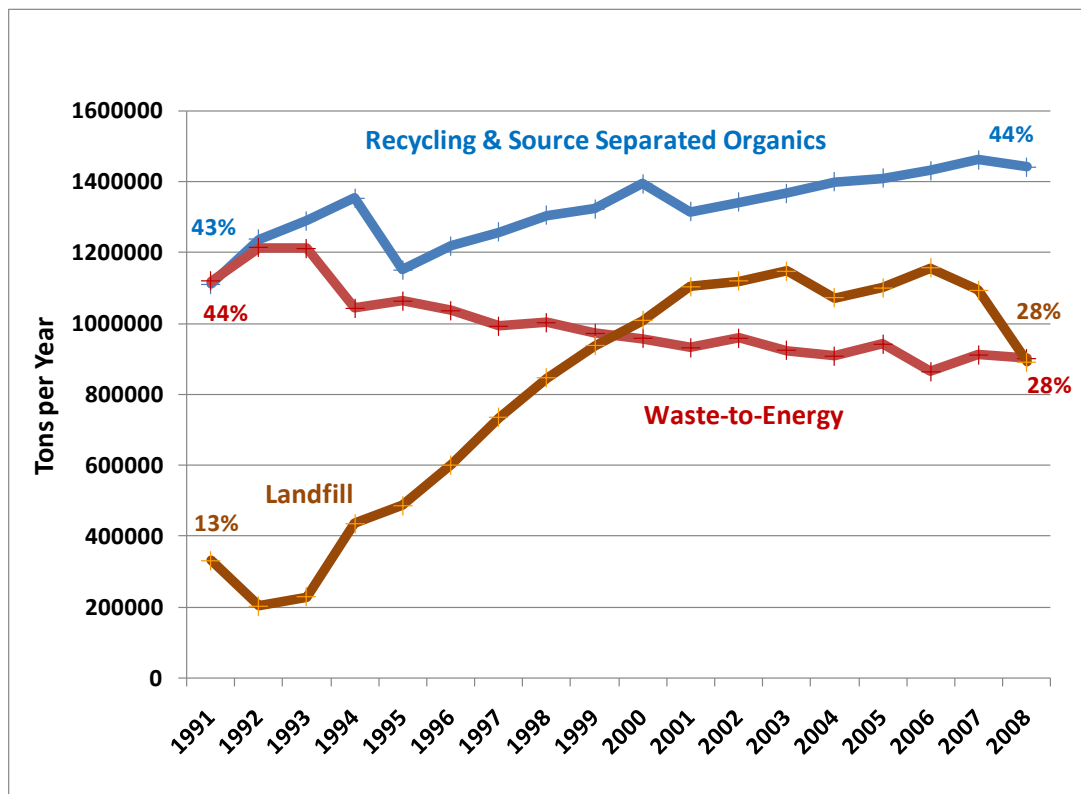
The charts and descriptions found on pages 16-19 detail the various aspects and trends associated with the Region's solid waste management system:

Solid Waste Management after Collection

Management Method (% of total)	2010 Amount (in tons)
Recycling + Organics Recovery (40% + 4% = 44%)	1,344,267
Processing (28%)	862,290
Landfilled (28%)	846,319
TOTAL	3,057,332

(2010 SWMCB Data Report)

Solid Waste Management Trends since 1991



(2010-2030 Metropolitan Solid Waste Policy Plan page 5)

Waste and Toxicity Reduction

Source reduction (also referred to as waste reduction) is the highest priority for managing waste in the solid waste management hierarchy. Source reduction is difficult to measure, but it is typically defined by the change in tons of waste generated per capita. MSW tons per capita decreased since the last update to the Regional Master Plan, from 1.26 in 2005 to 1.09 in 2010.

Toxicity reduction is the process of reducing the amount and degree of hazardous materials in the waste stream to limit environmental and public health risks. The Region promotes reduction of wastes with hazardous characteristics, and provides for reciprocal use of household hazardous waste collection programs. Each metropolitan area county has at least one year-round site for the collection of household hazardous waste (HHW), which is augmented with seasonal, temporary, satellite, or special one-day collections. Since 2005, participation at the Region's HHW facilities has increased by 44%, serving 245,602 vehicles in 2010. The top three collected materials by weight were consumer electronics at 51% of total pounds collected, latex paint at 18% and motor oil and filters at 8%. The Region provides for Hazardous Waste Operations and Emergency Response training for county inspectors and maintains a Very Small Quantity Generator (VSQG) database. Metropolitan county staff inspect, train, and license hazardous waste generators and regulate in accordance with federal Resource Conservation and Recovery Act (RCRA) standards, and use the VSQG database to track hazardous waste manifests.

Recycling

In 2010, the Region's recycling rate was at 40% (not including SCORE source reduction and yard waste credits). Recycling programs in the Region consist of curbside collection, event recycling days or one day events and drop-off sites, and include recycling services for both single-family and multi-family housing. Curbside recycling programs are provided by haulers through contracts with municipalities, or are provided by subscription service under licensing conditions of municipalities. Regional outreach, education and infrastructure efforts have been targeted primarily at the residential sector in the past two decades. Many businesses have recycling programs, and Minn. Stat. §115A.151 requires public entities to have containers for at least three recyclable materials from their operations.

There are five privately-owned and operated Material Recovery Facilities (MRFs) serving the Region. Materials accepted at the MRFs vary, but commonly include: paper/fiber, glass bottles, metals and plastic bottles. The private sector, municipalities, and counties provide numerous public drop-off locations for one or more types of recyclables.

Yard Waste

Minn. Stat. §115A.931 prohibits yard waste from being mixed with MSW, but yard waste can be collected by MSW haulers using separate collection vehicles or by special yard waste collectors, such as lawn services. Public and private collection sites are also available for residents to drop off yard waste, and there are over 40 yard waste sites currently serving the Region. The MPCA estimates that roughly 500,000 cubic yards of yard waste is managed in the metropolitan area through yard waste composting programs. Unlike many areas in the country, wood waste is not currently included in the calculation of yard waste collected for the Region. The SWMCB will therefore work with the MPCA to include yard waste in future performance measures so as to better reflect overall organics diversion activity within the Region and improve the ability of the Region to compare its progress to other areas across the country.

Organics Recovery

In 2010, 4% of the total MSW managed was through source separated organics (SSO) composting programs. Over the past five years, the number of SSO composting programs has risen. At least ten school districts, seven institutions, approximately 35 businesses, and four cities offer SSO composting programs. This does not include the many food-to-people and food-to-animal feed programs that also increase organics diversion. Two permitted organics composting facilities are located within the Region. One fully permitted SSO composting facility is located in Dakota County and a yard waste and organics composting facility with a pilot project permit from the MPCA is located in Carver County. A third facility was recently opened on tribal land in Scott County. All of the facilities are operated by private vendors.

Resource Recovery (Waste to Energy)

Four MSW resource recovery facilities serve the Region, with 28% (862,290 tons) of the Region's total MSW delivered to resource recovery facilities in 2010.

The Hennepin Energy Resource Center (HERC) in Minneapolis uses mass-burn technology to produce steam for district heating and to generate electricity. Ferrous metal is then recovered for recycling from the resultant ash. Hennepin County owns HERC and contracts for its operations. To date the facility has been permitted by the MPCA to burn 365,000 tons annually but has a design capacity of approximately 405,000 tons per year.

The Ramsey/Washington County Resource Recovery Facility located in Newport converts MSW into refuse-derived fuel (RDF). The facility is

privately-owned and operated. The MSW is delivered, shredded, and separated into three waste streams: RDF, recyclable metal and residue. The RDF is transported for combustion to Xcel Energy power plants in Red Wing and Mankato, where it is then burned to generate electricity. The ferrous and non-ferrous metals are recycled, and the residue is landfilled. The facility's permitted capacity is 500,000 tons per year. RDF is used at the Wilmarth Xcel Energy facility and at the Xcel Energy facility in Red Wing.

The Elk River Resource Processing Plant and the Elk River Energy Recovery Station facilities are an RDF processing facility and electrical generation power plant owned and operated by Great River Energy (GRE). The Elk River Resource Processing Plant processes up to 400,000 tons per year of MSW into RDF. The power plant's maximum RDF capacity is 300,000 tons per year, and while most of the energy is used by GRE, in the past, RDF from Elk River has also been sent to the Xcel Energy's Wilmarth facility. Currently, Anoka, Hennepin and Sherburne counties have separate service agreements with GRE. GRE has delivery agreements with the individual private haulers.

The Red Wing Resource Recovery Facility is owned and operated by the City of Red Wing. Select haulers from Dakota County deliver MSW to the facility for processing. The facility's permitted capacity is 27,000 tons per year. Incinerated waste is used at the Xcel Energy facility in Red Wing.

Land Disposal

In 2010, approximately 28 percent of the Region's MSW was landfilled (846,319 tons). Residential waste contributed 55 percent of landfill disposal, while non-residential waste contributed the remaining 45 percent. Of the total MSW landfilled, 92% was delivered to in-state landfills, while 8% was delivered to Wisconsin and Iowa locations. There are two MSW landfills located in the Region; both are located in Dakota County. These landfills are privately owned and operated and both have methane recovery systems. Other landfills serving the Region include those located in Elk River, Glencoe and, as previously mentioned, Western Wisconsin and Northern Iowa.

Non-MSW Management

Non-MSW includes non-hazardous industrial waste, construction and demolition debris (C&D), materials banned from disposal with MSW, non-hazardous industrial waste, non-hazardous infectious waste, and many other waste streams that are not MSW or are otherwise defined or regulated as hazardous waste. Nine non-MSW facilities serve the metropolitan area, including four non-MSW landfills in Dakota County. In 2009, the Region generated nearly 1.9 million tons of non-MSW.

C. Waste Forecast

Over the past decade, the Region has consistently generated about 3.3 million tons of MSW per year. Beginning in 2007, waste generation decreased from 3.4 million tons to 3.1 million tons in 2010 – most likely due to the state and national economic recession that slowed consumer purchasing. However, the Region expects continued population and employment growth over the next 20 years, and this combination will likely result in increased waste generation. It is estimated that the system will have to manage approximately 4.5 million tons of waste per year by 2020. During the time period of 2010 through 2030, the MPCA forecasts that a total of 79 million tons of MSW will be generated in the metropolitan area.

D. Challenges

The Policy Plan identifies challenges in metropolitan area waste management, including forecasted increases in waste generation, increased per capita growth rates, increased land disposal and decreased resource recovery. For the first time, the Policy Plan included numerical objectives in five-year increments for the metropolitan area to attain. These objectives focused on the following categories: Source reduction/reuse; Recycling; Organics recovery; Resource recovery; and Land disposal.

The chart below depicts the Policy Plan's percent of total MSW objectives for 2010-2030:

Management Strategy	2010 Region Actual	2015 State Objective	2020 State Objective	2025 State Objective	2030 State Objective
Source Reduction & Reuse	-	1-2%	2-4%	3-5%	4-6%
Recycling	40%	45-48%	47-51%	49-54%	54-60%
Organics	4%	3-6%	4-8%	6-12%	9-15%
Resource Recovery	28%	32-34%	32-33%	30-31%	28-24%
Landfilled	28%	20%	17%	15%	9%

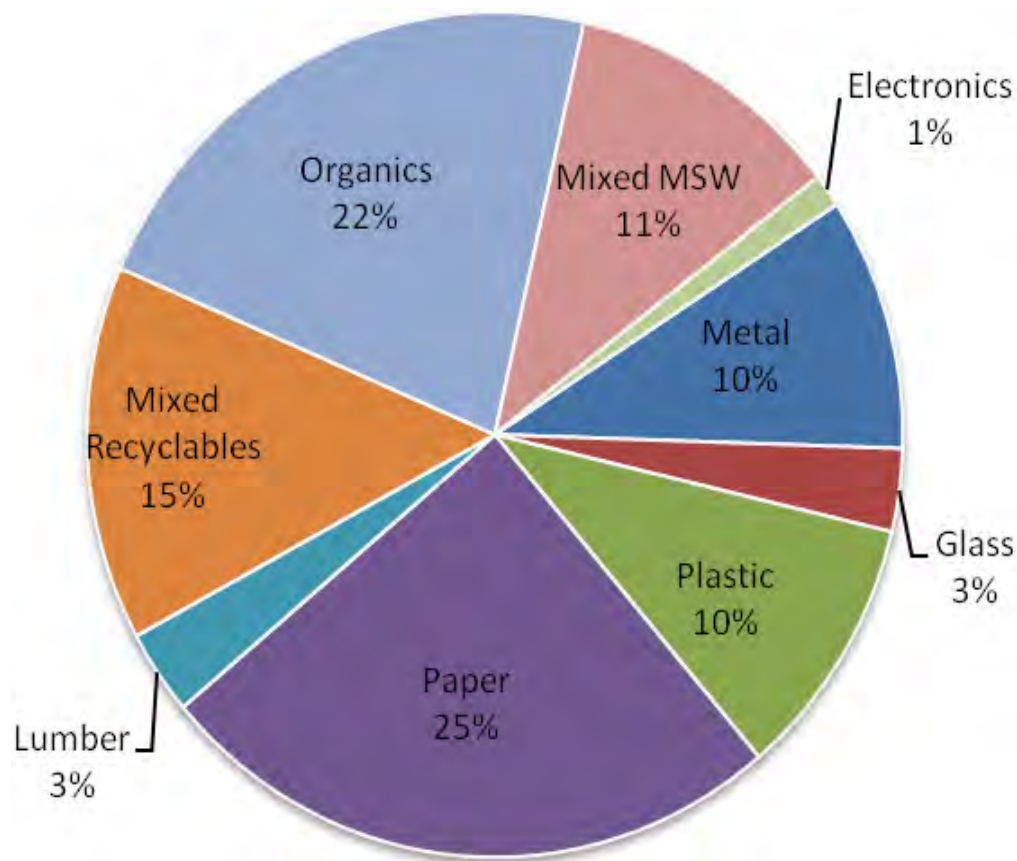
*(2010 Regional Data Presentation to the SWMCB. June 22, 2011.)
Note: Recycling does not reflect source reduction and yard waste credits*

Achieving these Policy Plan objectives will require all solid waste stakeholders to develop new solid waste strategies. The Policy Plan recognizes the need for new ideas, suggesting that the Region define future expectations, outline roles and responsibilities, and verify performance to reach the state objectives.

E. Opportunities

In 1999, the SWMCB and the MPCA conducted a waste composition study to analyze MSW deposited at landfills and resource recovery facilities. In 2009, the results of the 1999 study were combined with waste composition studies at three resource recovery facilities. The studies show no significant changes in waste composition over the past decade. Figure 3 identifies MSW composition for the metropolitan area.

Metropolitan Area MSW Composition



(2010 Metropolitan Solid Waste Policy Plan, page 25)

The studies do, however, continue to demonstrate that there are opportunities for material recovery prior to land disposal. The Policy Plan identifies potential strategies for increased material recovery, with a strong emphasis on non-residential recycling and organics recovery. The Policy Plan also supports the use and expansion of existing tools to move waste management up the solid waste management hierarchy and to better hold stakeholders accountable. These tools include education, licenses, ordinances, and contracts. The MPCA has committed to supporting legislative initiatives for extended producer responsibility/product stewardship, fully enforcing existing processing and public entities laws, restricting land disposal capacity as part of certificate of need decisions, and providing research, support and technical assistance that provides the foundation from which local governments can successfully operate.

Regional Coordination

Cost and Finance

A. Introduction

In 1980, the Minnesota Legislature enacted the Waste Management Act, established the solid waste management hierarchy of preferred waste management practices and required counties to manage solid waste in order to protect public health and the environment. The Legislature also clearly established a preference for the private provision of waste management services, as well as a preference that the costs of the waste management system be made visible to the consumer. Over time, the Legislature adopted a variety of laws related to the financing of the system, including SCORE taxes, landfill surcharges, public subsidies of recycling, designation, waste management service charges and county authority to issue bonds. The purpose of these laws is to provide the financial tools necessary to pay the costs of meeting the public objectives of protecting public health, a cleaner environment, and resource conservation.

As the regional waste management system developed over the last 30 years, costs increased and the methods of financing changed. Waste generators now pay for waste management services in a variety of ways, ranging from direct payments to private providers, to state taxes or local charges that indirectly pay for other services. Publicly funded services are also financed in a variety of ways, mostly independently created and administered at the local level. There is no regional solid waste charge, but counties contribute funds to operate the SWMCB due to the collective belief that regional coordination has and will continue to improve solid waste management outcomes.

B. Cost and Finance Principles

This Regional Master Plan emphasizes the need to focus the limited public resources that are available on regional solid waste management priorities. This work must be achieved within a market-driven system and should strive to reduce reliance on public subsidies and local property taxes whenever possible. The following cost and finance principles will be used by the SWMCB as it considers future region-wide financing issues:

- Public and private pricing policies should create incentives for generators to manage solid waste as high as possible on the solid waste management hierarchy;
- The solid waste management system and each of its components should account for the full costs of managing waste, including risk management, long-term care, and environmental costs;

- The costs of waste disposal should be borne by current waste generators and not deferred to future generations;
- Manufacturers, retailers and consumers should assume greater responsibility for the cost of collecting, transporting, and managing products at the end of their useful lives;
- The roles and responsibilities of local governments in achieving the Region's solid waste management objectives are impacted not only by short and long-term financial implications, but also by state laws and a regional commitment to environmental protection; and
- A larger state funding role is needed to reach all solid waste management objectives in the Policy Plan.

C. Regional Strategies

The SWMCB will:

1. Research other cost and finance mechanisms, including a regional financing model, and specifically identify how those mechanisms could improve solid waste management, if Policy Plan objectives are not met.

In partnership with the MPCA, the SWMCB will:

2. Identify and secure the revenue sources that provide adequate and long-term funding for the Region; and
3. Engage other solid waste stakeholders to evaluate billing and contracting associated with waste and recycling collection so as to assess how incentives can be leveraged to increase recycling and organics recovery.

Regional Coordination

Governance

A. Introduction

Since 1991, counties in the metropolitan area have collaborated on solid waste management through a joint powers agreement (JPA). The JPA that created the Solid Waste Management Coordinating Board has been amended several times during its two decade existence, and each time it has been amended with the intent of improving the coordination of county solid waste management efforts within the Region. Today, the specific, stated purpose of the SWMCB is to increase the efficiency and environmental effectiveness of solid waste management across multiple county jurisdictions, primarily through coordinated communication and outreach, policy development and collaborative activities.

Like the counties that continue to recognize a need for regional coordination, the MPCA emphasizes the importance of regional governance in managing solid waste in the Policy Plan. Under its objectives and policies, the MPCA includes the following statement regarding governance:

Policy 10: *Promote effective governance. Promote governance of solid waste management that results in the implementation of the WMA [Waste Management Act], resulting in: pollution prevention and decreased land disposal; the fair allocation of costs and liabilities; the efficient provision of services; the promotion of innovation; the fostering of private initiative and new technologies; and the provision of services that meet the diverse needs within the Region (2010 Metropolitan Solid Waste Policy Plan, page 10).*

While governance by itself cannot achieve the aggressive objectives established by the MPCA, the SWMCB agrees that effective regional governance is a component of achieving solid waste management success. The SWMCB spent 2010 - 2011 completing a governance analysis in preparation of the Regional Master Plan update at the end of 2011. During its analysis, the SWMCB:

- Analyzed the extensive research and case studies prepared by Dakota County regarding regional solid waste systems in North America and specifically focused on the governance and financial components of those systems;
- Participated in a strategic development process and workshop facilitated by the University of Minnesota that examined both the form and functions of the SWMCB; and

- Individually interviewed a majority of SWMCB commissioners to garner their ideas regarding the form and function of SWMCB in the present and how to best prepare the organization for the future.

The SWMCB asserts that solid waste management success in the Region should be judged on whether the solid waste objectives outlined in the Policy Plan are achieved. Effective regional governance is therefore a necessary—but not sufficient—condition of a successfully managed region. The SWMCB believes that there are solid waste management improvements that can be achieved under the current governance model. Therefore it is important that the State and Region first focus on functional improvements (i.e. increased organics recovery and recycling). Finally, as has been the case for two decades, the counties are able to adjust the SWMCB JPA to address changes in form if such changes are ultimately deemed necessary to enhance solid waste management effectiveness.

B. Regional Governance Principles

As indicated in the previous section, the SWMCB will continually assess whether the JPA enables the counties to effectively carry out their waste management responsibilities by referencing the following governance principles:

- *Efficiency and Effectiveness:* Counties are required by state law to engage in waste management, and will work jointly through the SWMCB to carry out activities that increase the efficiency and effectiveness of county efforts;
- *Accountability:* Counties are accountable to the MPCA through their individual solid waste master plans, and the counties shall then hold one another accountable through the SWMCB JPA. The counties, through their individual plans and through the SWMCB, will identify the specific methods to hold others in the Region accountable. The Performance Measurement chapter of this Regional Master Plan discusses how SWMCB will continually review and critically evaluate performance;
- *Support of the Solid Waste Management Hierarchy:* The Region’s governance will be structured so as to implement and support initiatives that move management of waste up the solid waste management hierarchy;
- *Support of the Private Sector:* The Region’s governance structure will advance the State’s solid waste management objectives through efforts that recognize the Region’s market-based approach to solid waste management; and

- *Continual Improvement:* On an ongoing basis, the SWMCB will evaluate its governance model and will examine and modify the current governance structure, as necessary, to meet the Region's solid waste objectives.

C. Regional Strategies

The SWMCB will:

1. Provide waste management leadership in the Region by serving as a forum for policy discussions, conducting research and evaluation studies and developing Regional programs in partnership with the State, other public entities and the waste industry;
2. Evaluate changes to its joint powers agreement that are necessary for implementation of Master Plan strategies; and
3. Continue to evaluate governance options if Policy Plan objectives are not met.

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Regional Coordination

Measurement and Accountability

A. Introduction

Measuring solid waste results is integral to the success of the Region's solid waste management system. The SWMCB, in partnership with the MPCA, is committed to collecting robust solid waste data that enables policymakers to devise strategies that result in the Region achieving the solid waste management objectives outlined in the Policy Plan. Without improved measurement data, it will be impossible for the State and Region to fully assess the effectiveness of Master Plan Regional Strategies and the Region's waste management system.

SWMCB believes that all successful solid waste measurement and accountability strategies will recognize the following principles:

- Data measurement, collection and reporting consistency will enable the State and Region to identify the most promising opportunities for system improvements and the expansion of solid waste management best practices;
- The flow of solid waste and the generators that produce it do not neatly fit within city and county jurisdictional lines;
- Non-residential generators will produce more timely and reliable data if they are required to submit identical data one time and to one entity;
- Consistent solid waste data must be available to the State so that it can construct meaningful policies that address the long-term solid waste issues of highest priority;
- When possible, counties should focus their resources on the creation of programmatic solid waste management efforts that are informed by the use of data that is consistent statewide and fits within a solid waste regulatory framework that is imposed by the State; and
- State, regional and local entities should be held accountable for the roles and responsibilities that they are expected to fulfill within Minnesota's solid waste management system.

The *SWMCB Joint Powers Agreement*, effective July 1, 1998, states that the SWMCB shall systematically evaluate the progress of the Region and each county in achieving the outcomes articulated in the Regional Master Plan.

B. Measuring Regional Progress on Achieving Solid Waste Management Objectives

Solid waste progress will ultimately be benchmarked against the objectives outlined in the 2030 Solid Waste Management Policy Plan, and those objectives will therefore serve as the outcomes by which SWMCB and its member counties will be held accountable. SWMCB will also regularly analyze available solid waste data to produce solid waste reports that compare the Region's current progress to the regional solid waste management objectives in the Policy Plan.

It is through this constant analysis that future regulatory, policy and communication priorities will be identified and specific strategies included in the annual workplan to guide programmatic implementation. Instead of attempting to measure and track data across a wide array of solid waste subcategories that ultimately are not the outcomes by which the Region will be assessed, the SWMCB will focus the 2011 Regional Master Plan on the macro objectives that will be the standards that determine regional success. This focus will will prioritize data collection and management efforts and enable the SWMCB and MPCA to focus more attention on the creation of critical data collection and measurement methods that are needed to fully assess future regional solid waste management progress.

C. Measurement of County Specific Strategies

In order to highlight the regional focus of the 2011 Regional Solid Waste Master Plan and streamline the submission of information to the MPCA, County Specific Initiatives (CSI's) were removed from the Regional Master Plan, and specific county strategies are instead being housed in the SWMCB member counties' individual Master Plans that must be submitted concurrently with the Regional Master Plan. Per the requirements of the SWMCB JPA, counties will continue to collectively review their county-specific strategies on an annual basis at a SWMCB meeting and identify specific tasks and results that each county will attempt to achieve in the year ahead. It is expected that both qualitative and quantitative measures of progress will identify how county strategies are contributing to the achievement of SWMCB's objectives identified in this Regional Master Plan.

D. Regional Strategies

The SWMCB will:

1. Evaluate and enhance current measurement and reporting tools (i.e. ReTRAC);
2. Support county development of individual performance measures so long as the measures provide data that integrates with other counties and enables the Region to benchmark progress on solid waste objectives;

3. Develop performance measures that track progress toward the achievement of the Region's recycling, organics recovery, processing and reuse objectives included within the State's 2030 Solid Waste Policy Plan;
4. Annually report to the MPCA regarding progress in meeting the Policy Plan objectives, including challenges and opportunities for future improvement; and
5. Encourage the inclusion of yard waste in any calculation of organics recovery for the Region.

In partnership with the MPCA, the SWMCB will:

6. Support full measurement of State, Regional and individual county waste management progress so as to improve overall accountability and better identify when changes to the current system are required;
7. Support the MPCA as it expands facility permitting and the reporting of solid waste data;
8. Align SCORE and other data so that it is consistent and aligns with the integrated reporting recommendations in the MPCA's SCORE revamp report;
9. Continue providing data to the MPCA so that it can measure source reduction and reuse at the state level and determine the effectiveness of pilot projects and other new strategies; and
10. Rely on the MPCA to evaluate and update Policy Plan objectives, as necessary, based on updated solid waste data.

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Regional Strategies

Source Reduction and Reuse

A. Introduction

The Policy Plan stresses the need to manage waste to maximize environmental benefits. A source reduction and reuse objective of 4-6% has been established for 2030. This is an aggressive objective that will require strong MPCA leadership, with support and local leadership from counties and municipalities from around the state.

A key public policy related to source reduction is product stewardship. Product stewardship, also known as extended producer responsibility (EPR), spreads responsibility for products at the end of their useful life among manufacturers, distributors, retailers and users. Product stewardship solutions can result in less waste being produced, and will be important in meeting the source reduction and reuse Policy Plan objective. This Regional Master Plan calls for the Region to foster product stewardship approaches to the management of difficult to manage waste. The Region will promote product stewardship framework legislation and support producer responsibility initiatives in order to reduce the expense and burden of collection currently borne by government.

Government is a large consumer of goods and services and generates large quantities of waste. Both the Policy Plan and the Regional Master Plan emphasize that government will lead by example, take environmental factors into consideration when making purchases and collaborate to share knowledge, experience, and technical expertise regarding environmentally preferable practices. The counties will continue participating in cooperative purchasing and seek to expand the availability and utilization of green products in their own operations and throughout residential and non-residential sectors within the Region.

Progress toward the source reduction and reuse Policy Plan objective will require improved data measurement. Standard methodology for measuring source reduction and reuse needs to be developed by the State to ensure that source reduction activities in one county be tracked in a way that is consistent with other counties. The Region will therefore depend upon the MPCA to develop that methodology and will provide local government input and data, when possible, to ensure the development process is a successful one.

B. Regional Strategies

The SWMCB will:

1. Provide product stewardship leadership in the Region by serving as a forum for policy discussions, conducting outreach with public entities, and raising general awareness about the product stewardship/extended producer responsibility model;
2. Develop and expand reduction and reuse efforts throughout the Region through programs such as the Reuse Alliance;
3. Provide assistance to counties to increase the purchasing of environmentally preferable products through cooperative purchasing contracts; and
4. Share knowledge, best practices, and technical expertise regarding environmentally preferable practices among public entities.

In partnership with the MPCA, the SWMCB will:

5. Develop a statewide policy for product stewardship and support related product stewardship legislation;
6. Support the MPCA's new and ongoing efforts to develop and expand reduction and reuse efforts throughout the Region;
7. Support MPCA efforts to develop and implement a measurement tool for source reduction and reuse; and
8. Expand the available list of environmentally preferable products contained within cooperative purchasing contracts.

Regional Strategies

Toxicity Reduction

A. Introduction

Reducing the toxicity of the waste stream is important in order to effectively protect public health and the environment. The most effective way to reduce the toxicity of waste is to redesign products to use less toxic components or to recover toxic components before they enter the waste stream, but sometimes toxic products must be used and then disposed of appropriately. In these instances, the waste containing toxic or hazardous components should be removed from the MSW waste stream and properly managed.

Before turning its focus to the management of toxic waste, the Regional Master Plan calls for an initial focus to be on preventing the toxic waste from even being created. The Master Plan calls upon residents and businesses to use fewer products containing toxic and hazardous components, reduce the amount of the product used, and properly manage products containing toxic or hazardous materials. The Region will develop appropriate communication tools to assist the counties in carrying these messages to the community, and additional information about specific communication strategies can be found in the Regional Master Plan's "Communication and Outreach" section.

A regional effort to foster product stewardship, meaning that all parties involved in designing, manufacturing, selling, and using a product take responsibility for the life-cycle environmental impacts of that product, will also prove effective from a cost, public health and environmental perspective. However, consistent with a key theme throughout the Regional Master Plan, greater private sector involvement and reduced dependence on government subsidization is needed to enhance product stewardship in the years ahead.

Finally, in addition to communication tools and encouraging greater product stewardship, the Region will continue to use a variety of compliance strategies, including coordinating certain aspects of hazardous waste regulation, to assure the proper management of toxic and hazardous waste by regulated entities. The counties will also continue to offer a regional HHW collection system through a reciprocal use agreement.

B. Regional Strategies

The SWMCB will:

1. Maintain the reciprocal use agreement for HHW collection services;

2. Evaluate cooperative purchasing efforts that provide for more efficient operation of county HHW programs;
3. Assist member counties in HHW system planning by coordinating an evaluation of driving distances as a measure of convenience, to determine if gaps exist in the availability of HHW programs;
4. Coordinate discussions about elements of county regulatory compliance strategies, including licensing, inspection, consultation and enforcement, to ensure that hazardous waste is properly managed throughout the Region; and
5. Evaluate emerging issues related to hazardous waste, such as proper management of pharmaceutical waste.

In partnership with the MPCA, the SWMCB will:

9. Monitor product use that may affect the level of toxic/hazardous materials in the waste stream and coordinate with the MPCA to identify solutions to reduce the toxicity of waste;
10. Develop a statewide policy for product stewardship and support related product stewardship legislation that addresses problem materials and products with toxic and hazardous components; and
11. Develop household hazardous waste disposal contracts that provide for cost-effective and environmentally preferable recycling and disposal options for county-collected household hazardous waste.

Regional Strategies

Recycling

A. Introduction

Recycling is a significant component of the Region's solid waste management system. The Policy Plan strongly emphasizes recycling, establishing an objective that 60% of all MSW should be recycled in the Region by 2030. The plan repeatedly mentions the importance of recycling in managing waste as a resource because recycling offers the promise of reduced pollution, diminished demand for scarce natural resources, and state and regional economic growth potential. In 2010, the Region recycled 41% of all MSW (not including SCORE source reduction and yard waste credits).

The Region's waste generation is expected to grow to an estimated 4.5 million tons by 2030. The costs associated with managing this increased waste will be significant. Ultimately, the Regional Master Plan recognizes the magnitude of the challenging task facing the counties, and it is clear that the 60% recycling objective will not be accomplished without generators and service providers involved in future efforts to improve. SWMCB counties will therefore continue working with their partners to empower generators and service providers so that a collaborative effort maximizes the Region's diversion of recyclable material in the years ahead.

As previously mentioned, the SWMCB recognizes that meeting higher recycling objectives will be a challenge. New initiatives must be undertaken to achieve the 60% recycling objective by 2030. First, the development of new markets is extremely important. SWMCB counties believe that the MPCA is positioned to be the governmental entity that aggressively leads market development efforts while working closely with the private sector and the federal government. SWMCB and the counties will then provide policy and regulatory support to the MPCA as those new markets emerge. Second, the SWMCB believes that the private sector is best positioned to introduce new collection techniques and technology to ensure that recycling effectiveness is maximized. The SWMCB therefore looks forward to working with the private sector in coming years to help introduce new, effective technologies to the Region.

B. Regional Strategies

The SWMCB will:

1. Share research, information, public policy tools and tactics for improving residential and non-residential recycling;
2. Develop model ordinances to encourage a consistent regulatory approach for recycling, as needed;

3. Evaluate and outline best management practices for “away-from-home” recycling, in locations such as parks, arenas, and public buildings as well as private businesses that serve the public;
4. Establish regional data reporting methods to guide recycling policy, including residential recycling for the Region, after identification by the MPCA of the appropriate entity for data development and collection;
5. Consider the development of programs targeted at the non-residential sector to increase recycling; and
6. Strengthen partnerships, through discussions and other opportunities, with service providers and recycling management facilities to identify improved recovery efforts and education needs.

In partnership with the MPCA, the SWMCB will:

7. Support state-led efforts to increase non-residential recycling through expanded policy efforts if Policy Plan objectives for recycling are not met using currently available policy tools;
8. Review the Policy Plan objectives following the receipt of improved data;
9. Support MPCA imposing mandatory separation goals for recyclable materials at transfer stations and landfills if the Policy Plan objectives for recycling are not met;
10. Support ordinances or legislation requiring entities that handle recyclables to report recycling rates to the State; and
11. Assist the MPCA in discussions on market development and participate in any activities emanating from those discussions.

Regional Strategies

Organics Recovery

A. Introduction

Organics recovery in the Region includes the management of yard waste (leaves, grass, and other plant waste) and source-separated organic (SSO) materials that include food waste, food production by-products, produce and meat trimmings, plant waste, and soiled, non-recyclable paper. In 2010, changes to Minn. Stat. §115A.03 subdivision 25(a) added composting of SSO's to the definition of recycling.

There are a variety of technologies available to manage the Region's organic wastes, including residential backyard composting, food rescue, food donation, food to livestock feeding, food to livestock feed manufacturing and various forms of non-residential composting. There has also recently been interest in anaerobic digestion, and several projects are currently being explored within the Region, but the technology remains in the early stages of assessment at this time.

County, city, and private sector efforts have been successful in increasing the amount of organic wastes materials managed by a variety of methods in the Region, and in 2010, 127,366 tons (26% of the Region's potential SSO) were diverted from the MSW waste stream.

The significant growth in organics recovery throughout the Region is due to county technical assistance, education programs, promotion of already existing organics recovery services, and targeted financial incentives. The Region's 2010 level of organics recovery, at 4%, already meets the Policy Plan system objective for organics recovery of 3-6% of total MSW by 2015. However, meeting future objectives (4-8% of total MSW in 2020 and 9-15% of total MSW by 2030) will require further changes in the waste management system. The counties and SWMCB will continue designing policies and programs in response to the State's challenging organics recovery objectives. Finally, it is also important to note that the SWMCB recognizes that: 1) private sector cooperation is needed to reach the 9-15% objective by 2030; and 2) yard waste should be included in performance measures for organic wastes to more accurately reflect ongoing efforts in the Region and align with how organics recovery is calculated in other regions around the country.

B. Regional Strategies

The SWMCB will:

1. Share research, information, public policy tools and tactics regarding organics recovery;
2. Develop model ordinances to encourage a consistent regulatory approach for organics recovery, as needed;
3. Host discussions with the private sector on the development of organics recovery strategies and technologies;
4. Establish regional data reporting methods to guide organics recovery after identification by the MPCA of the appropriate entity for data development and collection;
5. Consider the development of programs targeted at the non-residential sector to increase organics recovery;
6. Analyze joint collection of yard waste and organics recovery from residential generators; and
7. Identify a range of financial and regulatory organics recovery tools available to counties, and hold discussions to identify opportunities for regional consistency.

In partnership with the MPCA, the SWMCB will:

8. Support state-led policy efforts to increase non-residential organics collection and management as appropriate infrastructure develops, if policy plan objectives for organics recovery are not met using currently available policy tools;
9. Review the Policy Plan objectives following the receipt of improved data;
10. Support legislation requiring appropriate handlers of organic wastes to report organics recovery rates to the State; and
11. Work to include yard waste in performance measures for regional organics diversion.

Regional Strategies

Processing

A. Introduction

Waste processing is an important element in the waste management system for waste that is not reduced, reused or recycled. By processing waste into energy, resource recovery facilities reduce landfilling and power residences and businesses throughout the Region. To manage waste in accordance with the solid waste management hierarchy, the SWMCB adopts processing as the preferred alternative to landfilling for MSW that is not otherwise reduced, reused or recycled. (Note: see the Regional Master Plan's "Organics Recovery" section for specific strategies regarding organics diversion).

In 1985, the Minnesota Legislature adopted a law requiring all MSW generated in the seven metropolitan counties that is not reduced, reused or recycled to be processed at a resource recovery facility. There are currently four resource recovery facilities serving the Region: the Hennepin Energy Recovery Center, the Newport Resource Recovery Facility, the Elk River Resource Processing Plant and Red Wing waste-to-energy facility.

The Policy Plan highlights the need to ensure that waste generated by public entities is processed in a method that is consistent with its highest identified use per the State's solid waste management hierarchy. In response to that processing requirement and future waste management objectives identified in the Policy Plan, the MPCA and SWMCB agree that full utilization of the Region's waste processing capacity is a key component in achieving those desired outcomes. Full utilization of capacity is important to the achievement of current and future objectives. This effort must be coordinated with other available policy and regulatory tools to be as effective as possible.

The MPCA and SWMCB acknowledge the need for MPCA to fully exercise its statutory authority to enforce Minn. Stat. §473.848; it is only through a combination of fully utilizing processing capacity and the exercise of statutory enforcement authority for how waste is managed that the Region's future solid waste management objectives will be fully achieved.

B. Regional Strategies

The SWMCB will:

1. Address waste processing issues throughout the Region on an individual county or sub-regional basis;
2. Support a market-based approach regarding privately owned and operated

resource recovery facilities serving the Region, thus likely leading to the reduction or elimination of public subsidies;

3. Encourage its member counties, individually or jointly, to retain a first option to purchase RDF and processing facilities if, after termination of existing agreements, the facilities are to be closed or converted to a non-processing use; and
4. Support full utilization of design resource recovery capacity.

In partnership with the MPCA, the SWMCB will:

5. Ensure full compliance with Minn. Stat. §473.848 that requires MSW to be processed prior to land disposal;
6. Support the MPCA's enforcement of Public Entities law; all individual county plans will include the requirement that Public Entities process MSW;
7. Support current law that designates MSW and RDF as a source of renewable energy;
8. Monitor existing processing capacity and operations and consider proposals from the private sector for new processing options for the Region; and
9. Work to include yard waste, including wood waste used for the production of renewable energy, in performance measures for regional organics diversion.

Regional Strategies

Land Disposal

A. Introduction

Landfills continue to play a role in the solid waste system for the metropolitan area. Although land disposal is the least preferred option in the solid waste management hierarchy, an integrated waste management system requires that some landfill capacity be available. The Policy Plan acknowledges that landfills are necessary and that landfill capacity is needed for waste that cannot be reduced, reused, recycled or processed. Newer technologies such as leachate recirculation, bioreactors, and landfill mining provide opportunities to improve landfill management, but need to first be evaluated and then designed in a manner that prevents negative environmental outcomes. Ultimately, conservation of landfill space and the use of new technologies should be encouraged, but only when they also provide for optimal environmental protection.

Landfills that serve the metropolitan area are privately owned and operated, with some of the landfills serving the Region located in neighboring states. Governments therefore specifically focus on the regulatory issues that govern landfilling; landfill design and operation in Minnesota is regulated by the MPCA, counties and cities. This Master Plan stresses the need for landfills to be designed and operated in an optimal manner while also recognizing that landfills as well as all other waste facilities' operations will need to be expanded or changed by 2030 to achieve Policy Plan objectives.

Note: In this section of the Master Plan, the term "landfilling" refers to MSW landfills only.

B. Regional Strategies

The SWMCB will:

1. Regionally support individual county use of a variety of compliance strategies including licensing, inspection and enforcement to ensure that regulated solid waste is properly managed in landfills throughout the Region.

In partnership with the MPCA, the SWMCB will:

2. Support MPCA initiatives to document landfill air emissions and the long-term impacts and costs of landfilling to support future policy decisions;
3. Monitor existing landfills' capacity;
4. Encourage the MPCA to adopt a requirement for landfills and transfer stations to conduct waste characterization studies to identify opportunities to divert waste; and
5. Engage the waste industry to improve waste diversion opportunities at waste facilities.

Regional Strategies

Non-MSW Management

A. Introduction

Non-municipal solid waste (MSW) generally consists of three major components: construction, demolition and industrial waste. The Region is served by nine landfills that accept these waste streams. At present, these landfills have approximately 25 million cubic yards of remaining capacity.

The Region has invested significant resources in characterizing and researching non-MSW management so that more accurate data can be incorporated into SWMCB policy and program developments. This Master Plan therefore continues to recognize the need to further improve data regarding non-MSW management.

In addition to gathering improved data, the Metropolitan Solid Waste Management Policy Plan recognizes the need for new or expanded non-MSW market development, specifically targeting clean and mixed biomass, tear-off asphalt shingles and wallboard. For example, some SWMCB member counties have already seen significant savings from the recycling of shingles into asphalt paving projects, and the Region and state stand to benefit from both a budgetary and environmental perspective if shingle recycling can become more pervasive.

The Regional Master Plan's non-MSW strategies focus on increasing the reduction, reuse, recycling and processing of non-MSW through means that are consistent with the solid waste management hierarchy.

B. Regional Strategies

The SWMCB will:

1. Strongly encourage all member counties to include alternative bid pricing requirements whenever hot mix asphalt or asphalt paving services are purchased so as to increase shingle recycling;
2. Develop model language for county projects requiring that construction and demolition waste be reused and recycled to the greatest extent possible; and
3. Develop and promote initiatives that enhance non-MSW recycling and management in the Region, including assisting counties in evaluating the incorporation of the MPCA's pre-demolition inspection rule into local ordinances.

In partnership with the MPCA, the SWMCB will:

4. Work to streamline data collection for non-MSW waste;
5. Support initiatives that establish statewide non-MSW diversion objectives;
6. Work to develop a consistent definition and application for "beneficial use";
7. Support the private sector in expanding market development for recycled non-MSW, and beneficial uses for non-MSW materials such as clean and mixed biomass, tear-off asphalt shingles and wallboard; and
8. Encourage the MPCA to utilize landfill and transfer station permitting authority to require separation of non-MSW prior to land disposal.

Regional Strategies

Regulation

A. Introduction

The metropolitan counties are required by state law to regulate solid and hazardous waste. Each county has developed ordinances and Master Plans to define the steps that will be taken to affirm that solid and hazardous waste generators and facilities are regulated, that waste is managed in accordance with federal, state and local requirements and that the objectives of the Master Plan are met. The ordinances also specify the enforcement actions that may be used to gain compliance.

Note: For additional information regarding specific solid waste regulations within each SWMCB member county, please consult the individual county Master Plans that are being submitted concurrently with the Regional Master Plan.

The SWMCB does not have regulatory authority on behalf of its member counties, and previous editions of the Regional Master Plan therefore did not include any specific solid waste regulation strategies. However, with some of the available state and regional solid waste management regulatory tools not being fully utilized and a desire by SWMCB to expand some regulatory efforts throughout the Region, SWMCB opted to include regional and partnership strategies for regulation in the 2011 Regional Master Plan for the first time.

B. Regional Hauler Licensing

Established in 1995, the regional hauler licensing program was designed so the metropolitan counties can, through a collaborative effort, issue mixed municipal solid waste hauler collection and transportation licenses. The program provides for the issuance of one base license by the county in which the hauler is based and an operating license by each county in which a hauler operates. The base license provisions, including insurance requirements, fees, hauler application form and license year, are consistent throughout the Region. The SWMCB establishes the requirements for the application process and encourages uniform enforcement guidelines be carried out by the counties. However, the counties are the regulatory authorities responsible for licensing haulers and enforcing licensing requirements.

C. Hazardous Waste Licensing

Each metropolitan county licenses and inspects hazardous waste generators and facilities pursuant to hazardous waste ordinances. Because of the differences in population, priorities, and resources, the number of licenses issued and inspections conducted varies among the counties. For instance, some counties have adopted

minimal generator registration requirements and others require a full license for all generators. Similarly, some counties inspect all licensees and others have a risk-based system for determining which companies to inspect. Whenever possible, the metropolitan counties attempt to be consistent in application of licensing programs, as this helps avoid confusion for companies with locations in more than one county or that move from one county to another.

D. County Ordinances

Minn. Stat. §473.811 requires that each metropolitan county have ordinances that regulate solid and hazardous waste. Counties must license hazardous waste generators and both solid and hazardous waste collection and processing facilities. Solid and hazardous waste facilities that are covered by the ordinances must be in compliance with the requirements of the county ordinances, state rules and the Policy Plan. Therefore, county ordinances describe the licensing requirements and enforcement tools that may be used to obtain compliance.

Hazardous waste ordinances must embody and be consistent with state rules. When state rules are changed, counties must modify their ordinances accordingly and submit the changes to the State for approval within 120 days. Hazardous waste ordinances may be more stringent than state rules as long as they do not impede the implementation of state rules. The metropolitan counties have worked together through the SWMCB during the past twenty years to develop ordinances that are consistent with one another and with state rules. When state rules are changed, the metropolitan counties meet to discuss the changes and to coordinate ordinance modifications.

Note: For additional information regarding specific solid waste ordinances within each SWMCB member county, please consult the individual county Master Plans that are being submitted concurrently with the Regional Master Plan.

B. Regional Strategies

The SWMCB will:

1. Continue coordination of existing regulatory initiatives, such as the Very Small Quantity Generator (VSQG) database and health care and hazardous waste project;
2. Explore the expansion of regional hauler licensing to include non-MSW, recycling, and organics collection services; and
3. Evaluate each county's regulatory tools and identify opportunities for regional consistency in application that results in solid waste being managed at the highest level possible on the solid waste management hierarchy.

In partnership with the MPCA, the SWMCB will:

4. Support full MPCA enforcement of existing statutes that include processing (Minn. Stat. §473.848) and public entities law;
5. Identify state and regional solid waste priorities that focus future regulatory efforts;
6. Continue coordinating enforcement actions so as to maximize state and local resources; and
7. Support increased state efforts to improve recycling, organics recovery and processing through strategies such as disposal bans or generator requirements when Policy Plan objectives are not being met using currently available regulatory tools.

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Regional Strategies

Communications and Outreach

A. Introduction

The SWMCB has coordinated communications and outreach initiatives to enhance and complement county and regional programs and regulatory efforts since the creation of the SWMCB in 1991. The communications and outreach efforts seek to raise awareness and change behavior among residential and non-residential waste generators in the Region so that solid and hazardous waste is managed in ways that are consistent with county and regional plans. The SWMCB's communication and outreach efforts are designed to complement county efforts. All communication efforts are aligned with the solid waste management hierarchy, which emphasizes source and toxicity reduction, recycling, organics and resource recovery over sending waste to landfills.

To raise awareness and encourage behavior change, the SWMCB's communications and outreach efforts focus on developing and delivering consistent messages and educational materials using a variety of tools and media. Messages and materials are disseminated through regional partnerships, which are an important way to leverage resources and effectively reach a wide variety of audiences. Ultimately, the SWMCB's communications and outreach efforts will continue to empower residential and non-residential waste generators to make informed decisions about source and toxicity reduction, recycling, composting and resource recovery over sending waste to landfills.

B. Regional Strategies

The SWMCB will:

1. Seek new and strengthen current partnerships with public entities, community organizations, businesses, the waste industry and others to develop and deliver communication and outreach programs;
2. Update and support RethinkRecycling.com as a centralized source of information for waste generators in the Region;
3. Develop and disseminate consistent and effective messages that complement county efforts and empower residential, non-residential, and governmental waste generators to implement successful solid waste management programs;

4. Develop and implement regional outreach methods for solid waste-related messages. Outreach methods may include SWMCB-printed materials, print and television media, and social media and other forms of communication;
5. Provide educational, financial, and technical support to community-based organizations through programs such as Community POWER for the purposes of incorporating solid waste management best practices and education into community activities; and
6. Target a significant portion of the Region's communications and outreach efforts at non-residential recycling and organics recovery, currently the two solid waste policy issues of highest priority for the Region.

In Partnership with the MPCA, SWMCB will:

7. Work to integrate state, regional and local communications planning and tools in order to efficiently utilize public funds. SWMCB will provide opportunities for MPCA staff to participate in communication strategy planning and will participate in MPCA communications planning when invited. In addition, SWMCB will promote MPCA materials in the Region and encourage the MPCA to promote the use of SWMCB communications materials to statewide partners.

The City of Roseville and Ramsey County agree to the following work plan to increase recycling performance in 2012-2013.

While all elements of this work plan are important, the following overall categories should be considered high priorities for late 2012 through 2013 for all communities in Ramsey County:

- > *Improving communication to residents, including more consistency, increased frequency, a broader scope of topics, and core County messages.*
- > *Ensuring that every resident has recycling service, regardless of housing type.*
- > *Increasing public space recycling including, but not limited to, parks and right-of-ways.*
- > *Ensuring complete and accurate reporting to Ramsey County, and participating when appropriate with additional data collection.*
- > *Learning more about residential organics collection, in anticipation of having an organics program in place by 2016.*
- > *Expanding materials collected for which markets are now available, including expanded plastics collection where not already available, along with other items accepted in some programs but not others.*

CITY OF ROSEVILLE RECYCLING PERFORMANCE WORK PLAN

Administration	City Lead	Timeline	Progress
Secure accurate, reliable and timely reports, and participate in additional data collection if requested by the County (e.g., recycling participation rates).	Tim Pratt	Ongoing	
Participate in County ReTRAC/SCORE training.	Tim Pratt	12/2012 - 01/2013	
Ensure that Recycling Coordinator is engaged with the County through regularly scheduled Coordinator meetings, attendance at any mandatory meetings, reading e-newsletters, etc.	Tim Pratt	Ongoing	
Will incorporate a disaster emergency plan using waste hierarchy based on County plan.	Tim Pratt	2nd Q 2013	
Will consider potential ordinance for mandatory recycling of single family homes.	Tim Pratt	1st Q 2013	
Determine the best direction for the City recycling contract after the current contract expires 12/31/13. Key issues to explore include expanding plastics collection, targeting education, organics collection and opt-in collection for small commercial. Seek assistance from County consultant (Foth) as appropriate.	Tim Pratt	1st Q 2013	

Collection & Operations	City Lead	Timeline	Progress
Ensure public space recycling is available at all public properties (MN public entities statute §115A.151), including pairing each recycling container with a garbage container(s). a) Undertake field survey for all facilities b) Develop & implement process to educate City park users to recycle at their events through the reservation process.	Tim Pratt		
		April, 2013	
		1st Q 2013	
Expand materials collected for which markets are available, including plastic containers, tubs and lids.	Tim Pratt	During 2013	
Ensure that all mixed municipal solid waste (MSW) from City facilities is delivered to the RRT-Newport or other waste processing facility (per MN public entities statute §115A.471 & Ramsey Co. solid waste master plan). a) Check language in contract with trash hauler for City facilities b) Obtain letter from hauler annually, specific to City facilities, regarding where MSW was disposed in previous year & will be disposed in subsequent year	Tim Pratt		
		Nov. 30 each year	
		Nov. 30 each year	
Take advantage of opportunities to learn more about residential organics collection, in anticipation of having an organics program in place by 2016.	Tim Pratt	As opportunities arise	
Ensure recycling service is available to all residential properties, including multi-units and manufactured homes. a) Verify with recycling collector(s) that service is actually being provided for each property. b) Work with County staff & recycling collector as needed to provide multi-unit properties with "green bags," signage, & other educational materials.	Tim Pratt		
		1st Q 2013	
		Ongoing	
Apply for a Public Entity Innovation grant to assist residents in finding solutions to address bulky item disposal.	Tim Pratt	2nd Q 2013	
Explore potential contractual, funding & educational approaches for allowing opt-in curbside recycling collection for small businesses / organizations / institutions.	Tim Pratt	2nd Q 2013	

Education/Outreach	City Lead	Timeline	Progress
Meet all requirements on the SCORE Communication checklist, including contacting all residents at least twice per year with both print & electronic outreach tools, & incorporating specific items (e.g., 633-EASY, yard waste & HHW info., Rethink Recycling) into print & electronic outreach, education & promotion tools used by the City. a) Develop communications plan. b) Implement communications plan. c) Regularly review City website to update as needed & to ensure all core County messages are included.	Tim Pratt		
		1st Q 2013	
		Ongoing	
		Quarterly	
Include information in city newsletters to encourage recycling & other environmental practices.	Tim Pratt	Ongoing	
Work with recycling hauler(s) to develop & implement a plan for targeting communication to non- & low-performing participants.	Tim Pratt	3rd Q 2013	
Promote backyard composting.	Tim Pratt	2nd Q 2013	
AGREEMENT		Signature	

City of Roseville Manager:

City of Roseville Recycling Coordinator:

Ramsey County Environmental Health Director:

Ramsey County Environmental Health Educator:

Attached: County Resources

Direct requests for assistance can be made to Jean Buckley.

Progress reports will be submitted quarterly by Coordinator.

Tuesday September 6, 2011

SEARCH

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NEWS POLL

Which waste-conversion technology offers the most promise for commercial success?

- ☐ Anaerobic digestion.
- ☐ Gasification technologies.
- ☐ Pyrolysis.
- ☐ Fermentation/acid hydrolysis.
- ☐ Something else.
- ☐ I don't think any of these can succeed commercially.

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Recycling effort pits neighbor against neighbor

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By John Campanelli | WRN editor

Sept. 6 -- NASHVILLE, TENN. -- Like many communities, Brooklyn Park, Minn., saw a jump in recycling after it switched to single-stream collection.

That was in 2002, when the city's recycling totals rose more than 30% in one year, to almost 600 pounds per household per year.

But as the years passed, the Minneapolis suburb of 75,000 residents saw its recycling totals slide. By 2009, it was around 450 pounds per household per year, nearly at the levels of the days of source-separated recycling.

Brooklyn Park Recycling Director Dan Ruiz, known as "Dan the Recycling Man" around his city, knew he had to do something, and not just because he wanted to be green.

His department gets \$170,000 in county cash a year, and it comes with a string.

"Maintain or increase recycling pounds per household per year or lose your funding," Ruiz said during a session on increasing recycling at Wastecon last month.

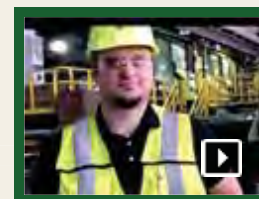
So Ruiz crafted a plan: Starting this past spring, he and volunteers went door-to-door educating residents about recycling. They handed out new containers and answered questions.

And they used a little Psychology 101.

Borrowing from Robert Cialdini's "Influence: The Psychology of Persuasion," Ruiz said he got the idea to pit neighbor against neighbor in a recycling competition.

"Who doesn't want to be better than the Joneses down the street?" said Ruiz.

He worked with his city's recycling collector, Waste Management Inc., to get data for each of the city's 20 collection routes/neighborhoods.



Waste & Recycling News senior reporter Jim Johnson spends some time with Pedro Da Paz, for an On the Job feature



Sobering news from BLS; Scrap metal workers arrested; Garbage truck stunts.

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2011 RECYCLING RANKING

Is your company one of the top recycling companies in the United States and Canada? If so, [please complete the following survey](#) to be included in the next ranking.

OPINION

- U.S. senator: Proper management of e-waste essential
- No harm in government looking at WM-Oakleaf deal
- Other voices: Cities need to buy back clean energy from landfills
- This week's cartoon

Starting earlier this summer, residents began receiving report cards, although Ruiz calls them "feedback reports." The statements tell them exactly how many pounds the average house recycled for the month and how that compared to other neighborhoods.

One resident might get a statement, complete with a star, that reads, "You recycled 15% more than your neighbors." Another might get one, without a star, that reads, "You recycled 35% less than your neighbors."

The psychology is not complicated.

"Everyone thinks that they're above average," said Ruiz. "If you find out that you're below average, your instinct is to improve it."

Early results have shown that to be true. After two months, recycling has ticked up in the neighborhoods that have received below-average report cards.

But something else has happened: Recycling rates have actually dropped in the neighborhoods that received stars on the data reports.

Ruiz isn't sure why it happened but he suspects that the neighborhoods might have become complacent after their "above average" marks.

So why didn't he move on to Psychology 102 and withhold the data to the best neighborhoods?

"I thought about that," he said, "after I saw the numbers."

Contact Waste & Recycling News Editor John Campanelli at jcampanelli@crain.com or 313-446-6767.

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by deanne toto

Quality Control

As single-stream collection continues to expand, processors and consumers of recyclables find that quality can remain an issue.

When single-stream recycling was gaining momentum as a collection method, it promised a number of efficiencies, including lower collection costs, more convenience for residents and higher landfill diversion rates. According to popular consensus, single-stream recycling has delivered on many of its promises. However, the quality of the recyclables recovered in this manner remains a topic of debate among processors and mill consumers.

The downturn in commodity markets experienced in late 2008 and early 2009 caused some critics to question the economics of single-stream recycling, including the Container Recycling Institute (CRI), Culver City, Calif. The CRI published a study in December 2009 that was authored by Clarissa Morawski, principal of CM Consulting, based in Ontario, Canada. The foreword to the study reads, "This new marketplace has

in effect tested the single-stream system. Those single-stream haulers and MRFs (material recovery facilities) who have not applied best practices have been riding the wave of rapid economic growth and unprecedented global scrap demand over the past decade."

Andy Ockenfels, president and CEO of City Carton Recycling, Iowa City, Iowa, a MRF operator, stresses the importance of quality regardless of the market. "While quality is key in a down market, we continue to push to make sure we can ship material in good times and in bad."

While markets have improved from early 2009, quality remains a concern for many consumers.

PLUSES AND MINUSES

FutureMark Paper, an Alsip, Ill.-based manufacturer of coated mechanical printing and writing papers made with up to 100 percent recycled content, takes

issue with single-stream fiber. In the October 2010 *Paper Recycling Supplement to Recycling Today*, company President and CEO Steve Silver says the quality of the paper collected through single-stream programs can sometimes be "terrible." He adds that after removing the contaminants, "5 to 10 percent of the material we're paying for isn't usable" and contributes an additional \$8 to \$10 per ton in cost on top of what the company is paying its suppliers for material.

According to FutureMark, dealing with out-throws causes the company manufacturing downtime and costs more than \$1 million per year in material loss, disposal costs and remediation.

While Silver says he is skeptical about the longevity of the single-stream method, it continues to grow. More than 160 single-stream MRFs operate today. And, according to the American Forest & Paper Association (AF&PA), Washington,



D.C., only 29 percent of the population with access to curbside recycling in 2005 was served by a single-stream collection program. That number grew to 50 percent by 2007.

The single-stream collection method benefits haulers in that it allows them to collect more material more efficiently using automated collection, larger bins and often times a single-compartment compaction truck. It also has been shown to increase the volume of recyclables recovered. For instance, Jerry Cifor, CFO of County Waste & Recycling, Clifton Park, N.Y., says the volume of recyclables increased by 24 percent since single-stream recycling was implemented in the company's service area, while the volume of garbage declined by 24 percent. County Waste is currently processing nearly 10,000 tons per month, Cifor says.

When County Waste, which serves 180,000 residents, moved to single-stream

collection, it also expanded the range of recyclables it accepts. Rather than accept only plastics Nos. 1 and 2, County Waste now accepts plastics Nos. 1 through 7 as well as metals beyond aluminum and steel cans, Cifor says.

"We have seen volumes increase by 50 to 300 percent in markets where we have introduced single stream," says Steve Dunn, region vice president of Houston-based Greenstar Recycling. "Customers respond quickly to the convenience of putting all recyclables into one bin."

Cifor says the move to single stream has been popular with County Waste customers. "I think our customers love the service, and we've picked up customers because of the new service," he says. "I can't think of a material negative, other than it cost us a ton of money to [convert to] it."

County Waste spent roughly \$12 million on its new single-stream MRF and

also invested \$29 million in new collection trucks and containers, Cifor says. The company is expecting a return on investment cycle of five to six years.

The question of who bears the cost burden of turning single-stream material into usable secondary commodities also can be a contentious issue among haulers, processors and consumers.

THE TRUE COST

"There are many advantages to single-stream collection," says Marcy Thompson, division vice president and general manager, Sonoco Recycling Inc., Hartsville, S.C. "The equipment needed to haul single-stream material is more automated, using less people, meaning haulers can pick up more material in relatively less time."

She continues, "In contrast, it takes more equipment to process this same material. With the constant improve-



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ments being made on the equipment side, processors also have to stay ahead of the curve, looking for the most recent technology and ensuring capital for process and equipment improvements as well as general preventive maintenance.”

In Thompson’s opinion, processors bear most of the financial burden related to single-stream recycling. “They are the ones to right-size equipment and outfit their facilities with the new technology and equipment needed to compete in the marketplace.”

Ockenfels says the material stream has changed in conjunction with the growth in single-stream recycling. Namely, City Carton is seeing less ONP (old newspapers) and more mixed paper. “It used to be that ONP was over 50 percent,” he says. “Now it is well below 50 percent.” Office paper, however, has been increasing, he says, as has shredded paper. With the company’s automated sorting system,

shredded paper can end up with the rejected items, Ockenfels says, necessitating hand sorting.

Dunn says single-stream processing equipment has evolved since it was first introduced, and that process continues today. “The addition of multiple screens and, especially, the refinement and placement of those screens, along with the inclusion of optical sorters for plastics and paper, have made a significant difference in the ability to sort single-stream materials and allow better quality than earlier systems that relied more heavily on hand sorting or limited screens.”

Matthew Coz, vice president of growth, commodity sales and marketing for Waste Management, Houston, also finds that the inbound quality of recyclables had declined as more materials enter the diversion stream through single-stream collection, though diversion increases by 50 percent on average. “With more and

varied materials entering the diversion stream, advances in sorting technologies have not kept pace,” he says. “As a result, we’ve seen some incremental declines in the quality of outbound commodities.”

According to Thompson, “As more material is introduced into recycling programs, the separation becomes even more important, but cost of separation also increases.” She points out that OCC (old corrugated containers) screens were not needed in systems designed just three years ago. “Current technology can be very expensive but it is necessary to remain competitive.”

Jonathan Sloan, president of Canusa-Hershman Recycling, Baltimore, says single-stream recycling necessitates significant investment in processing equipment. “The reality is that to properly and efficiently separate this material into salable commodities, you need a lot of good equipment,” he says. “It is a big capital in-



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vestment, whether you are processing 15 tons or 50 tons per hour.”

REDUCING RESIDUE

Even with the latest sorting equipment, single-stream MRFs can still experience higher residue rates related to incoming materials.

“The residue depends on the quality of what is put into the recycling bin,” Dunn says. “In Des Moines, for instance, we have worked with our municipal partners to make sure that the local customers are very well educated about what should go into the recycle bin. We launched our single-stream system there earlier in [2010] and the residue rate is very low (3 to 4 percent)—reflecting the strong education component of the program.”

Sonoco’s Thompson says that for the past five years, the company has been operating with a contamination rate of less than 3 percent. “Now that curbside recy-

cling programs are moving toward bigger roll carts (as opposed to smaller bins) and enhanced programs, we have seen that rate increase to about 8 percent or 9 percent and we expect it to continue to rise along with the increased volume.”

Coz says Waste Management has reduced residue rates and operational costs at its single-stream MRFs by focusing on advances in sorting technologies and improving inbound material quality. Educational campaigns have played a critical role in the latter area.

“Research continues to suggest that educational campaigns in support of recycling programs can have an effective impact on the quality of the inbound stream,” Coz says. “Consumers and communities can improve the inbound quality by learning what belongs in the cart or box and what doesn’t. In those instances, our single-stream plants can outperform some of our dual-stream plants.”

Dunn says single-stream MRFs can achieve material quality that rivals dual-stream. He adds, “That said, residue content does usually go up with single stream on a percentage basis, but the overall recovery increases for weight more than make up for the increase in residue. Also, remember that the single-stream system is not ‘creating’ this additional residue in the recycling program. It is really misplaced material that would have been in the garbage stream anyway.” 

The author is managing editor of *Recycling Today* and can be contacted at dtoto@gie.net.



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Waste Age

Single-stream Versus Dual Stream Recycling Management: Do the benefits justify the means?

Steven A. Byars | *Waste Age*

Oct. 17, 2012

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COMMENTS 8

Single-stream versus dual stream recycling management: Do the benefits justify the means?

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Disclaimer: This study was conducted using municipal solid waste data from between 1996 and 2009 (the most recent data available at the time of the study). All facts and figures are correct in relation to the data used.

Florida wants to increase its recycling rate to 75 percent by the year 2020 and single-stream recycling may be one way to help reach that goal. Although there are many supporters and detractors for single-stream recycling, a closer look at how it has affected Florida since its inception in 2005 may help gauge the true results. By performing a quantitative analysis on the benefits of single stream and its effect on recycling rates and contamination rates in Florida, and by comparing those rates to counties that still maintain dual-stream recycling systems and contamination rates of the host counties of the end user mills, a better understanding of the true effects of single stream can be realized.

The research analyzed whether single-stream recycling in the state of Florida was more beneficial, environmentally and economically, than dual stream recycling. It attempted to determine whether single-stream recycling encouraged residents to increase their recycling participation and, if so, if the size of the bin, the freedom from sorting or the ability to include more materials were responsible for the potential increase. In addition, the contamination level of recyclables entering single-stream processing facilities and end-user mills was compared to that entering dual-stream processing facilities to determine if more or less contamination was being sent to processing facilities or end-user mills as a result of the conversion to single stream.

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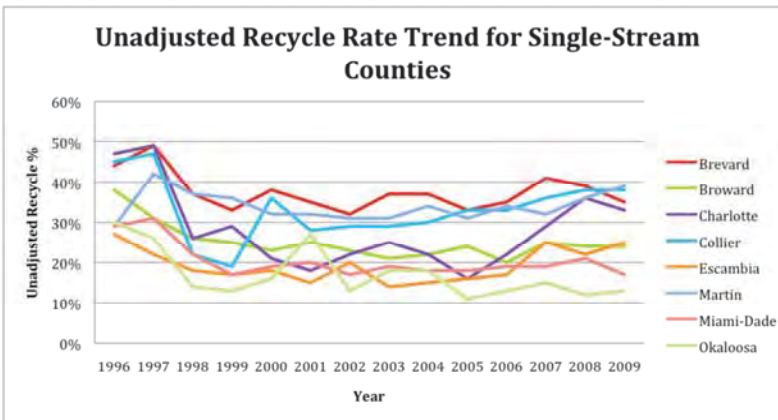
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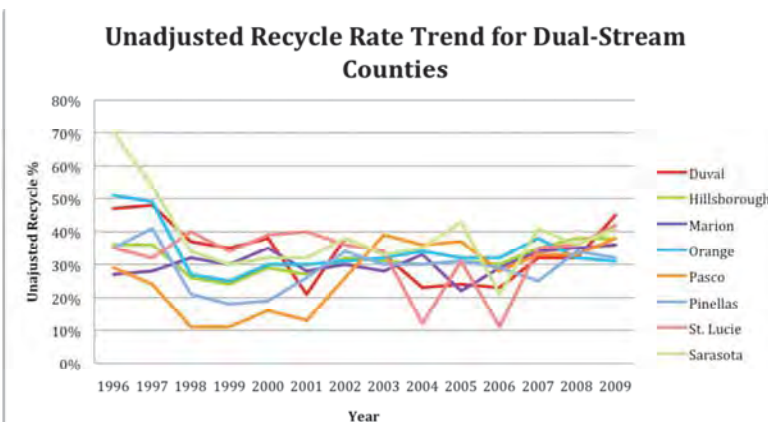
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A quantitative research approach was used that compared several years of Department of Environmental Protection data related to municipal solid waste handling in the state of Florida, specifically data from 1996 to 2009. Comparisons of the data between counties that had converted to single stream and counties that still operated dual-stream were carried out to identify possible trends in recycling rates and contamination rates. The specific counties that converted to single stream were Brevard, Broward, Charlotte, Collier, Escambia, Martin, Miami-Dade and Okaloosa. Dual-stream counties were Duval, Hillsborough, Marion, Orange, Pasco, Pinellas, St. Lucie and Sarasota. Figure 1 illustrates the unadjusted recycle rate trend for the eight single-stream counties while Figure 2 shows the unadjusted recycle rate trend for the eight dual-stream counties.

The trends for counties that still use dual-stream recycling methods closely resemble their single-stream counterparts. Samplings of eight dual-stream counties that have similar populations and collect similar amounts of municipal solid waste (MSW) show that they are trending between 30 and 40 percent (Figure 2) while single-stream counties are trending between 13 and 39 percent (Figure 1). There also seems to be very little fluctuation of the rates from year to year. The difference, however, is that the highest recyclable collection rate for a county that uses single-stream recycling is Martin County at 39 percent while the highest recyclable collection rate for a county that uses dual-stream recycling is Duval County at 45 percent.



In addition, Hillsborough, Pasco, St. Lucie, and Sarasota counties all have recycling rates above 38 percent. This seems to challenge the conventional thinking that single-stream recycling brings in more material since the three counties with the highest percentages of recyclable material all operate under a dual-stream system and use 14-gallon bins.

A look at the rates to determine if the size of the bin had any influence on the recycling increases or decreases is inconclusive as Broward, Charlotte, Collier, and Escambia counties all use the 64-gallon bins and experienced increases while Miami-Dade County, which also uses the 64-gallon bins, experienced a decrease. In addition, Brevard and Martin counties experienced increases with smaller bins while Okaloosa County experienced a decrease. The two counties experiencing the greatest increase, Collier with



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an eight-point swing and Martin with five, use different sized bins, 64 gallon and 28 gallon, respectively. A larger sample size taken over at least five more years may be necessary in order to quantify a correlation between increased recycling rates and bin sizes.

To determine if single-stream recycling significantly reduced the amount of material going to the landfill, comparisons between counties that converted to single stream were made by looking at the recycling and contamination trends before and after the counties converted to single stream.

Although a decrease in the amount of material going to the landfill should be positive, the landfill rate trend for eight single-stream counties indicates that the only county that managed to significantly reduce its landfill percentage was Martin County; Brevard, Broward, Charlotte, Collier, Escambia and Miami-Dade counties all saw reductions in their landfill percentage by at least two percentage points but still remain basically flat, while Okaloosa County managed to gain two percentage points. A closer look at the trend from 1996 to 2009 shows that six out of the eight counties are landfilling more material in 2009 than they did in 1996.

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July 26th 2005 Public Works Meeting Minutes:

Recycling Report

Tim Pratt, Recycling Coordinator, presented a draft of the recycling report and went through the process that provided data for the report.

Member Fischer asked why there was only one contrast area, which was for single-stream recycling, and none for the other option. Pratt said that single-stream was the hot topic right now and they were looking for more data in that area. Member Fischer asked if Ramsey County contracts for single-stream. Pratt said the County doesn't contract for recycling at all, cities do.

Member Willenbring asked what the City's role is in the whole recycling program. Pratt said it depends on the system that is used. Typically, in two-stream programs the City provides the bins; with a single-stream program, the vendor would provide the bins and charge the City. Basically, the costs and aspects of the program are dependent on the contract that is agreed upon.

Member Fischer asked what the process will be for choosing which program to go with. Pratt said that's what he's asking of the Commission and would like some directive by next month.

Member Willenbring said he was impressed with all the data that was collected.

Member Shiely asked if the City gets funding regardless of whether the street is under City or County jurisdiction. Pratt said the County doesn't stipulate how the funding is used in that way.

Member Fischer said he liked the report, but asked if some rough costs could be presented for each program so they could come to a better recommendation. Pratt said that a Request for Proposal could ask for more than one option if that's what they decide. He said he could give them the proposed figures from the last bid three years ago: the lowest for two-stream was \$1.95 per household per month fixed for three years; the lowest for weekly was \$2.15 per household per month fixed; and the lowest for single-stream was \$2.49 per household with a 3%, or cost of living increase, per year. The vendor later offered a \$2.32 rate, but that still included the 3% per year increase.

Member Shiely asked if vendors could be brought in to make presentations to the Commission. Pratt said that was a Commission decision. Member Willenbring said he didn't think it was necessary. Chair Wilke said there would be no need since the differences are clearly spelled out in the report. Member Fischer said he didn't think it was necessary.

Member Willenbring asked if everyone is charged a recycling fee whether they use it or not. Pratt said yes, and that was a Council decision.

Gary Boyum and Jennefer Klennert from Waste Management spoke in support of single-stream recycling and passed out brochures on the program they offer.

John Kysylczyn, 3083 Victoria, spoke against the recycling report. He said the information is too broad to make any valid comparisons between single- and double-stream programs. He then went on to list information he thought should have been included in the report. He expressed concern about the proposal

review committee.

Member Willenbring asked what Commission members should do before the next meeting regarding this subject. Schwartz asked Tim Pratt if the next step for the Council on August 8th was a draft Request for Proposal. Pratt said they could go to that step if that was the recommendation. Schwartz said in that case comments and recommendations from Commission members should be made within the next couple of weeks so they can be presented to the Council. Greg Schroeder, City Councilmember, stepped up and said he didn't think this was a fair request. They weren't giving Tim enough direction on what they wanted. Schwartz said the Council would make the ultimate decision on how it will be bid. He suggested they wait for Council direction on what they expect in terms of Commission involvement.

Member Fischer asked what decision the Council will be making on August 8th. Pratt said that he would be presenting this same draft report to them and that Schroeder had already asked for a month to review the information. Pratt would then return to Council in another month for direction. Member Fischer said then they would also have a month to consider the information and make comments. Schwartz and Pratt agreed.

Member Marasteanu stated that he thinks the single-stream program is the way to go. He said the report was full of good information and that it is obvious to him that single-stream is the way to go.

Chair Wilke said that based on the report he thinks it's pretty obvious that residents want a single-stream program. Chair Wilke moved to recommend to Council that they draft a Request for Proposal for a single-stream program. Member Willenbring seconded.

Member Willenbring asked if they really need to see an RFP. The Council will be making the actual decision. He said the RFP is just paperwork staff has been filling out for years and bringing it to the Commission for approval is a waste of everyone's time.

Member Shiely said he'd be very cautious about not going through the bidding process when we're spending \$250,000. Chair Wilke said he thinks that's a decision staff has to make.

Chair Wilke said he thinks they should make a recommendation to Council that the Commission support a single-stream RFP.

Member Fischer pointed out that even though the report shows 92.5% liked single-stream, less than half of them were willing to pay more to get it. The report seems to show that whatever program residents were on, that's what they preferred. He said he'd like to see what people would choose if they were given all the options.

Chair Wilke said he was in a single-stream pilot area, and the collection seemed to take less than half the time.

Member Fischer said he'd like to make a recommendation to Council for an RFP that included several different options.

John Kysylyczyn pointed out that the price between single- and double-stream is

\$1.44 per household per year.

Gary Boyum, Waste Management, explained how requesting an RFP would differ from continuing the current contract. The RFP process could result in a higher fee.

Chair Wilke restated the motion that they recommend that the Council goes with an RFP for single-sort recycling. Member Willenbring had previously seconded.

Ayes: 4

Nays: 1

January 30, 2006

TO: Municipal Recycling Coordinators in Ramsey County
Other Interested Parties

FROM: Norm Schiferl, Ramsey County Environmental Health
Tim Pratt, City of Roseville
Mary Chamberlain, R.W. Beck, Inc.
Robert Craggs, R.W. Beck, Inc.
Dan Krivit, Dan Krivit and Associates

Attached is the Executive Summary for the City of Roseville's Recycling Pilot Program. This document is the result of a collaborative effort between the City of Roseville, Ramsey County, and the project team of R. W. Beck, Inc. and Dan Krivit and Associates (consultants for Ramsey County). The link for the full summary report is: <http://www.ci.roseville.mn.us/info/recycle/report.htm>

The City's pilot study was unique in that it not only compared single-stream to dual-stream recyclable materials collection methods, it also compared other program variables to the City's current dual-stream collection program. The comparisons between collection methods included data collected from recyclable materials composition sorting events. Actual materials collected from each pilot route were sampled and sorted (before and during the pilot) to offer the most accurate depiction of residents' behavior when changes were made to their recycling program.

We hope this report will benefit other municipalities, not only in Ramsey County, but also throughout the Twin Cities metropolitan area and elsewhere in Minnesota. As more and more communities are faced with the decision of making changes to their recyclable materials collection programs, this study (along with others referenced in this report) may provide information and insight to the possible benefits and drawbacks of changing collection methods.

If you have any questions, please feel free to contact:

Norm Schiferl
(651) 773-4450
norm.schiferl@co.ramsey.mn.us

Tim Pratt
(651) 792-7027
tim.pratt@ci.roseville.mn.us



Residential Solid Waste and Recycling Citizen Advisory Committee Report

Executive Summary

May 2002

Major Findings

○ Since the 1991 report there have been many developments in the garbage and recycling industries. Those changes include:

🗑 The number of Roseville residents recycling and the amount they recycle have stayed about the same since 1992

🗑 Every Minnesotan is making more garbage (just over a ton a year) despite efforts at waste reduction, reuse and recycling

🗑 Garbage haulers are no longer required to take our trash to a facility that processes it into fuel for electricity plants

🗑 More of our garbage is being sent to out of state landfills

🗑 Consolidations in the garbage hauling industry resulting in fewer haulers serving Roseville residents

○ Residents surveyed are pleased with their garbage service. Sixty-three percent rated it excellent and 33% rated it good. Seventy-nine percent said the rates seem fair for the service provided; 16% said the rates were too high for the service provided.

○ Residents surveyed said they are concerned about where their garbage goes and would prefer garbage haulers take trash to a resource recovery facility instead of a landfill.



Garbage being processed at a Resource Recovery Facility.

○ Residents surveyed said the most important part of a garbage collection system would be keeping it low cost.

○ Among the improvements in the recycling program residents would like are: to accept more materials and to improve the bin system by either making them bigger, covered or wheeled, or to provide more bins.

○ Roseville is not meeting goals set by the City Council to reduce waste and increase recycling.

○ Roseville is not meeting the State's hierarchy that calls for waste reduction and reuse, recycling, composting, using resource recovery and avoiding using landfills to dispose of our trash.

○ Only about a third of Roseville apartment, condo and townhome residents can recycle where they live.

- Roseville charges apartment buildings, condos and townhomes a recycling fee, but doesn't provide recycling service to them.
- Roseville's population is aging. Since 1990, Roseville had nearly four times the percentage growth in residents over age 75 as Ramsey County and Metro areas.
- Roseville has traditionally designed programs to meet the needs of elderly residents. For instance garbage and recycling haulers are required to offer walk up service. And the City of Roseville offers a senior discount on water bills; more than 25% of water accounts receive the senior discount.
- Roseville residents are paying more for garbage service than our neighbors in cities that contract for service.
- A 1999 study shows that 35% of our garbage by weight is paper and 26% is organic material such as food scraps much of which could be recycled or composted.
- A few Minnesota cities are using or testing organics collection and composting programs to help residents reduce their garbage.
- In the next five years millions of computers and television sets will become obsolete nationwide. They contain lead and other hazardous materials, however there is no organized program to collect old electronic items and keep them out of our trash.
- Seventy-eight percent of homeowners and 70% of multi-unit complex residents surveyed said they would be very likely or somewhat likely to take items to a City-organized clean up day.
- City staff says illegal dumping is not a problem on City land. However they say illegal storage of appliances, furniture, brush and other items on personal property is a significant problem.

Key Recommendations

- Offer a Citywide clean up day run by a company or companies in which residents will be charged for disposal and Roseville subsidizes 1/3 of the disposal cost.
- Expand and enhance communication to residents about the proper ways to dispose of electronics, appliances, brush, yard waste and other items that cannot or should not be put in your trash.
- Require garbage haulers to annually give their customers a complete list of their disposal services and rates.
- Expand Roseville's recycling program to include all apartment buildings, condos and townhomes.
- Explore ways to increase the number of Roseville homeowners who recycle and increase the amount they recycle.
- Meet the City's and State's environmental goals by designing a garbage system that uses environmentally preferred management of waste. Of the methods studied by the Committee, an organized collection system run by a consortium of private haulers appears to give the City the best, and perhaps only, means to meet the City's and State's environmental goals and balance citizen interests and concerns.

Report Summary

Everyone generates waste. By waste we mean things that we have, that we no longer wish to have. Perhaps it's an old piece of furniture, yesterday's newspaper or a candy bar wrapper. Sometimes we give those things away, sometimes we recycle them and sometimes we throw them in the garbage. Those are some, but not all, of the parts of the waste system.

We all use the waste system, although most of us take it for granted. Our garbage and recycling are often picked up when we're not home and taken someplace we don't see. But the choices we make, either explicitly or by default, impact lives and livelihoods, the natural environment and the business environment.

The City Council adopted a set of environmental goals in 1992. The goals were based on recommendations in the Vista 2000 report. The environmental goals adopted by the Council are:

- 🗑️ Identify and solve local pollution problems through clean up, mitigation and prevention.
- 🗑️ Continue the emphasis on waste reduction and the improvement of the community's recycling efforts.
- 🗑️ Continue the emphasis on strong programs which develop environmental awareness in all of our citizenry.

In June 2001 the Roseville City Council established a Residential Solid Waste and Recycling Citizens Advisory Committee to review Roseville's practices and policies on garbage and recycling established following a 1991 citizens report, study alternatives and make recommendations.

Committee members spent 10 months hearing presentations from officials with the State,

Ramsey County and other Minnesota cities. We conducted a survey of homeowners and another of apartment, townhome and condo residents; conducted focus groups with residents, apartment owners and managers, and garbage haulers; conducted a public workshop; and took written and phone comments.

Members also toured the Resource Recovery Facility, the Household Hazardous Waste collection site, Waste Management's single stream recycling facility and other cities' clean up day programs.

Committee members found most residents are glad that their trash and recycling are picked up in a timely fashion and taken away. Residents surveyed are pleased with their garbage service. At the same time they are concerned about where their garbage goes for disposal.

At the time of the last report in 1991, Ramsey County required all garbage collected go to the Resource Recovery Facility in Newport, Minnesota. But a 1994 U.S. Supreme Court decision declared garbage hauling to be interstate commerce and the County's requirement was made moot.

Garbage haulers told the committee they now make decisions about where to take our garbage based primarily on cost.



It costs more to process waste at a resource recovery facility than to dispose of it in a landfill. As a result, a growing proportion of Minnesota garbage is being taken to landfills in other states; landfills often owned by the largest garbage haulers.

Meanwhile Roseville is not meeting goals set by the City Council to reduce waste and increase recycling. Each Minnesotan produces more than a ton of trash a year up 23% since 1993. And recycling participation rates and the amount collected have shown no pattern of consistent growth since 1992 (see graphs at right).

Using the knowledge gained from our activities, Committee members determined what we saw as the elements of an effective solid waste and recycling system and then ranked them in order of importance (see detailed list in Appendix A).

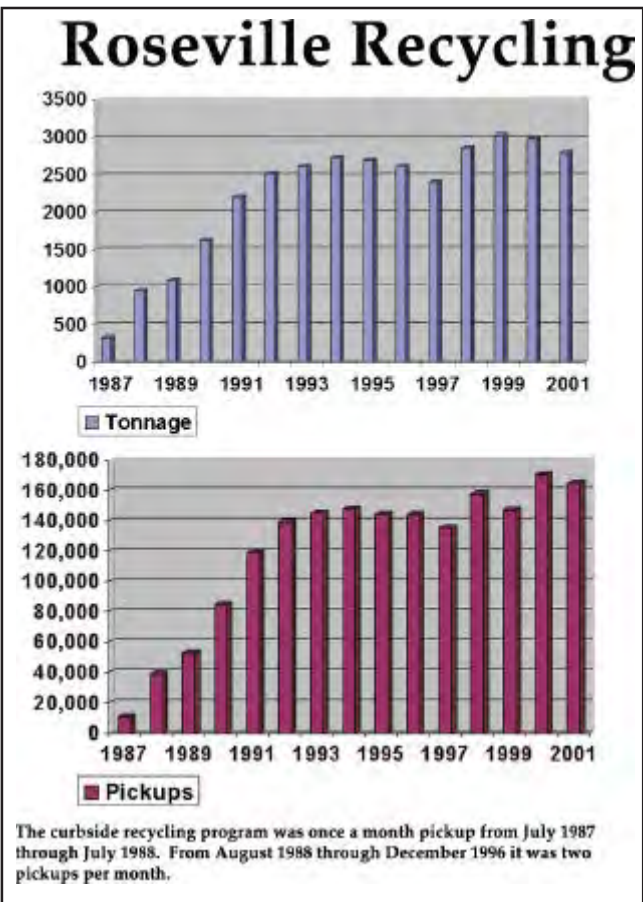
What are the elements of an effective solid waste and recycling system?

<u>Rank</u>	<u>Element</u>
1	Environmentally preferred management of waste.
2	Reasonable cost
2 (tie)	Good Customer Service
4	Education
5	Simple and Convenient
5 (tie)	Access to Service
7	Customer Choice
8	Expanded Opportunities for Disposal of Difficult Items
9	Reduce Traffic

Committee members used the City Council's environmental goals as well as their list of elements of an effective solid waste and recycling system and their knowledge of solid waste and recycling policies and programs as they deliberated various options that could be incorporated into Roseville's recycling and garbage systems.

Clean Up Day

Cities that run Clean up days organize them as an annual event residents can plan on to dispose of items that typically cannot be put in with their regular trash such as appliances,



furniture and brush.

According to the Committee's 2002 Roseville resident survey there appears to be significant interest in holding a clean up day in Roseville. Seventy-eight percent of homeowners and 70% of multi-unit complex residents said they would be very likely or somewhat likely to take items to a clean up day.

Recommendations:

The committee recommends Roseville re-institute an annual clean up day run by a private company in which the City pays one-third of the disposal cost (approximately \$12,000 a year). The committee also recommends the clean up day have a reuse area where residents can swap reusable items, and have electronics collection where the company guarantees the products will be dismantled and recycled in the United States.

Bulky Items

Recommendation:

The committee believes residents should be fully informed of the need for proper disposal of difficult items and of all the public and private programs to help them recycle and dispose of these items. To help inform residents, the committee recommends Roseville change its licensing for garbage haulers to require they annually inform residents of all the haulers waste services and the rates for those services.

Electronics

Recommendations:

Include in a Citywide clean up day and area for electronics drop off. Require the vendor guarantee the electronics material it receives remains in the U.S. for processing and/or disposal.

Encourage the Minnesota Office of Environmental Assistance to promote electronics recycling programs and support the MOEA's efforts at product stewardship.

Garbage

While Roseville contracts for recycling service, residents contract individually for garbage service.

Current System

Roseville homeowners contract with any of eight companies licensed by the

City to remove their garbage. Homeowners may change haulers as they wish and haulers are free to recruit customers as they wish. This system is called Open Collection.

Although the system is not completely free of



regulation by Roseville. Following the 1991 report, the City was divided into five zones each with its own day of the week for pickup of garbage and recycling. The City also has a set of service standards required for licensing that include offering separate pickup of yard waste and brush, and offering walk up service for which haulers can charge extra. There is, however, no monitoring for compliance.

Roseville residents surveyed are generally pleased with their garbage service. Sixty-three percent rated it excellent and 33% rated it good. Seventy-nine percent said the rates seem fair for the service provided; 16% said the rates were too high for the service provided. Focus group members said they were pleased that their garbage hauler picked up their trash and took it away so that they didn't have to think about it anymore.

But that didn't stop focus group members and survey participants from wondering what happened to their trash. Thirty-two percent of residents surveyed said they were very concerned where their garbage goes, 48% were somewhat concerned and 20% were not very concerned. Ninety percent said they would prefer their garbage goes to a resource recovery facility where it is turned into fuel for an electricity generating plant instead of going to a landfill.

State Hierarchy

The State agrees that it would rather see garbage go to a resource recovery facility. In 1980 the Minnesota Legislature established an order of preference for managing waste in order to protect the state's environment and public health. This preferential order is:

- ♻ Reduction and Reuse
- ♻ Recycling
- ♻ Yard and Food Waste Composting
- ♻ Resource Recovery
- ♻ Landfilling with methane collection
- ♻ Landfilling with no methane collection

Roseville's environmental goals to decrease waste and increase recycling fit well into the State's hierarchy. However this waste management order of preference is not being met.

Organized Collection

Some of our neighboring cities use a system of organized collection to meet environmental goals and the needs of residents.

Cities contract for service on behalf of residents with either one hauler as is done in North St. Paul and or a group of haulers as is done in Little Canada and Vadnais Heights.

Cities do this for a number of reasons including lowering costs to residents, lessening truck traffic on city streets, designating a disposal facility for the garbage in order to meet environmental goals, setting enforceable customer service standards and expanding the number of services available to residents.

Some committee members were surprised to learn that Roseville's open hauling system in which garbage companies compete against each other for customers does not offer the lowest rates.

Residents in cities with organized collection pay \$3.25 to \$5.75 a month less than Roseville residents for garbage and recycling service.

Recommendation:

Committee members unanimously recommend a garbage system that meets the City's environmental goals and the members' top priority of environmentally preferred management of waste. That system should also follow the State hierarchy. Of the methods studied by the Committee, an organized collection system run by private haulers appears to give the City the best, and perhaps only, means to meet the City's and State's environmental goals and balance citizen interests and concerns.

The majority of Committee members believe the best way to achieve environmentally preferred management of waste is through a contract with a consortium consisting of all the current haulers in Roseville (as was done in Vadnais Heights and Little Canada). These consortiums typically divide the cities into zones with one hauler assigned to each zone. However, Roseville may require more than one hauler per zone in order to preserve customer choice. Such service may cost residents more than a single hauler per zone system.

That contract is the only way where the City can specify that waste be managed using what is currently the environmentally preferred waste method: a resource recovery facility.

Additionally, the Committee strongly believes the City should monitor developments by the State, County and private sector to determine if a future alternative might better meet the City's and State's environmental goals and balance citizen interests and concerns.

Furthermore, the Committee believes a waste management system consisting of a consortium of current private waste haulers in collaboration with the City could also provide the following benefits to Roseville residents:

- Negotiated lower rates to customers (the top priority of the majority of residents surveyed – 53%)
- Preserve customer choice (the second highest priority of residents surveyed – 40%)
- Limited truck traffic that reduces wear and tear on streets, thus reducing or delaying property tax assessments for road maintenance or replacement
- Limited truck traffic that reduces air pollution, noise pollution and improves

or enhances neighborhood safety and appearance

- Strong performance and incentive-based contract provisions that would guarantee a high level of customer service
- Provide residents with clear, annual delineation of haulers' services and rates
- Expand and enhance residents' knowledge about the full range of public and private services and costs for disposal of difficult items

The Committee recognizes that there are Roseville residents who would not want the City Council to restrict their ability to choose a garbage hauler, and that there are concerns about how government involvement with the consortium of haulers might impact cost, service and small haulers' viability. The Committee understands those concerns and believes a City contract with a consortium of all the current haulers in Roseville will preserve market share for small haulers, and allow the City to set strong performance and incentive-based contract provisions that would guarantee a high level of customer service while meeting residents expressed desires for lower rates and environmentally preferred management of their waste.

Household Hazardous Waste

Ramsey County offers a free Household Hazardous Waste Collection program. There is a year round drop off site in St. Paul; Roseville hosts



Ramsey County's seasonal HHW site in Roseville.

a seasonal site on Kent Street just east of the intersection of Larpenteur and Dale.

Recommendation:

The committee believes the City and Ramsey County should do even more to educate residents about Household Hazardous Waste and proper disposal of HHW.

Leaf Pickup Program

Minnesota banned the burning of leaves and other yard waste effective January 1, 1971. In response to the ban, Roseville began curbside collection of leaves.



Roseville originally offered the leaf pickup program at no additional cost to residents. The City began charging a small fee in 1997 and participation dropped. However use has been growing every year since then.

Meanwhile the leaf pickup program has allowed Roseville to avoid paying to clean out catch basins and reduce the amount spent on stormwater pond cleanup.

Recommendation:

The committee believes this is a valuable program that more residents will use as Roseville's population ages and recommend it be continued. The committee believes staff should expand and enhance education to residents about the benefits of proper disposal of leaves.

Recycling

Roseville's participation rate of 65% is one of the highest in the state. But to make the program better, members believe the system

should be more convenient.

Multi-family Complexes

Roseville is not providing recycling service to most apartment, condo and townhome residents. Owners can contract with a private company if they wish, but only about a third do. Roseville has traditionally treated apartments, condos and townhomes differently than houses. But the State and Ramsey County include these multi-family complexes in their recycling requirements for cities. Additionally Roseville has been charging multi-family complex owners the City's recycling fee while not providing any service.

Recommendation:

Committee members believe the City should meet its goal to improve recycling efforts in Roseville by including all apartment, condo and townhome complexes in the City's program. To ease the transition the committee suggests this expansion be phased in adding condos and townhomes first with apartments to follow. And that complexes not be charged until they receive service.

Residential Curbside Recycling

Committee members found two main ways to do that based on resident needs: collect recycling more often or offer better bins.

Residents surveyed asked that bins be larger, wheeled, covered or just more of the current bins.

An intriguing program of putting all recycling into a single, wheeled cart is just starting here in Minnesota. While the program shows great potential, there are some significant drawbacks



that must be overcome. Single stream recycling processing has a higher rate of material that is damaged and can't be recycled (called residual). This can result in less material that is actually recycled into new paper, cans or jars even though more material may be collected.

Recommendation

The committee believes Roseville should do all it can to meet its environmental goal to improve the City's recycling efforts. However the committee could not reach a consensus whether the City should continue with the current system while expanding and enhancing public education campaigns, switch to every week collection or should proceed with single stream recycling collection. A list of the pros and cons of each system is included in the full report and Appendix B. Members wish to leave it to the Council or a future committee to decide.

Yard Waste

Minnesota banned putting yard waste in with your garbage effective January 1, 1990.

In response to the ban Roseville required all licensed garbage haulers to offer separate yard waste and/or brush collection.

Most Roseville residents surveyed mulch their grass and don't have to dispose of it. Twenty percent compost yard waste in their back yard, 20% arrange a special pickup with their garbage hauler and 14% take it to a free County compost site.

Recommendation:

This system is working well and the committee recommends the City continue requiring garbage haulers offer yard waste pickup, while enhancing and expanding education campaigns to residents about the benefits of low maintenance lawn care, mulching and composting.

Brush

There are no public drop off sites for brush in Roseville.

Thus, most residents surveyed arrange a special pick up with their

garbage hauler. Residents split almost 50/50 on whether they would use a public brush drop off site.



Recommendation:

The committee recommends Roseville offer brush drop off as part of an annual clean up day. In addition the City should expand and enhance education campaigns to residents about what to do with brush during other times of the year as well as require haulers to annually inform residents about services and rates as was mentioned earlier.

Organics

Some cities are starting or testing programs for residents to separate organic material from their trash so that it can be composted.

An example is the City of Hutchinson that operates a curbside organics collection program. Each participating household is given a 90 gallon wheeled organics cart similar to a trash cart and special kitchen waste compostable bags. Residents can put in food waste; compostable cardboard such as pizza and freezer boxes; paper products such as paper plates, napkins and paper towels along with yard waste. A Food Waste Recovery truck picks up the organics and hauls them to the City run compost facility.

The finished compost is a quality product that is then sold to offset part of the cost of the program.

Hutchinson runs an actively used organics collection program. Wayzata and Burnsville are currently conducting pilot programs. St. Paul just finished an organics pilot program and is looking for a way to offer that service to residents.

Recommendation:

The committee recommends Roseville study organics collection as a way to meet the City's goals of reduced waste and increased environmental awareness of residents.

ROSEVILLE RESIDENT SURVEY ABOUT RECYCLING AND GARBAGE COLLECTION- MULTI-FAMILY DWELLING

Recycling

Roseville provides every other week curbside recycling for single-family homes, duplexes, triplexes, fourplexes and condominiums. Apartment and townhome developments can contract with private companies for pickup of recyclables.

Please circle the response corresponding to the answer closest to your opinion or situation.

Q1) Does your development provide recycling service?

Freq (%)

56 (72)	1.	Yes
22 (28)	2.	No (go to question 8)
4		BLANK

Q2) How would you rate your recycling service? (circle one)

17 (31)	1.	Excellent
29 (53)	2.	Good
6 (11)	3.	Fair
3 (6)	4.	Poor
27		BLANK

Q3) What items do you recycle at your development? (circle all that apply)

Freq (%)*

50 (94)	a.	Newspapers
44 (83)	b.	Food and beverage cans
43 (81)	c.	Glass bottles and jars
22 (42)	d.	Magazines
25 (47)	e.	Cardboard
15 (28)	f.	Junk mail
35 (66)	g.	Plastic bottles
5 (9)	h.	Other (please describe)_____
29		BLANK

* Respondents could circle more than one answer, so the percentages will not total to 100%.

Q4) How do you get your information about your development's recycling service?
(circle all that apply)

Freq (%)*

- | | | | |
|----|------|----|------------------------------|
| 47 | (92) | a. | Management |
| 0 | (-) | b. | Friends or Neighbors |
| 1 | (2) | c. | Recycling Company |
| 5 | (10) | d. | Other (please describe)_____ |
| 31 | | | BLANK |

Q5) How satisfied are you with the amount of information you received about how to use the recycling service? (circle one)

Freq (%)

- | | | | |
|----|------|----|----------------------|
| 25 | (49) | 1. | Very satisfied |
| 16 | (31) | 2. | Somewhat satisfied |
| 6 | (12) | 3. | Not very satisfied |
| 4 | (8) | 4. | Not at all satisfied |
| 31 | | | BLANK |

Q6) What additional information about recycling would you like to receive?

- | | | | |
|----|------|----|------------|
| 8 | (13) | 1. | Comment |
| 52 | (87) | 2. | No comment |
| 22 | | | BLANK |

Q7) What, if any, changes would you want to see in the recycling service?

- | | | | |
|----|------|----|------------|
| 14 | (23) | 1. | Comment |
| 46 | (77) | 2. | No comment |
| 22 | | | BLANK |

Q8) What do you recycle somewhere other than at your development?

- | | | | |
|----|------|----|------------|
| 23 | (28) | 1. | Comment |
| 59 | (72) | 2. | No comment |

Q9) Roseville is investigating the option of including apartment and townhome developments in the City's recycling program. Would you be interested in participating?

- | | | | |
|----|------|----|-------|
| 41 | (62) | 1. | Yes |
| 25 | (38) | 2. | No |
| 16 | | | BLANK |

* Respondents could circle more than one answer, so the percentages will not total to 100%.

Q10) Would you be willing to pay a small fee to participate in the recycling program?

<u>Freq</u>	<u>(%)</u>	1.	Yes-----> Q10a)	How much per month would you be willing to
20	(29)	2.	No	pay? (circle one)
48	(71)			
14			BLANK	

<u>Freq</u>	<u>(%)</u>	1.	\$1
4	(21)	2.	\$2
9	(47)	3.	\$5
4	(21)	4.	\$10
2	(10)		
63			BLANK

Garbage

Apartment and townhouse developments select a garbage hauler and contract with that company. Roseville regulates garbage collection by dividing the City into five zones where each zone has its own day of the week for garbage collection. There are 8 companies licensed to collect garbage in Roseville.

Q11) On which day is your garbage picked up? (circle one)

7	(24)	1.	Monday
14	(48)	2.	Tuesday
0	(-)	3.	Wednesday
2	(7)	4.	Thursday
6	(21)	5.	Friday
53			BLANK

Q12) Which garbage service does your development currently use? If you don't know, please ask someone else in your household or your building manager. (circle one)

15	(29)	1.	BFI
0	(-)	2.	Gene's Disposal Service
0	(-)	3.	Highland Sanitation
0	(-)	4.	Horrigan's Hauling
0	(-)	5.	Mudek Disposal
1	(2)	6.	Superior
11	(21)	7.	Walter's
18	(35)	8.	Waste Management
7	(14)	9.	Other
30			BLANK

Q13) How would you rate their service? (circle one)

<u>Freq</u>	<u>(%)</u>	
22	(31)	1. Excellent
36	(51)	2. Good
11	(16)	3. Fair
2	(3)	4. Poor
11		BLANK

Q14) Are you concerned about the effect garbage trucks have on any of the following?
(circle all that apply)

<u>Freq</u>	<u>(%)*</u>	
12	(16)	a. Air pollution
15	(20)	b. Noise pollution
8	(10)	c. How my neighborhood looks
4	(5)	d. Street maintenance
7	(9)	e. Safety
47	(61)	f. No, I'm not concerned about any of these
5		BLANK

Q15) Would you want Roseville to limit the number of garbage haulers if by doing so the City could do any of the following? (circle all that apply)

15	(23)	a. Negotiate lower garbage rates
14	(21)	b. Reduce wear and tear on City streets
12	(18)	c. Require haulers to provide a high level of customer service
20	(30)	d. Reduce pollution
9	(14)	e. Improve how my neighborhood looks
10	(15)	f. Improve safety
30	(46)	g. Would not want Roseville to limit the number of haulers
16		BLANK

Q16) How concerned are you about how your garbage company disposes of your garbage and the impact it may have on the environment? (circle one)

<u>Freq</u>	<u>(%)</u>	
20	(27)	1. Very concerned
36	(48)	2. Somewhat concerned
19	(25)	3. Not very concerned
7		BLANK

* Respondents could circle more than one answer, so the percentages will not total to 100%.

Q17) Would you prefer your garbage be taken to a recovery facility where much of your garbage is turned into fuel to be burned at an electricity generating plant, taken to a landfill, or disposed of in another manner? (circle one)

<u>Freq</u>	<u>(%)</u>	
70	(96)	1. Recovery facility
1	(1)	2. Landfill
2	(3)	3. Another manner (please describe)_____
9		BLANK

Q18) Would you be willing to pay more if your hauler guaranteed to dispose of your garbage at a recovery facility instead of sending it to a landfill?

27	(41)	1.	Yes-----> Q18a)	How much more per month would you be willing to pay? (circle one)
39	(59)	2.	No	
16			BLANK	

<u>Freq</u>	<u>(%)</u>	
6	(23)	1. \$1
9	(35)	2. \$2
10	(38)	3. \$5
1	(4)	4. \$10
56		BLANK

Household Hazardous Waste

State and Federal government regulations restrict what can be put in your garbage. The regulations are designed to ensure hazardous materials are disposed of in a physically and environmentally safe manner. Ramsey County operates a year-round site in St. Paul and a seasonal site in Roseville where residents may dispose of hazardous material for free such as lawn chemicals, bug spray and leftover paint.

Q19) Have you used Ramsey County's seasonal site on Kent Street in Roseville for dropping off household hazardous waste?

4	(5)	1.	Yes-----> Q19a)	How would you rate their service? (circle one)
70	(95)	2.	No	
8			BLANK	

<u>Freq</u>	<u>(%)</u>	
2	(67)	1. Excellent
1	(33)	2. Good
0	(-)	3. Fair
0	(-)	4. Poor
79		BLANK

Q20) Have you used the year-round site at Bay West in St. Paul?

<u>Freq</u>	<u>(%)</u>				
5	(7)	1.	Yes----->	Q20a)	How would you rate their service? (circle one)
69	(93)	2.	No		
8			BLANK		
<u>Freq</u>	<u>(%)</u>				
3	(60)	1.	Excellent		
2	(40)	2.	Good		
0	(-)	3.	Fair		
0	(-)	4.	Poor		
77			BLANK		

Disposal of Other Items

It is illegal to dispose of appliances and other electronic items in your garbage because they may contain hazardous material. There are a number of private companies that will recycle or dispose of your electronic items for a fee. Some garbage haulers will pick up electronics or large items such as furniture for a small fee.

Q21) How do you dispose of appliances, tv's or computers that cannot be put in your garbage? (circle all that apply)

<u>Freq</u>	<u>(%)*</u>		
17	(30)	a.	Take it to a designated disposal facility
10	(18)	b.	Arrange a special pickup with my garbage hauler
25	(45)	c.	Donate it to charity
10	(18)	d.	Sell it
12	(21)	e.	Other (please describe)_____
26			BLANK

Q22) How do you dispose of large items such as furniture and mattresses that are not picked up with your usual garbage? (circle all that apply)

23	(36)	a.	Arrange a special pickup with my garbage hauler
32	(50)	b.	Donate it to charity
9	(14)	c.	Sell it
15	(23)	d.	Other (please describe)_____
18			BLANK

* Respondents could circle more than one answer, so the percentages will not total to 100%.

Q23) If Roseville organized an annual clean-up day where, for a small fee, you can dispose of items not accepted by your regular garbage hauler, how likely would you be to take items there for disposal? (circle one)

<u>Freq</u>	<u>(%)</u>	
27	(39)	1. Very likely
22	(31)	2. Somewhat likely
21	(30)	3. Not likely
12		BLANK

Q24) How satisfied are you with the cleanup of debris and junk in your neighborhood? (circle one)

31	(41)	1. Very satisfied
34	(45)	2. Somewhat satisfied
6	(8)	3. Not very satisfied
4	(5)	4. Not at all satisfied
7		BLANK

Demographics

Q25) What type of housing do you live in? (circle one)

1	(1)	1. Single family house
1	(1)	2. Townhome or Condo
6	(7)	3. Rental building with two to eight units
40	(49)	4. Rental building with nine to 100 units
33	(41)	5. Rental building with more than 100 units
1		BLANK

Q26) What year were you born?

(SEE APPENDIX B, PAGE B-2)

Q27) How many people live in your household with you?

(SEE APPENDIX B, PAGE B-3)

Q28) Are you male or female?

25	(31)	1. Male
55	(69)	2. Female
2		BLANK

Q29) How many years have you lived in Roseville?

(SEE APPENDIX B, PAGE B-4)

Q30) Where did you live before Roseville?

(SEE APPENDIX B, PAGE B-5)

Q31) Was garbage service there better, the same or worse than it is in Roseville? (circle one)

<u>Freq</u>	<u>(%)</u>	
9 (13)	1.	Better
46 (69)	2.	Same
12 (18)	3.	Worse
15		BLANK

Q32) Was recycling service there better, the same or worse than it is in Roseville? (circle one)

19 (30)	1.	Better
31 (49)	2.	Same
13 (21)	3.	Worse
19		BLANK

Thank you for your help with the survey! Please use the enclosed envelope to return your survey to:

Minnesota Center for Survey Research
University of Minnesota
2331 University Avenue SE, Suite 141
Minneapolis, Minnesota 55414

ROSEVILLE RESIDENT SURVEY ABOUT RECYCLING AND GARBAGE COLLECTION- SINGLE-FAMILY DWELLING

Recycling

Roseville provides every other week curbside recycling for single-family homes, duplexes, triplexes, fourplexes and condominiums. The City provides a blue bin to contain recyclables that are sorted into two categories: paper products and containers. Apartment and townhome developments can contract with private companies for pickup of recyclables.

Please circle the response corresponding to the answer closest to your opinion or situation.

Q1) How often do you use Roseville's recycling service? (circle one)

<u>Freq</u>	<u>(%)</u>		
336	(77)	1.	Every two weeks
43	(10)	2.	Once a month
9	(2)	3.	Once every couple of months
5	(1)	4.	Once or twice a year
43	(10)	5.	Never (go to question 16)
13			BLANK

Q2) How would you rate Roseville's recycling service? (circle one)

215	(55)	1.	Excellent
165	(42)	2.	Good
12	(3)	3.	Fair
0	(-)	4.	Poor
57			BLANK

Q3) Do you use a City-provided blue bin for recycling?

320	(81)	1.	Yes
74	(19)	2.	No -----> Q3a) Why not? (circle all that apply)
55			BLANK

<u>Freq</u>	<u>(%)*</u>		
25	(34)	a.	Not big enough
17	(23)	b.	Too difficult to carry to the curb
2	(3)	c.	My materials blow out of the bin
1	(1)	d.	Too big for what I recycle
2	(3)	e.	They didn't fit in my house
47	(64)	f.	Other (please describe)_____
376			BLANK

* Respondents could circle more than one answer, so the percentages will not total to 100%.

Q4) Does the blue recycling bin meet your recycling needs?

Freq (%)

176 (46) 1. Yes

204 (54) 2. No -----> Q4a) What would make it better? (circle all that apply)

69 BLANK

Freq (%)*

132 (66) a. Larger

2 (1) b. Smaller

68 (34) c. Covered

122 (61) d. Wheeled

60 (30) e. Other (please describe)_____

250 BLANK

Q5) What items do you recycle at curbside? (circle all that apply)

381 (97) a. Newspapers

362 (92) b. Food and beverage cans

358 (91) c. Glass bottles and jars

308 (78) d. Magazines

343 (87) e. Cardboard

249 (63) f. Junk mail

357 (91) g. Plastic bottles

21 (5) h. Other (please describe)_____

56 BLANK

Q6) What items do you recycle that are **NOT** collected as part of Roseville's curbside recycling program?

Freq (%)

144 (36) 1. Comment

262 (64) 2. No comment

43 BLANK

Q7) Your recycling is collected every other week. Is that too often, just right, or not often enough for you? (circle one)

10 (3) 1. Too often

342 (88) 2. Just right

37 (10) 3. Not often enough

60 BLANK

* Respondents could circle more than one answer, so the percentages will not total to 100%.

SINGLE-FAMILY - ROSEVILLE RESIDENT SURVEY

Q8) Currently you pay \$21 a year on your water bill for pickup of your recycling every other week. Would you be willing to pay more for once a week pickup of your recycling?

<u>Freq</u>	<u>(%)</u>	1. Yes -----> Q8a)	How much more per month would you be willing to pay? (circle one)
62	(16)	2. No	
324	(84)		

63 BLANK

<u>Freq</u>	<u>(%)</u>	1.	\$1
16	(27)	2.	\$2
22	(37)	3.	\$5
16	(27)	4.	\$10
5	(8)		
390			BLANK

Q9) How do you get your information about Roseville's recycling service? (circle all that apply)

<u>Freq</u>	<u>(%)*</u>	a.	Roseville Wrap
285	(74)	b.	City Website
15	(4)	c.	Newspaper
82	(21)	d.	City Staff
13	(3)	e.	New Resident Packet
23	(6)	f.	Friends or Neighbors
73	(19)	g.	Recycling Company (Waste Management)
100	(26)	h.	Other (please describe)_____
32	(8)		
63			BLANK

Q10) How satisfied are you with the amount of information you receive about how to use Roseville's recycling service? (circle one)

<u>Freq</u>	<u>(%)</u>	1.	Very satisfied
236	(61)	2.	Somewhat satisfied
127	(33)	3.	Not very satisfied
21	(6)	4.	Not at all satisfied
1	(0)		
64			BLANK

Q11) What additional information about recycling would you like to receive?

92	(23)	1.	Comment
314	(77)	2.	No comment
43			BLANK

* Respondents could circle more than one answer, so the percentages will not total to 100%.

Q12) What, if any, changes would you want to see in Roseville's recycling service?

<u>Freq</u>	<u>(%)</u>		
92	(23)	1.	Comment
314	(77)	2.	No comment
43			BLANK

Q13) How many times this year have you contacted the recycling company (Waste Management) or the City of Roseville about missed pickups or other recycling problems?

(SEE APPENDIX A, PAGE A-2)

Q14) If you contacted the recycling company or the City of Roseville, how satisfied were you with the outcome? (circle one)

21	(10)	1.	Very satisfied
16	(8)	2.	Somewhat satisfied
1	(0)	3.	Not very satisfied
1	(0)	4.	Not at all satisfied
163	(81)	5.	Did not contact the recycling company or the City of Roseville
247			BLANK

Q15) Roseville is investigating the option of one bin for all recyclables. Would you be interested in a no-sort system where all recycling goes into a single, wheeled container?

198	(51)	1.	Yes -----> Q15a)	How much more per month would you be willing
187	(49)	2.	No	to pay to use the no-sort recycling system?
64			BLANK	(circle one)

<u>Freq</u>	<u>(%)</u>		
36	(19)	1.	\$1
45	(24)	2.	\$2
27	(14)	3.	\$5
6	(3)	4.	\$10
73	(39)	5.	Would not be willing to pay more
262			BLANK

Garbage

Roseville residents select a garbage hauler and contract with that company. Roseville regulates garbage collection by dividing the City into five zones where each zone has its own day of the week for garbage collection. There are 8 companies licensed to collect garbage in Roseville.

Q16) On which day is your garbage picked up? (circle one)

<u>Freq</u>	<u>(%)</u>		
115	(28)	1.	Monday
66	(16)	2.	Tuesday
61	(15)	3.	Wednesday
107	(26)	4.	Thursday
59	(14)	5.	Friday
41			BLANK

Q17) Which garbage service do you currently use? If you don't know, please ask someone else in your household. (circle one)

51	(12)	1.	BFI
0	(-)	2.	Gene's Disposal Service
0	(-)	3.	Highland Sanitation
5	(1)	4.	Horrigan's Hauling
1	(0)	5.	Mudek Disposal
8	(2)	6.	Superior
199	(48)	7.	Walter's
149	(36)	8.	Waste Management
4	(1)	9.	Other
32			BLANK

Q18) How would you rate their service? (circle one)

269	(63)	1.	Excellent
139	(33)	2.	Good
15	(4)	3.	Fair
4	(1)	4.	Poor
22			BLANK

Q19) How would you rate their cost? (circle one)

Freq (%)

- | | | | |
|-----|------|----|--|
| 321 | (79) | 1. | Rates seem fair for service provided |
| 19 | (5) | 2. | Rates are reasonable, but service level should be improved |
| 65 | (16) | 3. | Rates seem too high for service provided |
| 44 | | | BLANK |

Q20) Why did you pick that garbage hauler? (circle all that apply)

Freq (%)*

- | | | | |
|-----|------|----|--|
| 118 | (29) | a. | Same hauler as my neighbors |
| 132 | (32) | b. | Offered a low introductory price |
| 14 | (3) | c. | Agreed to take my garbage to a processing facility instead of a landfill |
| 84 | (20) | d. | Offered the best service |
| 75 | (18) | e. | Offered the lowest long-term price |
| 125 | (31) | f. | Other (please describe)_____ |
| 40 | | | BLANK |

Q21) Are you concerned about the effect garbage trucks have on any of the following?
(circle all that apply)

- | | | | |
|-----|------|----|--|
| 91 | (22) | a. | Air pollution |
| 84 | (20) | b. | Noise pollution |
| 47 | (11) | c. | How my neighborhood looks |
| 65 | (16) | d. | Street maintenance |
| 73 | (17) | e. | Safety |
| 266 | (63) | f. | No, I'm not concerned about any of these |
| 29 | | | BLANK |

Q22) Would you want Roseville to limit the number of garbage haulers if by doing so the City could do any of the following? (circle all that apply)

- | | | | |
|-----|------|----|---|
| 215 | (53) | a. | Negotiate lower garbage rates |
| 122 | (30) | b. | Reduce wear and tear on City streets |
| 97 | (24) | c. | Require haulers to provide a high level of customer service |
| 100 | (24) | d. | Reduce pollution |
| 56 | (14) | e. | Improve the way my neighborhood looks |
| 82 | (20) | f. | Improve safety |
| 165 | (40) | g. | Would not want Roseville to limit the number of haulers |
| 41 | | | BLANK |

*Respondents could circle more than one answer, so the percentages will not total to 100%.

SINGLE-FAMILY - ROSEVILLE RESIDENT SURVEY

Q23) How concerned are you about how your garbage company disposes of your garbage and the impact it may have on the environment? (circle one)

<u>Freq</u>	<u>(%)</u>	
135	(32)	1. Very concerned
204	(48)	2. Somewhat concerned
85	(20)	3. Not very concerned
25		BLANK

Q24) Has your garbage hauler told you where the company takes your garbage?

157	(40)	1. Yes
239	(60)	2. No
53		BLANK

Q25) Would you prefer your garbage be taken to a recovery facility where much of your garbage is turned into fuel to be burned at an electricity generating plant, taken to a landfill, or disposed of in another manner? (circle one)

363	(90)	1. Recovery facility
19	(5)	2. Landfill
19	(5)	3. Another manner (please describe) _____
48		BLANK

Q26) Would you be willing to pay more if your hauler guaranteed to dispose of your garbage at a recovery facility instead of sending it to a landfill?

212	(51)	1. Yes -----> Q26a)	How much more per month would you be willing to pay? (circle one)
201	(49)	2. No	
36		BLANK	

<u>Freq</u>	<u>(%)</u>	
56	(29)	1. \$1
84	(43)	2. \$2
49	(25)	3. \$5
7	(4)	4. \$10
253		BLANK

- Q27) Roseville may change the current system of garbage collection. In making the decision about any changes it would be helpful to know which of the following issues is most important to you. Please rank them 1 - 5, with 1 being the most important and 5 being the least important. (Write one number on each blank).

(SEE APPENDIX A, PAGES A-2 TO A-4)

- _____ Lower cost
 _____ Guarantee a high level of customer service
 _____ Ability to chose my own hauler
 _____ Guarantee my garbage is taken to a recovery facility
 _____ Reduce garbage truck traffic on my street

Household Hazardous Waste

State and Federal government regulations restrict what can be put in your garbage. The regulations are designed to ensure hazardous materials are disposed of in a physically and environmentally safe manner. Ramsey County operates a year-round site in St. Paul and a seasonal site in Roseville where residents may dispose of hazardous material for free such as lawn chemicals, bug spray and leftover paint.

- Q28) Have you used Ramsey County's seasonal site on Kent Street in Roseville for dropping off household hazardous waste?

Freq (%)

- 183 (42) 1. Yes -----> Q28a) How would you rate their service? (circle one)
 252 (58) 2. No
 14 BLANK

Freq (%)

- 82 (45) 1. Excellent
 89 (49) 2. Good
 8 (4) 3. Fair
 2 (1) 4. Poor
 268 BLANK

- Q29) Have you used the year-round site at Bay West in St. Paul?

- 57 (13) 1. Yes -----> Q29a) How would you rate their service? (circle one)
 381 (87) 2. No
 11 BLANK

Freq (%)

- 31 (54) 1. Excellent
 24 (42) 2. Good
 1 (2) 3. Fair
 1 (2) 4. Poor
 392 BLANK

Disposal of Other Items

It is illegal to dispose of appliances and other electronic items in your garbage because they may contain hazardous material. There are a number of private companies that will recycle or dispose of your electronic items for a fee. Some garbage haulers will pickup electronics or large items such as furniture for a small fee.

Q30) How do you dispose of appliances, tv's or computers that cannot be put in your garbage? (circle all that apply)

Freq (%)*

- | | | | |
|-----|------|----|---|
| 120 | (30) | a. | Take it to a designated disposal facility |
| 135 | (33) | b. | Arrange a special pickup with my garbage hauler |
| 199 | (49) | c. | Donate it to charity |
| 72 | (18) | d. | Sell it |
| 87 | (21) | e. | Other (please describe)_____ |
| 42 | | | BLANK |

Q31) How do you dispose of large items such as furniture and mattresses that are not picked up with your usual garbage? (circle all that apply)

- | | | | |
|-----|------|----|---|
| 181 | (44) | a. | Arrange a special pickup with my garbage hauler |
| 217 | (53) | b. | Donate it to charity |
| 74 | (18) | c. | Sell it |
| 95 | (23) | d. | Other (please describe)_____ |
| 40 | | | BLANK |

Q32) If Roseville organized an annual clean-up day where, for a small fee, you could dispose of items not accepted by your regular garbage hauler, how likely would you be to take items there for disposal? (circle one)

Freq (%)

- | | | | |
|-----|------|----|-----------------|
| 210 | (50) | 1. | Very likely |
| 117 | (28) | 2. | Somewhat likely |
| 94 | (22) | 3. | Not likely |
| 28 | | | BLANK |

Q33) How satisfied are you with the cleanup of debris and junk in your neighborhood? (circle one)

- | | | | |
|-----|------|----|----------------------|
| 257 | (62) | 1. | Very satisfied |
| 135 | (32) | 2. | Somewhat satisfied |
| 18 | (4) | 3. | Not very satisfied |
| 8 | (2) | 4. | Not at all satisfied |
| 31 | | | BLANK |

* Respondents could circle more than one answer, so the percentages will not total to 100%.

Yard Waste, Leaves and Brush

It is illegal to put yard waste, leaves and brush in your garbage. The City of Roseville and Ramsey County operate compost sites where you may drop off leaves and yard waste for free.

Q34) How do you dispose of leaves? (circle all that apply)

Freq (%)*

- | | | | |
|-----|------|----|---|
| 136 | (32) | a. | City's curbside leaf pick-up program |
| 165 | (38) | b. | Take to the compost site on Dale Street |
| 48 | (11) | c. | Take to a County compost site |
| 86 | (20) | d. | Arrange special pickup with my garbage hauler |
| 112 | (26) | e. | Other (please describe)_____ |
| 35 | (8) | f. | Don't have leaves for disposal |
| 19 | | | BLANK |

Q35) How do you dispose of yard waste such as grass clippings? (circle all that apply)

- | | | | |
|-----|------|----|---|
| 250 | (59) | a. | Mulch it |
| 85 | (20) | b. | Compost in my back yard |
| 61 | (14) | c. | Take to a County compost facility |
| 83 | (20) | d. | Arrange special pickup with my garbage hauler |
| 33 | (8) | e. | Other (please describe)_____ |
| 43 | (10) | f. | Don't have yard waste for disposal |
| 25 | | | BLANK |

Q36) How do you dispose of brush? (circle all that apply)

- | | | | |
|-----|------|----|---|
| 57 | (14) | a. | Chip it myself and use it |
| 58 | (14) | b. | Compost in my back yard |
| 181 | (43) | c. | Arrange special pickup with my garbage hauler |
| 47 | (11) | d. | Take it to a private brush disposal company |
| 100 | (24) | e. | Burn it in my backyard or fireplace |
| 59 | (14) | f. | Other (please describe)_____ |
| 56 | (13) | g. | Don't have brush for disposal |
| 27 | | | BLANK |

Q37) If Roseville were to operate a site where you could pay to drop off your brush, how likely would you be to use it? (circle one)

Freq (%)

- | | | | |
|-----|------|----|-----------------|
| 82 | (20) | 1. | Very likely |
| 107 | (26) | 2. | Somewhat likely |
| 230 | (55) | 3. | Not likely |
| 30 | | | BLANK |

* Respondents could circle more than one answer, so the percentages will not total to 100%.

Demographics

Q38) What type of housing do you live in? (circle one)

<u>Freq</u>	<u>(%)</u>		
385	(86)	1.	Single family house
59	(13)	2.	Townhome or Condo
3	(1)	3.	Rental building with two to eight units
0	(-)	4.	Rental building with nine to 100 units
0	(-)	5.	Rental building with more than 100 units
2			BLANK

Q39) What year were you born?

(SEE APPENDIX A, PAGE A-5)

Q40) How many people live in your household with you?

(SEE APPENDIX A, PAGE A-7)

Q41) Are you male or female?

241	(55)	1.	Male
200	(45)	2.	Female
8			BLANK

Q42) How many years have you lived in Roseville?

(SEE APPENDIX A, PAGE A-7)

Q43) Where did you live before Roseville?

(SEE APPENDIX A, PAGE A-9)

Q44) Was the garbage service there better, the same or worse than it is in Roseville?
(circle one)

26	(7)	1.	Better
254	(73)	2.	Same
70	(20)	3.	Worse
99			BLANK

SINGLE-FAMILY - ROSEVILLE RESIDENT SURVEY

Q45) Was the recycling service there better, the same or worse than it is in Roseville?
(circle one)

<u>Freq</u>	<u>(%)</u>		
28	(10)	1.	Better
159	(56)	2.	Same
98	(34)	3.	Worse
164			BLANK

Thank you for your help with the survey! Please use the enclosed envelope to return your survey to:

Minnesota Center for Survey Research
University of Minnesota
2331 University Avenue SE, Suite 141
Minneapolis, Minnesota 55414

Report

**City of Roseville
Recycling Pilot Program
Summary**

Ramsey County, Minnesota

December 2005



City of Roseville Recycling Pilot Program

Executive Summary

Overview

The City of Roseville, Minnesota (City) conducted a pilot study in 2004 to help refine its curbside recycling program to capture more recyclable material. The pilot analyzed the impacts that various collection methods have on the quantity and quality of residential recyclable materials collected curbside, as well as impacts on customer participation.

The project team of R. W. Beck, Inc. and Dan Krivit and Associates (Project Team) was retained by Ramsey County (County) to assist the City with this pilot project to:

- Assist with the design of the pilot;
- Conduct a recyclable materials composition assessment;
- Analyze the results of the field evaluation; and
- Produce a final recycling pilot project summary based on all available data and project reports produced by City staff, County staff, and the Project Team.

Directed by City staff, the pilot study included field tests of different strategies for providing curbside recycling collection services, analysis of data gathered from recyclable material composition sorts, a survey of residents before and after the pilot, gathering of set-out and participation data, and an examination of contamination issues. Waste Management, Inc., the existing City recycling contractor, conducted the collection operations of the pilot project.

Pilot Study Methodology

It was determined that key program parameters could be tested in a pilot collection project by comparing different collection approaches in different neighborhoods within the City.

The collection approaches that were tested are summarized below in Table ES-1.

Roseville Recycling Pilot Program Summary

Table ES-1
Pilot Study Components

	Monday Single- Stream	Monday Single- Stream Contrast	Tuesday Increased Frequency	Wednesday Increased Education	Thursday Larger Bin Capacity	Friday Control (Current System)
Frequency of Collection	Every other week	Every other week	Weekly	Every other week	Every other week	Every other week
Bins/Carts	64-gallon cart	64-gallon cart	18-gallon bin	18-gallon bin	Two 22- gallon bins with wheels	18-gallon bin
Added Education	Only pertaining to new sorting system	Only pertaining to new sorting system	Only pertaining to new frequency of collection	Extra educational materials	Only pertaining to new bin capacity	None
Demographics	Similar	Newer homes & more affluent than other pilot areas	Similar	Similar	Similar	Slightly higher average income than other pilot areas except Contrast

Results of Pilot Program

Material Composition Assessment

To compare the types and quantities of recyclable and non-targeted materials collected in each of the various pilot study areas, the pilot program included detailed material composition sorts and analysis.

For each pilot route (including the Control route), one field sort was conducted in the two-month “Before” period (June-July 2004) and two field sorts were conducted in the four-month “During” period (August-November 2004).

The statistical analysis measured if there was a statistically significant change in the percentages of the various recyclable materials, and/or the actual weight of certain materials in the pilot areas.

The overall results from the analysis reflect that the composition of materials collected for recycling changed significantly with single-stream but did not change significantly with any of the dual-stream variations (increased frequency, increased capacity, increased education).

The percentage of non-targeted materials (at the curb) in the single-stream routes were higher than the percentage of non-targeted materials found on the same routes collected as dual-stream routes in the “Before” period. The percentages of non-targeted materials in the single-stream routes were higher than the percentages of non-targeted materials found in the combined “During” dual-stream pilot routes.

Tonnages of Material Collected

Average gross weights (all tonnages, including non-targeted materials) collected per route for each week of the study for which data was collected (three weeks in the “Before” period, and five weeks in the “During” period for the dual-stream routes, nine weeks for the Weekly route) were calculated. These gross weights were then converted to an average gross weight collected per household per route.

Weights of non-targeted materials included by residents with their recyclables were calculated for each pilot area. Overall, non-targeted materials in the “During” single-stream areas were found to be statistically significantly higher than the dual-stream “Before” areas.

Using this contamination data from the composition study, the gross weights per household were then adjusted by subtracting the non-targeted materials to determine the net pounds of targeted recyclable materials per household collected per route in the “Before” and “During” periods for each pilot area, as shown below in Table ES-2.

Table ES-2
Comparison of Net¹ Pounds per HH Collected Per Route *Before* and *During* the Pilot

	Routes “Before” Pilot - All Dual-Stream Net Average Non-Targeted Materials ²			Routes “During” Pilot Net Average Non-Targeted Materials ²			Statistically Significant Difference
	Mean (Avg. Lbs Collected per HH per Route)	Lower Range	Upper Range	Mean (Avg. Lbs Collected per HH per Route)	Lower Range	Upper Range	
Mon. SS	21.33	19.70	22.96	28.16	25.83	30.49	✓
Mon. – SS Contrast	26.87	25.72	28.03	34.39	32.19	36.59	✓
Wed. – Addt’l Educ	21.73	15.84	27.63	25.30	22.62	27.99	
Thurs. – Larger Bins	20.03	17.82	22.23	26.87	23.29	30.46	✓
Fri. – Control	24.14	19.19	29.10	26.86	20.60	33.11	

¹ Average total pounds after non-targeted materials were subtracted.

² The range was calculated by subtracting the difference in pounds collected with and without non-targeted materials from the gross pounds collected per household.

Comparing the tonnages collected before and during the pilot:

- The single-stream routes resulted in statistically significant increases in total tonnages recovered, even when their relatively high portions of non-targeted materials were subtracted out, as compared to the same areas collected as dual-stream routes in the “Before” period.
- The Larger Bin Capacity route resulted in a statistically significant increase in total tonnage recovered, net of non-targeted materials, as compared to the same area collected in the “Before” period.

Table ES-2 compared the pilot routes in which the recyclable materials were collected every other week. Because the Tuesday pilot route was collected weekly, the pounds collected per household were not comparable to those collected every other week, so a comparison of the weekly routes was conducted separately.

During the pilot, the average gross pounds of recyclable material collected per household on the weekly route was 14.95 pounds. The average pounds of non-targeted materials per household was .55 pounds per week, resulting in the net pounds per household per week of 14.40 pounds.

The effects of weekly collection of recyclable materials can be compared to every other week collection on an *annual* basis. Table ES-3 below shows the projected annual pounds per household for each route, based on the average pounds collected per collection event during the pilot, net non-targeted materials.

Table ES-3
Comparison of Projected Pounds Per HH Per Year

	Average Pounds Collected Per Collection Event During Pilot¹	Estimated Pounds Per HH Per Year
Mon. SS	28.16	732.16
Mon. – SS Contrast	34.39	894.14
Tues - Weekly	14.40	748.80
Wed. – Addt'l Educ	25.30	657.80
Thurs. – Larger Bins	26.87	698.62
Fri. – Control	26.86	698.36

¹ Net non-targeted materials.

As reflected above, weekly collection resulted in annual quantities collected that are comparable to the single-stream pilot route.

Set-out and Participation Rates

City staff conducted field audits of each pilot route, each collection week in order to collect accurate set-out data by identifying households that had curbside recycling bins or carts set out for collection. The results of the set-out data analysis showed that the routes with the largest increase in the number of set-outs were the single-stream route and the Larger Bin Capacity route.

Participation was defined as a household that set out recyclable materials at least once during the six collection events of the pilot routes collected every other week, and at least once during the first six collection events and once during the second six collection events of the pilot route collected weekly. The pilot route with the largest increase in participation was the Larger Bin Capacity route.

Customer Attitudes

The City conducted two mail surveys, before and after the pilot study. About one-half of pilot program participants responded to each of the mail surveys. In the pre-survey, 39 percent of respondents stated that a financial rebate would motivate them to recycle more. In the post-survey, when asked if they would be willing to pay more for the cart system, 49 percent in the single-stream pilot stated yes, and 64 percent in the single-stream contrast pilot stated yes. Of the weekly route respondents, 45 percent stated they would be willing to pay more for increased collection frequency. The survey results are summarized in detail in Table 11 of the report.

Conclusions

The Project Team has summarized the results of the City's recycling pilot program as follows:

- The largest increase in the number of set-outs occurred in the single-stream and larger bin capacity routes.
- The largest increase in participation occurred in the larger bin capacity routes.
- The largest increase in quantities of material collected per household occurred in the single-stream and larger bin capacity routes.
- Based on the tonnages collected during the pilot routes, it is estimated that on an annual basis, the amount of recyclable materials collected weekly would be comparable to the quantities collected on a single-stream route.
- The composition of the single-stream routes showed increased percentages of paper collected, decreased percentages of metals, glass and plastic, and an increase in the percentages of non-targeted materials. However, the net quantities collected in the single-stream routes were greater than the dual-stream routes.
- The pilot route that was provided increased public education materials did not result in a statistically significant increase in the quantity of materials set out at the curb.

Opportunities for improving curbside recycling in any given municipality are truly program-specific. The City of Roseville has a very mature program and its pilot program results may differ if compared to other programs. Cities need to decide the optimal curbside recyclable materials collection program based on a range of issues including cost, materials recovery levels, participation, and customer preference.

Recommendations

The Roseville pilot project can provide lessons for other recycling program managers looking for opportunities to improve program performance.

1. The implementation of single-stream recycling is a significant, visible change in residential recycling. Ramsey County municipalities should closely examine the available results from this Roseville pilot and other research projects referenced when evaluating alternative collection options such as single-stream. Single-stream collection, larger bin capacity, and/or increased frequency may foster an increase in quantities collected.
2. Ramsey County staff should continue policy discussions with the MPCA about the definition of “recycling” as it relates to glass. Glass is presently not considered recycling when used as landfill cover.
3. Municipalities should consider including RFP/bid and contract provisions for contractors to measure the various types of contamination. If a municipality elects to include such requirements, the municipality should also consider how to monitor and enforce such provisions for measurement of contamination.

Introduction

Everyone generates waste. By waste we mean things that we have, that we no longer wish to have. Perhaps it's an old piece of furniture, yesterday's newspaper or a candy bar wrapper. Sometimes we give those things away, sometimes we recycle them and sometimes we throw them in the garbage. Those are some of the most recognizable parts, but not all of the parts, of the waste system.



We all use the waste system, although most of us take it for granted. Our garbage and recycling are often picked up when we're not home and taken someplace we don't see. But the choices we make, either explicitly or by default, impact lives and livelihoods, the natural environment and the business environment. We will explore those choices and their impacts throughout this report.

Roseville and other Minnesota cities are charged by the State with protecting public health, safety and welfare, and protecting the environment. Garbage and recycling collection are necessary public services to assure those charges, much as proper handling of sewage, provision of safe drinking water, providing safe roads and fire and police protection services.

In 1980 the Minnesota Legislature established an order of preference for managing waste in order to protect the state's environment and public health. This preferential order is

- 🗑 Reduction and Reuse
- 🗑 Recycling
- 🗑 Yard and Food Waste Composting
- 🗑 Resource Recovery
- 🗑 Landfilling with methane collection
- 🗑 Landfilling with no methane collection

Roseville last examined its residential solid waste and recycling practices in 1991 when a citizens advisory committee was appointed by the City Council. That committee released the report "Options for Residential Waste Collection and Recycling for Roseville." The City Council enacted a number of the Committee's recommendations the main one being to divide the City into five zones each with its own day for pickup of garbage and recycling.

Since then there have been a number of developments in the garbage and recycling industries that prompted the City Council to re-examine Roseville's solid waste and recycling policies. Those changes include consolidations in the garbage hauling industry; stagnation of recycling rates in Roseville and Minnesota; an increase in the amount of garbage produced per person despite efforts at waste reduction, reuse and increased recycling; and an increase in out of state landfilling of garbage following a 1994 U.S. Supreme Court decision that struck down Ramsey County's requirement that garbage haulers take their waste collected to the Resource Recovery Facility (RRF), a waste to energy plant, in Newport, Minnesota.

Additionally the City Council adopted a set of environmental goals in 1992. The goals were

based on recommendations in the Vista 2000 report. Vista 2000 was set up by the City Council to bring together citizens, city officials, and business, education, and civic groups to create a vision for Roseville's future. The environmental goals adopted by the Council are:

- ♻ Identify and solve local pollution problems through clean up, mitigation and prevention.
- ♻ Continue the emphasis on waste reduction and the improvement of the community's recycling efforts.
- ♻ Continue the emphasis on strong programs which develop environmental awareness in all of our citizenry.

There has also been a developing difference in policy. The City has traditionally treated multi-family complexes such as apartment buildings as commercial buildings. Commercial buildings are not provided the same level of City service especially in recycling. Meanwhile Minnesota and Ramsey County have set garbage and recycling laws and policies that consider multi-family complexes to be similar to single-family homes.

In June 2001 the Roseville City Council established a Residential Solid Waste and Recycling Citizen Advisory Committee to investigate and update the City's policies on residential garbage and recycling.

The Council solicited membership, reviewed the applications and appointed Committee members. The Committee began meeting in August 2001. Committee members were: Todd Anderson, Rebecca Caulfield, Paul Severson, Jeff Travis, Judy Wood and Joe Wozniak. Assistant City Manager Christine Butterfield and Recycling Coordinator Tim Pratt served as staff support.

The goal has been to design the best quality, most cost effective system of garbage and recycling services that meet the needs of residents and goals established by the City Council following the 1992 Vista 2000 report.

Committee members learned about the solid waste and recycling policies and practices in a number of ways:

- ♻ Heard presentations from State, Ramsey County and city officials on topics including recycling at multi-family complexes, landfills, cleanup days, State and County policies, the effects of garbage truck traffic on Roseville streets, Household Hazardous Waste collection, the 1991 report on garbage collection, St. Paul's groundbreaking recycling collection study, and organized collection of garbage.
- ♻ Toured the Resource Recovery Facility in Newport, other cities' clean up day activities, and the Household Hazardous Waste collection site in St. Paul.
- ♻ Read reports and background information from City, Ramsey County, State of Minnesota and national sources.



*Committee members touring
the Resource Recovery
Facility*

To gauge public opinion the committee took several steps:

- ☞ Conducted mail surveys of a scientifically selected sample of homeowners and multi-family complex residents;
- ☞ Conducted focus group discussions with homeowners, multi-family complex residents, multi-family complex owners and managers, and waste haulers; ☞ Received phone call and mail comments solicited by an article in the “Roseville Wrap” resident newsletter; and
- ☞ Conducted a public workshop at the Roseville Skating Center in which residents came to share their thoughts on recycling and garbage collection.

As they discussed options, committee members decided that consumers should take some responsibility to find proper means of disposal for all the things they no longer wish to have. Residents should not rely solely on government programs to manage their waste. Although City programs can raise awareness of waste issues by managing some waste while educating residents about waste issues. Committee members believe government can help residents become fully informed about product stewardship, the dangers of grass clippings in the storm water system, the environmental and economic impacts of purchasing and waste choices, and other garbage and recycling issues. If residents are fully informed, they will be empowered to make decisions about their waste choices and use economic forces to create a waste system that best meets their needs. For instance will they know to ask before they buy something new if the store will take it back when it wears out? Or maybe they will switch to a smaller garbage cart after using a backyard compost bin for food scraps and yard waste.

Using the knowledge gained from their activities, Committee members determined what they saw as the elements of an effective solid waste and recycling system and then ranked them in order of importance. (Find a detailed list in Appendix A).

What are the elements of an effective solid waste and recycling system?

<u>Rank</u>	<u>Element</u>
1	Environmentally preferred management of waste.
2	Reasonable cost
2 (tie)	Good Customer Service
4	Education
5	Simple and Convenient
5 (tie)	Access to Service
7	Customer Choice
8	Expanded Opportunities for Disposal of Difficult Items
9	Reduce Traffic

Committee members used the City Council’s environmental goals as well as our list of elements of an effective solid waste and recycling system and our knowledge of solid waste and recycling policies and programs as we deliberated various options that could be incorporated into a comprehensive Roseville recycling and garbage system.

The results of the Committee’s deliberations are contained in this report being submitted to the Roseville City Council in May 2002.

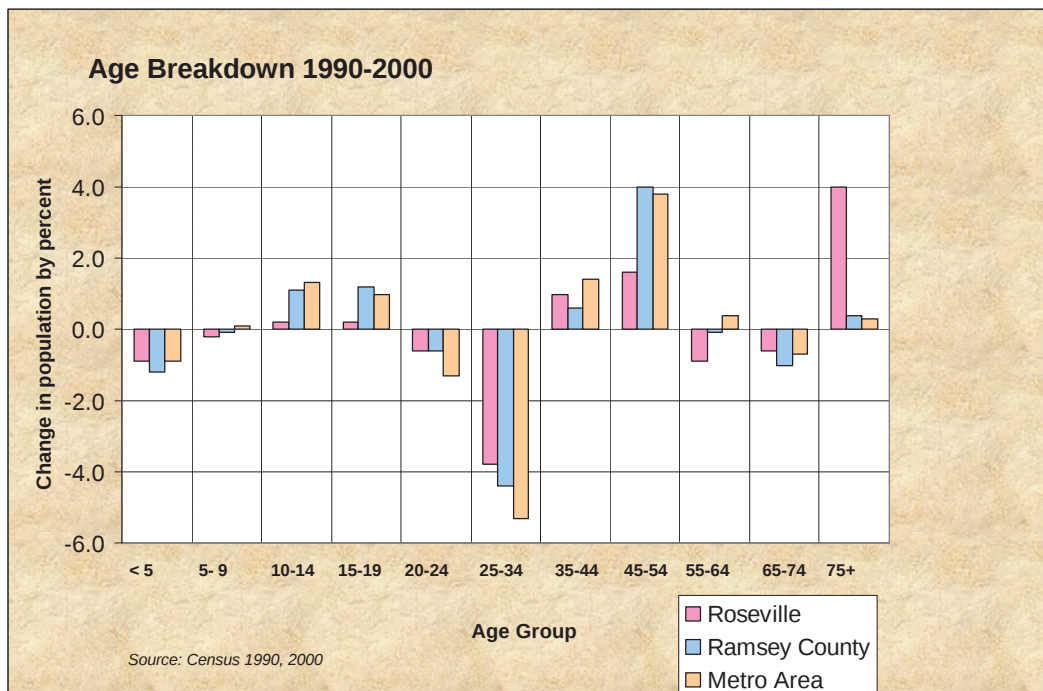
Demographics

Aging Population

Since the 1991 report there have been some significant changes in the demographics of the population of Roseville according to census data.

While the largest population group is the 20 to 44 age group, Roseville has an aging population. The median age is 41, the fourth highest among Metro area municipalities with more than 10,000 in population. Twenty percent of Roseville's population is over the age of 65 (30% over age 55). Roseville has the second highest percentage of people age 65+ among metro municipalities with more than 10,000 in population. Roseville had nearly four times the percentage growth in residents over age 75 as Ramsey County and Metro areas (see chart below).

In 1990, the median age was 37.4 and there were more residents in the 25 to 34 year old family forming years. Roseville's population over the age of 65 was 16.8%. Since 1990 Roseville paralleled the Metro area in losing population in those 5 and under and in the 20 through 34 age group.



As Roseville residents age they remain living in their own homes. Roseville has the 5th highest proportion of householders age 65 or older (13.86%). The senior population is also mostly female. Sixty-one percent of Roseville residents over age 65 are women.

Roseville has traditionally recognized the needs of elderly residents. Garbage and recycling haulers are required to offer walk up service. Many of the garbage companies do charge extra for this. The City of Roseville offers a senior discount on water bills to those receiving retirement or disability benefits. In March 2002 there were 2,575 accounts that received the discount out of 9,963 total residential accounts or 25.8%. The Parks and Recreation Department offers classes and activities targeted to seniors. The Police Department offers a free program to check on seniors called "R U Ok?"

Total Population

Roseville's total population figure has remained fairly stable since 1970. It was 34,439 in 1970 compared to 33,690 in 2000. Projections indicate a moderate growth rate through the year 2020 when Roseville will have 37,000 residents.

Residents of Color

The extremely low proportion of residents of color is a common feature of many Twin Cities inner ring suburbs. The two largest minority groups are "Asian Americans" at 4.9% of the population and "African American" at 2.8% of the total in 2000 compared to 2.6% and 1.6% respectively in 1990. Hispanic is an ethnic not a race category as such since they can crossover several race categories. The total Hispanic population was 2.0% of the total in 1990 and in 2000. The 1990 Census did not track population by country of origin as was done in 2000. The 2000 Census lists the following as the top five subcategories for Asian Americans in Roseville: Chinese (1.7%), Asian Indian (1%), Vietnamese (0.7%), Korean (0.6%) and Hmong (0.36%). For those of Hispanic ethnicity the majority identify themselves as of Mexican heritage (1.2% of Roseville's population). Almost all the rest are divided among Central and South American countries of heritage or list no sub classification.

English as a Second Language

Results on English as a second language have not been released from the 2000 Census yet. According to the 1990 Census 1.7% of Roseville residents said they did not speak English well. About half of those residents (0.8%) spoke an Asian or Pacific Island language. The only other language of note was Spanish (0.3%). The rest are not listed.

Residential Solid Waste and Recycling Topic Areas

Clean Up Day

History/Trends: Cities that run clean up days organize them as an annual event(s) residents can plan on to dispose of items that typically cannot be put in with their regular trash such as appliances, furniture and brush. Cities typically encourage residents to use the clean up day by subsidizing a portion of the disposal cost. This coupled with education campaigns alert residents to the problems of disposing of difficult items and the safest solutions.

For instance, appliances may contain mercury, PCBs or ozone depleting CFCs/Freon. Under state law major appliances must be processed to remove environmentally damaging materials. Mattresses, carpeting and furniture may be put in the trash and likely end up in a landfill. However there are companies that will collect and refurbish or recycle some of these items. State law bans putting brush in with your garbage. There are no county or state programs for brush disposal, although most private garbage companies will take brush for a fee and drop it off at a compost facility.



Roseville used to hold annual Clean Sweep days in which residents could drop off large items such as furniture and mattresses for disposal. Residents could also drop off brush at the Ramsey County site on Larpenteur east of Dale. There was a charge for disposal of all items. A contractor was hired to collect the large items and City crews collected the brush for chipping. The City did not subsidize the contractor for the program.

Roseville discontinued its Clean Sweep days in the early 1990's after being unable to find a contractor willing to run the collection. This ended despite the popularity of the program. A December 12, 1990 memo from Administrative Intern Kathleen Miller to City Manager Steve Sarkozy and Assistant City Manager Steve North said that City crews were trying to find a way to deal with the long lines at the Clean Sweep day.

Currently Roseville residents may contract with their garbage hauler and pay an extra fee to pick the items up at curbside. Fees vary depending on the type of item and its size. Thirty-three percent of Roseville homeowners surveyed in 2002 and 18 percent of multi-family complex

	<u>Homeowners</u>	<u>Multifamily</u>
Arrange pick up of electronics	33%	18%
Arrange pick up of large items	44%	36%

residents dispose of old computers and TV's by arranging a special pickup with their garbage hauler. Forty-four percent of homeowners and 36% of multi-family complex residents arrange a special pickup with their garbage hauler to dispose of mattress and old furniture. A few said they mix the items in with their trash and two residents say they use Shoreview's Cleanup Day.

Many Roseville residents also donate old items to charity. In the 2002 survey 49% of homeowners and 45% of multi-family complex residents say they donate old TV's and computers to charity, 53% of homeowners and 50% of multi-family complex residents donate old furniture to charity. Around 18 percent of homeowners and multi-family residents sell their old TV's, computers and furniture.

However it is getting harder to donate certain items to charities because they are restricting what they accept. They began restricting donations because they would get broken or antiquated items they couldn't sell and had to pay to dispose of these items.

According to a 2002 Roseville resident survey there appears to be significant interest in holding a clean up day in Roseville. Seventy-eight percent of homeowners and 70% of multi-unit complex residents said they would be very likely or somewhat likely to take items to a clean up day.

	<u>Homeowners</u>	<u>Multifamily</u>
Very Likely to use Clean up day	50%	39%
Somewhat Likely to use Clean up day	28%	31%

What Other Cities Do

Thirteen of 17 cities in Ramsey County offer clean up days for their residents (Gem Lake, Lauderdale and North Oaks are the others that don't offer them). Some such as Arden Hills and Shoreview, and Falcon Heights and St. Paul hold joint clean up days. Four cities hold the event in the spring; two in the fall and seven hold them in both the spring and the fall. Most encourage participation by paying a portion of the disposal fee. For instance Shoreview pays one-third of the disposal cost.

Typical items collected (which vary from community to community) are: Appliances, Brush/Tree Waste, Car Batteries, Carpeting, Construction & Demolition debris, Electronics/Brown Goods, Fluorescent Bulbs, Furniture, Mattresses, Metals, Refuse, Reusable Clothing, Reusable Household Goods, Tires, Used Auto Fluids, and in some cases Recyclables that are typically accepted in curbside programs. Reusable items are either put in an area where residents may pick up an item for free or they are given to a charitable organization such as the Salvation Army.

Most of the 13 cities contract with a hauler to collect and charge the residents and have some staff on hand to help coordinate the event. Some such as North St. Paul use City crews and volunteers to run the clean up day. It costs Shoreview between \$10,000 and \$12,000 in labor, disposal and communication to residents to run each cleanup day. It costs North St. Paul approximately \$5,000 not including labor to run its clean up day.

Eleven neighboring communities offer brush drop off as part of their community clean up days. Shoreview, Arden Hills, Vadnais Heights and White Bear Lake even conduct extra clean up days

dedicated solely to brush. Residents of these communities are charged a fee for disposal of brush. These communities chip the brush, use some for City projects and make most of it available for residents to pick up free of charge.

Gene Kruckenberg, Environmental Officer with the City of Shoreview, says residents appreciate having a clean up day they can count on and can schedule around. He says Shoreview takes more calls praising the program than for nearly all other city services.

Alternatives

Not all cities use a clean up day in a central location. The City of Bloomington runs curbside collection of bulky items. The City is divided into 5 collection zones. On that zone's designated Saturday residents may put out up to two appliances for pickup. Eighty percent of households participate setting out approximately 4,000 appliances each year. Bloomington contracts with BFI for recycling; BFI subcontracts with Arca to collect the appliances. Arca charges Bloomington \$15 for each appliance collected. Bloomington charges residents \$.75 a month, \$9 a year, on their utility bill to pay solely for the appliance pickup. Bloomington pays Arca \$250,000 a year, the City collects \$225,000 from residents. Bloomington does not accept electronics or HHW because Hennepin County has a year-round drop off site in the City that accepts those items.

The City of Hutchinson has a white goods collection day as part of its garbage program. Residents can place one white good (appliance) and one hard good (furniture item) per household curbside for collection on that one day of the year. Residents call the City's garbage hauler Waste Management to schedule pick up. Residents pay a monthly garbage fee that includes recycling, collection of organics and white goods collection. The fee is based on the size of the resident's garbage container (although Hutchinson offers senior discounts). Current rates are \$11.98 senior, \$14.83 for a 30-gallon cart, \$19.05 for a 60-gallon cart and \$25.26 for a 90-gallon cart.

Mesa, Arizona also offers white goods curbside pickup. Residents must register, but items are picked up any week of the year on residents' garbage pick up day. Residents are charged \$10 for the first appliance, \$5 for each additional appliance up to four. City crews also set out rollofs in residential areas each spring. Residents are advised that they can put appliances, bulky items construction debris and other similar items (no electronics or household hazardous waste) in the rolloff for free. The cost is included in residents' monthly garbage fees.



Another disposal option is the Twin Cities Free Market website www.twincitiesfreemarket.org. The website is run by Eureka Recycling (previously named the St. Paul Neighborhood Energy Consortium). Metro area residents may use the website to list something they wish to get rid of or to browse for something they may wish to acquire. Eureka Recycling posts the listing and requires that all transactions be free of charge. Anoka and Washington Counties pay Eureka Recycling a subsidy to run the site. The subsidy allows County officials to publicize the website to residents.

Illegal Dumping and Storage

Despite the potential for people to not want to pay to dispose of appliances and furniture (one resident in the survey said items are piling up in the house because he or she refuses to pay to dispose of the items), illegal dumping of trash on City property does not appear to be a problem in Roseville.

According to Streets Supervisor Steve Zweber and Park Maintenance Supervisor Ken Hoxmeier City crews deal with 6-12 cases of illegal dumping (including brush, furniture, tires and appliances) on City property each year. That number has stayed about the same over that past decade.



However Permits Coordinator Don Munson and Code Enforcement Officer Rick Talbot say illegal storage of appliances and other items on personal property is a significant problem. From 1998 to 2001 Roseville staff investigated an average of 60 complaints a year of illegal storing of brush and debris. That's more than for any other category except for tall weeds. Most are resolved after a code enforcement officer contacts the homeowner and alerts them to the violation and asks them to comply with City code.

Options Considered:

- 1) Meet the City's stated environmental goals by offering a Citywide clean up day run by a company or companies in which residents will be charged for disposal and Roseville subsidizes 1/3 of the disposal cost at an annual expense of approximately \$11,000.
- 2) Meet the above stated environmental goals by offering two Citywide clean up days (spring and fall) and incur the expense of approximately \$22,000 annually.
- 3) Meet goal two stated above by allowing residents to continue using private sector means of disposal. Meet goal three by beginning campaign to alert residents to proper means for disposing of other items.
- 4) Meet the above stated goals by offering a Citywide clean up day run by City crews at an estimated cost of approximately \$9,000.
- 5) Meet the above stated goals by offering a curbside collection program for appliances and furniture.
- 6) Meet the above stated goals by beginning a program of neighborhood rollofs for free disposal of appliances and other similar debris.
- 7) Urge Ramsey County to investigate subsidizing the Free Market website.
- 8) Expand and enhance education campaigns with Ramsey County to alert residents to disposal options for problem materials.
- 9) Add as a requirement for licensing that haulers annually give customers, and file with the City, a clear delineation of rates and services.
- 10) Explore partnerships with neighboring communities for jointly holding a clean up day.

Recommendations:

Offer a Citywide clean up day run by a company or companies in which residents will be charged for disposal and Roseville subsidizes 1/3 of the disposal cost at an annual expense of approximately \$11,000.

Expand and enhance education campaigns to alert residents to the need to properly dispose of difficult items.

Add a requirement to hauler licensing that haulers annually give customers, and file with the City, a clear delineation of rates and services.

Urge Ramsey County to investigate participating in the Free Market website.

Disposal of Bulky Items

History/Trends: While it is not illegal to dispose of large items such as mattresses, furniture and carpeting in the garbage it may take additional time or money to do so. All licensed garbage haulers in Roseville charge extra to take bulky items. The fee varies by type of item and size.



If taken away by a garbage hauler these items typically end up in a landfill. Even if items are taken to a waste to energy processing facility they will most likely be separated out because they are difficult to process.

Some items such as mattresses and carpeting can be recycled, but residents may need information and support to find the ways to do this.

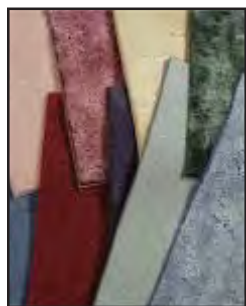
Most Roseville residents chose to get rid of these items using the least expensive means. Many residents recycle them by giving furniture and similar items away or selling them. Fifty-three percent of homeowners and 50% of multi-family complex residents surveyed in 2002 have donated large items to charity. Eighteen percent of homeowners and 14% of multi-family complex residents have sold the items.

A large number also put these items in the trash after arranging a special pickup with their garbage hauler. Forty-four percent of homeowners and 36% of multi-family residents have done so. Five percent of homeowners simply take the item to the dump themselves and a few break the item down into small pieces and place it in their trash.

According to a 2002 Roseville resident survey there appears to be significant interest in holding a clean up day in Roseville. Seventy-eight percent of homeowners and 70% of multi-unit complex residents said they would be very likely or somewhat likely to take items to a cleanup day.

Product Stewardship

A growing trend is one of product stewardship where a company takes back an old item when it sells you a new item. About 5% of homeowners surveyed said the seller took the old item when they delivered the new item. Many mattresses for instance can be refurbished and resold by the company. (North St. Paul even included a mattress recycling company in its clean up day.)



The Minnesota Office of Environmental Assistance has taken the lead in working with private companies to develop a system of product stewardship for carpeting. The MOEA joined other states in negotiating a memorandum of understanding with the carpet industry under which the industry will develop programs to increase the amount of reuse and recycling of post-consumer carpet and reduce the amount of waste carpet going to landfills. The first collection programs in Minnesota are expected to launch in late 2002 or early 2003. More information on this can be found at <http://www.moea.state.mn.us/carpet/index.cfm>.

Illegal Dumping and Storage

According to City staff, illegal dumping on City property is not a problem. However illegal

storage of appliances, furniture, brush and other items on personal property is a significant problem.

Neighboring communities have found residents value a city clean up day where residents can dispose of items such as furniture, bulky items and appliances for a fee.

Alternatives

Some cities with organized collection of garbage offer curbside pickup of bulky items. The City of Hutchinson has a white goods collection day as part of its garbage program. Residents can place one white good (appliance) and one hard good (furniture item) per household curbside for collection on that one day of the year. Residents call the City's garbage hauler, Waste Management, to schedule pick up.

Residents pay a monthly garbage fee that includes recycling, collection of organics and white goods collection. The fee is based on the size of the resident's garbage container minus any senior discount. Current monthly rates are \$14.83 for a 30-gallon cart, \$19.05 for a 60-gallon cart, \$25.26 for a 90-gallon cart and \$11.98 senior rate.

In Stillwater residents can put out furniture, appliances and electronics on their trash pick up day. Furniture is disposed of with the rest of the trash. Appliances and electronics are picked up by appointment. Disposal costs are included in residents' trash rates. Current monthly rates are \$9 for seniors, \$11.45 for a 32-gallon cart, \$13.24 for a 64-gallon cart, and \$15.10 for a 92-gallon cart.



In Mesa, Arizona City crews set out rollofs in residential areas each spring. Residents are advised that they can put appliances, bulky items, construction debris and other similar items (no electronics or household hazardous waste) in the rolloff for free. The cost is included in residents' monthly garbage fee.

These cities do not offer annual clean up days.

Options Considered:

- 1) Continue to educate residents about private means of disposal for bulky items.
- 2) Initiate a citywide clean up day that includes an area for residents to drop off bulky items.
- 3) Initiate a citywide program of curbside collection of bulky items.
- 4) Encourage the Minnesota Office of Environmental Assistance to promote carpet recycling programs and support the MOEA's efforts at product stewardship.

Recommendations:

Include in a Citywide clean up day an area for residents to drop off bulky items.

Expand and enhance education campaigns to educate residents about private means of disposal for bulky items.

Encourage the Minnesota Office of Environmental Assistance to promote carpet recycling programs and support the MOEA's efforts at product stewardship.

Disposal of Electronics



History/Trends: While electronics are similar to appliances and so-called white goods, they require a separate system of disposal. In order to properly handle and recycle the components of electronics such as TV's, VCR's, computers and stereos requires different equipment and specially trained workers. It's projected that by 2007 an estimated 500 million personal computers will be discarded nationally. Additionally broadcast television stations are required to switch to digital signals by 2006. While current

TV sets can be adapted to receive those signals, there is the potential that many consumers will purchase new digital sets that fully show the improved picture and discard the old ones.

Electronics, unlike white goods, currently have little value as recycling. White goods such as washing machines have significant amounts of metal that can be recovered. Some components of electronics can be recycled, but the markets are still developing. Because of handling requirements and recycling difficulty it is typically more expensive to properly dispose of electronics.

A key consideration in handling electronics is the amount of hazardous material present. For instance every television and computer monitor contains a picture tube known as a cathode ray tube or CRT. A CRT contains between two and six pounds of lead. Lead exposure is known to cause neurological disorders. CRT's may also contain other hazardous or toxic substances such as cadmium. Because of the toxic materials inside them, electronics should not be put in with your regular trash.

CRT's can be reused or recycled, as can circuit boards and other components of electronic items, plastic, glass and metals. In Minnesota there are no known curbside collection programs for electronics. Instead communities partner with private firms to offer drop offs during clean up day programs, have year-round drop off sites in the community, or educate residents about private companies that will pick up items or accept drop offs at their facilities. Roseville does the latter.

Roseville encourages residents to either donate working items to a charity such as Computers for Schools or if the item is antiquated or no longer working to take it to an electronics recycling company such as Asset Recovery Corporation in St. Paul. They can also arrange a special pickup with their garbage hauler, but this is typically more expensive than taking it to a disposal firm. The garbage hauler then takes the electronics to a disposal firm. Waste Management even has a branch of its company that deals with electronics disposal.

Many Roseville residents prefer to give their old appliances and electronics to charity. Forty-nine percent of homeowners and 45% of multi-family complex residents surveyed in 2002 said they had donated such an item to charity. Eighteen percent of both homeowners and multi-family complex residents said they sold

	<u>Homeowners</u>	<u>Multifamily</u>
Donate to Charity	49%	45%
Sell it	18%	18%
Take to Disposal Facility	30%	30%
Arranged Pickup	33%	18%

the old item. A significant number take steps to properly dispose of these items. Thirty percent of homeowners and multi-family complex residents have taken their old appliances or electronics to a designated disposal facility. While 33% of homeowners and 18 percent of multi-family complex residents arranged a special pick up with their garbage hauler.

However it is getting harder to donate electronic items to charities because they often received items that did not work or antiquated items for which there was no resale value. As a result some charities such as Goodwill and The Salvation Army no longer take electronics.

Product Stewardship

A growing trend for disposal in the electronics industry is called product stewardship. That is where a manufacturer agrees to steward the product through its life cycle. Thus the company does not forget about the computer or VCR once it is sold. Instead the company enacts a system to take back the item once a consumer no longer wants it. For example Sony will take back any of its electronic items at no additional cost to the consumer, retailer or electronics disposal company. So when your Sony DVD player wears out you can take it back to a store that sells them such as Best Buy. Best Buy will take the item from the consumer at no charge and ship it back to Sony. Sony then reimburses Best Buy for its expenses in handling the item. In 2001 Panasonic and Sharp ran similar pilot programs. Gateway computers will give you a rebate on a new computer if you return any brand of old computer.

Some companies are charging a recycling fee when the item is bought. The consumer can then return the item for free when he or she no longer wants it.

The Minnesota Office of Environmental Assistance is acting on behalf of the State in pushing product stewardship programs. In particular it is working for manufacturers and retailers to charge a recycling fee at the time of purchase. That way a consumer can return the item for free when they no longer want it. The MOEA is also working with manufacturers to increase the amount of recycled material in new electronic items.

Recycling and Disposal

Once an item is accepted at an electronics recycling facility the company evaluates the item. First workers determine if the item can be repaired or refurbished and either they do it or it is sold to a company that can. If the item cannot be salvaged it is broken down into its components most of which are sold to companies that recycle the components and some of which are disposed of following state and federal guidelines.

Not all electronics recycling facilities do this though. Some ship the items overseas to be broken down. A February 2002 report from the environmental group Basel Action Network documented cases in China and India where the electronics dismantling was causing pollution problems and workers had little or no protection against potentially harmful chemicals (see photo at left). Ramsey County recommends consumers use Asset Recovery Corporation in St. Paul for disposal because it was the only



local firm that would guarantee all of the electronics material it receives would remain in the United States.

Options Considered:

- 1) Continue to educate residents about private companies that will pick up items or accept drop offs at their facilities.
- 2) Initiate a clean up day that includes electronics drop off. Require the vendor guarantee the electronics material it receives remains in the U.S. for processing and/or disposal.
- 3) Work with Ramsey County to develop a year-round drop off site for electronics.
- 4) Encourage the Minnesota Office of Environmental Assistance to promote electronics recycling programs and support the MOEA's efforts at product stewardship.
- 5) Investigate if Roseville can ban electronics from being disposed of in the garbage.

Recommendations:

Include in a Citywide clean up day and area for electronics drop off. Require the vendor guarantee the electronics material it receives remains in the U.S. for processing and/or disposal.

Expand and enhance information to residents about private companies that will pick up electronic items for proper disposal or accept drop offs at their facilities.

Encourage the Minnesota Office of Environmental Assistance to promote electronics recycling programs and support the MOEA's efforts at product stewardship.

Solid Waste (Garbage) Disposal

History/Trends: Cities, townships and counties are charged by the State of Minnesota with protecting public health, safety and welfare, and protecting the environment. Garbage and recycling collection are necessary public services to assure those charges, much as proper handling of sewage, providing safe drinking water, providing safe roads, and providing fire and police protection.



Roseville has relied on the private sector to provide garbage service and has contracted with a private hauler on behalf of residents to provide recycling service.

Roseville homeowners contract with any of eight companies licensed by the City to remove their garbage. Homeowners may change haulers as they wish (typically in search of a better deal or better service) and haulers are free to court and charge customers as they wish. This system is called Open Collection. Although the system is not completely free of regulation by Roseville. Following the 1991 report, the City was divided into five zones each with its own day of the week for pickup of garbage and recycling. The City also has a set of service standards required for licensing that include offering separate pickup of yard waste and brush, and offering walk up service for which haulers can charge extra. There is, however, no monitoring for compliance.

All residential dwellings and commercial establishments must arrange for garbage pickup. Exceptions may be approved by the City Manager for environmentally sound alternatives. For instance, some residents share a garbage cart with their neighbors. Some small business owners take their trash to their business and put it in their dumpster there for disposal.

The main alternative is a system called organized collection. Organized collection of waste is when a city arranges for collection services on behalf of residents. Most area cities that have organized collection contract with a private waste hauler or haulers to provide the service in a defined area. Five of the 17 cities in Ramsey County have organized collection. Some have a single hauler for the whole city while others contract with a group of haulers. While residents give up the ability to directly choose their hauler they benefit from lower rates, less truck traffic, expanded services, enforceable service standards and can determine where their garbage goes for disposal.

Fewer Haulers

In 1991 there were 14 haulers in Roseville; in 2002 there are 8. The eight licensed residential garbage haulers in Roseville are: BFI, Gene's Disposal Service, Highland Sanitation, Horrigan's Hauling, Muddek Disposal, Superior Services, Walter's, and Waste Management. Some haulers including Bellaire Sanitation and Wildwood Sanitation were bought by Waste Management. Red Arrow switched to only doing commercial hauling in Roseville. Others such as Pete's sold their accounts in Roseville.

Since the 1991 report there has been a great deal of consolidation in the garbage hauling market. In 2000 there are 31 fewer residential haulers (about a third less) in Ramsey and Washington Counties compared to 1995. The four largest haulers in Ramsey and Washington Counties

(Waste Management, BFI, Superior and Walter's) collected 71% of the total tons of trash in the two counties in 2000 compared with 42% in 1995. While the four smaller haulers that serve Roseville (Gene's, Highland, Horrigan's, and Mudek) collected 3.1% of the total tons of trash in the counties compared to 2.5% in 1995. In 1991 Superior was not doing business in Roseville. The other three held 86% of the residential routes. According to the 2002 resident survey 98% of Roseville homeowners contract with one of the big four haulers.



Waste Hierarchy

In 1980 the Minnesota Legislature established an order of preference for managing waste in order to protect the state's environment and public health. This preferential order is shown on the chart at left.

Recognizing that solid waste poses a risk to the environment no matter how it is managed, the Legislature placed waste reduction and recycling at the top of the hierarchy. The less waste produced and the more material recycled, the less the need for processing or disposal. Landfill disposal is at the bottom of the hierarchy because of pollution and related liability

concerns and the lost opportunity to use waste as a resource.

However this waste management order of preference is not being met. The amount of garbage produced by each Minnesotan has increased 23% since 1993 to more than a ton per person in 2001. Meanwhile the rate of recycling in Roseville and Minnesota has been stagnant over the past ten years. And the amount of garbage being sent to landfills is increasing. This comes even though Minnesota leads the nation in the amount of garbage processed at resource recovery facilities that turn garbage into a fuel to be burned at electricity generating plants.

In addition to the State hierarchy, Ramsey County has a Solid Waste Management Plan in which it seeks to minimize waste, prevent pollution, promote efficiency, and provide a sustainable infrastructure for solid waste management. To do that, Ramsey County has established five goals:

- 🗑️ Manage wastes to protect the environment and public health, and to conserve resources
- 🗑️ Manage wastes using a variety of methods according to the State's hierarchy, in order to minimize landfilling
- 🗑️ Manage wastes cost-effectively and minimize potential liability for citizens, businesses and taxpayers
- 🗑️ Encourage waste generator responsibility for environmentally sound waste management
- 🗑️ Allocate costs fairly to users.

The County has limited regulatory power to manage waste and instead must rely on cooperation from garbage haulers to meet those goals. That has been difficult because at times the County's goals are in conflict with the haulers competitive pressures to hold down cost.

Additionally the City Council adopted a set of environmental goals in 1992. The goals were based on recommendations in the Vista 2000 report. Vista 2000 was set up by the City Council to bring together citizens, city officials, and business, education, and civic groups to create a vision for Roseville's future. The environmental goals adopted by the Council are:

- ♻ Identify and solve local pollution problems through clean up, mitigation and prevention.
- ♻ Continue the emphasis on waste reduction and the improvement of the community's recycling efforts.
- ♻ Continue the emphasis on strong programs which develop environmental awareness in all of our citizenry.

Residents' Concerns

Roseville residents surveyed in 2002 are pleased with their garbage service. Sixty-three percent rated it excellent and 33% rated it good. Seventy-nine percent said the rates seem fair for the service provided; 16% said the rates were too high for the service provided.

<u>Rate Your Garbage Service</u>	
Excellent	63%
Good	33%
Fair	4%
Poor	1%

While there are a number of components to waste collection and disposal, many Roseville residents say they are most concerned about the price they pay. Thirty-two percent of residents surveyed said they chose their current hauler because the company offered a low introductory price. Another 18% said they chose their hauler because the company offered the lowest long-term price. There was no indication they associate the State's or the County's tax with the price they pay for garbage collection service.

But not all residents are paying attention to the bottom line. Twenty-nine percent of homeowners said they chose their hauler because it was the same as their neighbors. Four percent said they simply continued service with the same hauler used by the previous owner. Twenty-three percent picked a hauler based on the service offered (Note: those surveyed could choose more than one answer).

When asked if they were concerned about the effect garbage trucks have on air pollution, noise pollution, neighborhood appearance, street maintenance and safety, 63% said they were not concerned about any of those.

What happens to their garbage was of more interest to residents. Thirty-two percent said they were very concerned where their garbage goes, 48% were somewhat concerned and 20% were not very concerned. And 90% said they would prefer their garbage goes to a recovery facility instead of a landfill.

When asked to rank elements of a garbage collection system, residents again indicated that ensuring the lowest cost was the most important thing to them. Guaranteeing a high level of customer service was also a priority. Many residents ranked ability to choose a hauler as their top priority or as the item that was least important to them.

Forty-six percent ranked lower cost as what was most important. Twenty-five percent said ability to choose their hauler and 16% said guarantee garbage is taken to a recovery facility. While customer service was a bit lower as a first choice (15%), it moved up as a priority when we compare the top three choices. Eighty-nine percent ranked lower cost as one of their top three choices, 80% listed customer service and then it fell down to 58% listing ability to choose and 55% listing take garbage to a recovery facility.

What's Important in a Garbage System (ranked in the top three choices)	
Lower Cost	89%
High Level of Service	80%
Ability to choose a hauler	58%
Guarantee Garbage Goes to a RRF	54%
Reduce Truck Traffic	24%

Reducing truck traffic ranked way down by survey respondents. Fifty-four percent listed it as the item that was least important to them. That was followed by 25% listing ability to choose and 13% saying take garbage to a recovery facility was least important to them.

Organized collection of garbage can reduce rates (because of economies of scale) and truck traffic while limiting residents' ability to choose a hauler. When asked if they would want the City to limit the number of haulers in order to achieve the benefits of organized collection, only cost seem to appeal to Roseville homeowners. Fifty-three percent said they would want Roseville to limit the number of haulers in order to negotiate lower rates. Forty percent said they would not want Roseville to limit the number of haulers. Far fewer resident said they would want to limit trucks in order to have one of the other benefits.

Where Garbage Goes

Once garbage in Roseville is picked up it can be taken to various disposal sites including landfills, resource recovery facilities and/or transfer stations (see appendix H). Construction and demolition waste from work done on your house must go to special C&D landfills and is not included in state totals used to track household waste.

Other options not used by companies that serve Roseville residents include incineration and composting. The City of Minneapolis operates a garbage incinerator where there is no processing of the waste; all garbage brought there is burned to produce electricity.

The Prairieland Composting Facility in Truman, Minnesota is designed to compost garbage. Garbage is brought to the facility and processed so that noncompostable material such as plastics and household batteries are removed. The material is then put in a covered storage facility to decompose. The finished compost can be sold but it is not in much demand.

There is more demand for compost that comes from organics composting facilities. Facilities such as the NRG compost facility in Rosemount accept only what are called organics that includes food waste, yard waste and compostable paper products. That material requires very little processing and the resulting compost is cleaner and higher in nitrogen making it easier to sell.

Transfer Stations

A transfer station is just a temporary storage facility for the garbage. Garbage is collected there before being shipped to another facility for final disposal. For instance Walter's hauls the garbage it collects to its own transfer station in Blaine, compiles it and ships it to a landfill in Eau Claire, Wisconsin for final disposal. Transfer stations may also accept garbage from private citizens. Ramsey County licenses nine privately run transfer stations.

Landfills

There are 32 landfills (including three in the metro area) that serve Minnesota. Minnesota has enacted stronger environmental and financial requirements for landfills and a higher tax on tipping fees (the charge for dropping off waste) than surrounding states. As a result, no companies are planning to build new landfills in the metro area. And the State estimates space at existing landfills in Minnesota will run out in the next ten to fifteen years. Instead more waste is being shipped to out of state landfills.



At a landfill the material is dumped into the ground, compacted and at the end of the day covered with either dirt or another approved cover material such as broken glass (this prevents material from blowing away and animal scavenging). That closed off area is called a cell. Garbage is added much faster than it can decompose under these conditions (some items such as plastic and glass rarely, if ever, decompose under these conditions). Eventually landfills can accept no more garbage and are capped meaning a final layer of dirt is placed over the site, it is landscaped and officials monitor the site basically forever for health and safety effects of the decomposing material.

Minnesota also requires landfill operators use methane collection systems in capped sections of landfills. Methane gas is given off in the natural decomposition process and is linked to global warming. A methane collection system traps the gas before it can be released into the atmosphere. Although estimates are that in a best case scenario only about 20% of the total methane produced is captured. Typically the gas is then burned on site. Companies such as BFI use the burning gas to produce electricity.

Currently federal regulations require new landfills to have a double lining (usually of plastic) to prevent leachate from sinking into the ground. Leachate is the water (rainwater, etc.) that settles to the bottom of the landfill carrying chemicals and particulate from the decomposing material. Federal regulations require that leachate be collected and treated at a wastewater treatment facility that is usually constructed at the landfill site adjacent to the burial area. Once treated the water can then be pumped to where wastewater typically goes (in Minnesota that's usually major rivers).

Federal and state regulations on landfills were enacted after discoveries of groundwater contamination from landfill leachate. A number of closed landfills have also become Superfund cleanup sites.

Once landfills are closed they must be monitored basically forever to make sure that the material does not contaminate the soil or groundwater outside the landfill. Minnesota charges a sales tax on your garbage collection bill that pays for this monitoring and any ensuing cleanup (Minnesota pays between \$30 and \$40 million a year to monitor and clean up all the currently closed landfills in the state). Also federal regulations require landfill operators to sign a financial assurance statement in which they post a letter of credit for money that could be used for cleanup. (However if that operator goes out of business there is no guarantee private money would be available for cleanup.) Minnesota requires additional post closure care. Instead of a letter of credit, an operator has to have a contingency action cleanup fund of money set aside to pay for cleanup.

Tipping fees at landfills run between \$35 and \$40 a ton although some garbage companies that run their own landfills give themselves a lower, preferred rate. Tipping fees at landfills have gone up in part due to these potential long-term obligations to pay for cleanup. However since government assumes a number of the costs of monitoring and cleanup, garbage rates charged to consumers do not fully reflect the cost of landfill disposal.

Large garbage haulers have begun to capitalize on their scale by building landfills in other states such as Iowa and Wisconsin that have lower tipping fee taxes and lesser environmental and financial requirements. This trend has become especially pronounced since a 1994 U.S. Supreme Court decision opening the door for haulers to take their trash out of state. Haulers such as Waste Management and Superior Services are able to truck their trash and dump in out of state landfills they own for less than what it costs to use disposal facilities in Minnesota. In 2000, Minnesota was the tenth largest exporter of trash among the 50 states.

Following years of complaints from residents about the truck traffic and other undesirable elements of living near a landfill, Wisconsin lawmakers increased the tipping fee tax at Wisconsin landfills \$3 a ton in 2001. The money will go for grants to Wisconsin recycling programs, but the bill's sponsors freely admit they were trying to discourage dumping of out of state waste. Despite the increase tipping fee taxes are six to seven dollars a ton less in Wisconsin than in Minnesota. And Craig Seim, General Manager of BFI's Minnesota division told the Committee garbage haulers will continue to make disposal decisions based primarily on cost.

Waste Management is experimenting with a new type of landfill called a bioreactor where the wastewater is poured back over the capped cells of the landfill in order to speed decomposition and if successful allow the cell to be reused. Don Kyser a Public Engineer with the Minnesota Office of Environmental Assistance told the Committee he believes this experiment will not work as well as hoped. He says the amount of leachate collected and treated is only enough to appropriately saturate one cell to speed decomposition. And in this test the leachate is being spread over all the cells. Also glass and plastic will not decompose in these bioreactor landfills.

Resource Recovery Facilities

At resource recovery facilities, garbage is processed to create a fuel to be burned at electricity generating plants. Garbage is dumped on a tipping floor. Workers do a sight inspection and remove items that cannot be processed such as appliances and tires. Those items are separated out and shipped elsewhere for proper disposal. Bulky items that cannot be easily processed such as mattresses and furniture as also set aside. Occasionally they will be processed, but most of the time they are sent to landfills for disposal.



The Resource Recovery Facility in Newport

The waste is then run through processing lines where ferrous metals (iron and steel) and aluminum are removed for recycling. The rest of the material (typically paper and similar products with a high BTU value) is processed into smaller pieces for easier shipping and burning. This end product is called refuse derived fuel (RDF).

It costs about \$20 more a ton to process garbage through a resource recovery facility than through a landfill. Thus tipping fees are higher. But Minnesota resource recovery facilities use government subsidies to make tipping fees cost competitive.

Roseville and the Resource Recovery Facility

All haulers in Ramsey County are required to send at least a portion of the garbage they collect to the Resource Recovery Facility in Newport. In 1986, Ramsey and Washington Counties entered into a twenty-year Service Agreement with Northern States Power Company (now NRG Energy, Inc., a subsidiary of the newly renamed Xcel Energy). This obligation is passed along to residents as part of the solid waste management fee on residents' property tax bills.

The purpose of the Facility is to minimize the counties' dependence on landfills (meeting the State hierarchy and County goals) by processing waste into RDF. This fuel is burned in place of coal at NRG power plants in Red Wing and Mankato. Trash is not a fossil fuel thus burns cleaner than coal as it contains no sulfur, a major contributor to acid rain.

Of the 395,459 tons of waste that was delivered from Ramsey and Washington Counties to the facility in 2000:

- 77% was processed into fuel
- 3% was ferrous metal that was recovered and recycled
- 20% was material that was landfilled because it could not be recovered for fuel or recycling.

The RDF produced in 2000 generated enough electricity to serve about 28,000 homes for one year.

The four small haulers that serve Roseville residents take all the trash they collect to the RRF. While the large four have been taking much of their trash to out of state landfills. BFI owns Lake Area Disposal in southwest Washburn County in Wisconsin (as well as Pine Bend Landfill in

Inver Grove Heights, Minnesota); Seven Mile Creek Landfill in Eau Claire, Wisconsin is owned by Superior Services; Waste Management owns Timberline Trail Disposal Facility in Rusk County, Wisconsin and the Central Disposal Systems landfill in Lake Mills, Iowa. Walter's has a contract to deliver waste from its transfer station to the Seven Mile Creek Landfill.

When Ramsey and Washington Counties set up the agreement with NRG to build and operate the Resource Recovery Facility (RRF), the Counties could mandate that garbage haulers take all the waste they collect to the RRF. In the 1994 case *Cabone vs. Clarkstown* the U.S. Supreme Court ruled that trash hauling is interstate commerce. This meant that the Counties' could no longer mandate residents' trash be taking to the RRF. This opened the door for haulers to increase out of state landfilling mentioned previously because it was cheaper for them to do so. Cities with organized collection can require haulers use a resource recovery facility because haulers can voluntarily enter into contracts with cities and counties in which they agree to take garbage where the city or county designates.

During the 2001 session Minnesota lawmakers gave the counties money to offset the higher tipping fees at waste to energy facilities. Because of a budget shortfall, no such proposal is included in this year's budget.

Ramsey and Washington Counties offered artificially low tipping fees in 2002 of \$32 a ton to any hauler that agreed to take all the trash it collected in the Counties to the RRF. As a result, during the last ten days of 2001, BFI, Waste Management and Superior all agreed to one year contracts to haul all their garbage to the RRF. This came at the same time the Counties were investigating mandating organized collection in part to decrease the amount of garbage being taken out of state and to increase the amount of garbage going to the RRF. The large haulers have not said what they will do when the low tipping fees expire at the end of 2002. But they are under no obligation to follow the State's hierarchy for dealing with waste. And competitive pressures can be at odds with the State's, the County's and Roseville's environmental goals.



Licensing

Ramsey County requires haulers to hold a County license. The County requires insurance, various safety standards and that a portion of the waste collected is sent to the Resource Recovery Facility (RRF) in Newport, Minnesota.

According to Roseville City Attorney Joel Jamnik, Roseville could not require as part of its garbage hauler licensing that haulers take garbage to the RRF. Instead haulers are free to dispose of Roseville garbage in any manner they wish fit that does not violate state or federal environmental regulations. Haulers participating in a focus group with the Committee said they make disposal decision based primarily on cost.

Roseville's licensing requirements for residential dwellings include: weekly collection of

garbage, proof of insurance, annual notification to City and customers of rates, separate collection of yard waste and special waste (appliances, furniture, etc.), walk up service, give a choice of three different size containers. Most haulers charge extra for separate collection and for walk up service. Prices are based on the size of the garbage container. Although it's not clear that all haulers are meeting all these requirements. One resident in a focus group of homeowners said he switched garbage haulers because the one he originally had refused to arrange a special pickup of his yard waste.

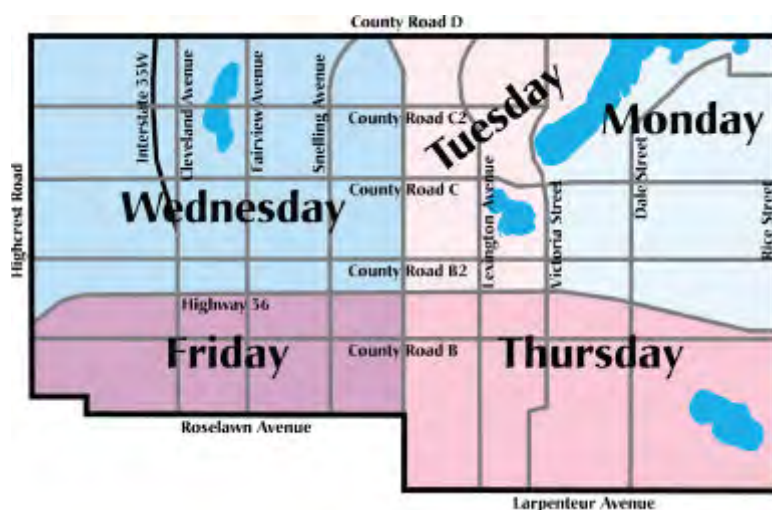
Companies are required to notify the City and customers at least 60 days in advance of any change in rates. Roseville has no rate change notifications on file for the past three years other than changes made when annual rates are filed. However phone calls from residents to City staff following the publishing of hauler rates in the January/February Roseville Wrap suggests customers are being charged a variety of rates not just the rate on file with the City.

There is no monitoring to ensure haulers are following the terms of their licensing. Even if the City were to find a company in non-compliance revoking a license would be an unlikely occurrence because of the ensuing negative reaction from that company's customers.

Companies typically bill quarterly. Many bill for the quarter to come. The billing system used by the haulers makes it so that residents are unable to switch haulers mid-quarter and receive a rebate.

Effect of Traffic

Following the 1991 report Options for Residential Waste Collections and Recycling for Roseville the Council divided the City into five zones. Garbage and recycling service is restricted to a specific day of the week for each zone (see map below).



According to Thor Bank who was chair of the 1991 committee that authored the report, the committee recommended the zone system to restrict garbage and recycling truck traffic to one day a week. Before that haulers could chose the day of service. Bank said residents did not like garbage trucks driving down their streets four or even five days a week and residents were concerned about pollution, noise and safety. Some haulers have complained that going to zones is

an unfair restriction on their business. But residents in the focus group said they are quite happy that truck traffic is restricted to one day a week.

A minority of residents still has concerns about the amount of truck traffic on their streets. In the 2002 resident survey 22% were concerned about the effect garbage trucks have on air pollution,

20% on noise pollution, 17% on safety, 16% on street maintenance, 11% on neighborhood appearance while 63% were not concerned with any of these. Roseville streets are in much better shape than they were in 1991. According to Public Works Director Duane Schwartz many Roseville streets have been rebuilt in the past 15 years. Roseville roads typically last 20-30 years. Most residential streets in Roseville are designed for 7-ton maximum axle weight. The more heavy-duty arterial streets are designed for 9-ton maximum axle weight.

As part of the City's Pavement Management Fund, every four years, Roseville's 120 miles of streets are evaluated for their condition. This information is then used to determine a maintenance plan. The streets are also given a rating of 1 to 100. Above 65 means the street is in good shape. Between 35 and 65 means the street needs repairs. Below 35 means the street needs to be reconstructed. In 1985, 28 percent of Roseville streets were under a 35 rating. Now it is 1 percent. A survey a couple of years back showed that of comparable cities in the Metro area, Roseville had the highest rating for its streets.

Streets in Roseville are kept in good shape because of the City's innovative Street Infrastructure Repair Fund. Roseville set aside roughly \$14 million available from pre-payment of bonds and other sources. Interest on this money is used for the Street Infrastructure Repair Fund that pays for various repair projects such as pavement patching. This keeps the cost for those projects off residents' property tax bills.

Roseville spends \$600-700,000 a year on street repair and maintenance. Another \$1.4 million comes from state aid. Another \$700-800,000 comes from the Street Infrastructure Repair Fund.

Schwartz says our Pavement Management Plan and our Street Infrastructure Repair Funds are the envy of many cities throughout the country. He takes calls from other municipalities looking for details on how our programs work.

However Schwartz says Roseville streets could last an estimated five to ten years longer if garbage truck traffic was limited.

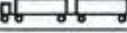
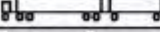
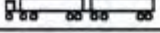
Garbage trucks put more wear and tear on streets than any other type of vehicle. According to the report "Effects of Heavy-Vehicle Characteristics on Pavement Response and Performance" from The University of Michigan Transportation Research Institute axle weight most directly determines damage to pavement and typical 3 axle garbage trucks have the highest axle weight of any vehicle traveling city streets approximately 20,000 lbs per front axle and a combined 44,000 lbs on the rear pair (see table on following page from the University of Michigan).

According to Schwartz there is a formula for calculating the different impacts of different vehicles. Pavement design manuals give the following load factor values to vehicle types:

- Car load factor = .0007
- Truck 18,000 lb/axle = 1.0
- Garbage truck can be as high as 1.6

The formula used by MnDOT says 1 garbage truck trip is equal to 1,000 car trips in terms of damage to pavement. Residential streets have average daily traffic counts of 200 to 500 vehicles.

TABLE 1. Truck matrix sizes and weights

Truck Num.	Truck Configuration	Configuration Name	GCVW (kips)	Axle Loads (kips)	Wheelbases* (feet)
1-2		2 Axle Straight Truck	32	12/20	15
3-4		3 Axle Straight Truck	46	12/34	18
5-8		3 Axle Refuse Hauler	64	20/44	17.5
9-12		4 Axle Concrete Mixer	68	18/38/12	20/12
13		3 Axle Tractor-Semitrailer	52	12/20/20	10/36
14-15		4 Axle Tractor-Semitrailer	66	12/20/34	12/36
16-20		5 Axle Tractor-Semitrailer	80	12/34/34	12/36
21		5 Axle Tractor-Semitrailer	80	14/33/33	10/36
22		5 Axle Tanker	80	12/34/34	12/36
23-24		6 Axle Tanker	85	12/34/39	12/38
25		5 Axle Doubles	80	10/18/17/18/17	10/22/22
26		5 Axle Doubles	80	10/20/15/20/15	10/22/22
27		7 Axle Doubles	120	12/34/34/20/20	12/38/22
28		9 Axle Doubles	140	12/32/32/32/32	12/38/38
29		Turner Doubles	114	10/26/26/26/26	12/22/22

* Wheelbases to tandem centers. Tandem spreads set at 52 inches.

(Table Courtesy of the University of Michigan Transportation Research Institute)

Schwartz devised a formula using these factors. He then factored in the life expectancy of a Roseville street and the cost per mile of reconstructing that road (approximately \$500,000 to reconstruct one mile of 7-ton street). Using his calculations he said by limiting the number of garbage trucks on a Roseville street to approximately one hauler, it could extend the life of the street 5 to 10 years. And based on the assessment charged to a typical homeowner that could save the homeowner twenty to forty dollars a year.

The report from the University of Michigan also shows that repeated starting and stopping (especially stopping) will increase the damage to streets by 50% to 100% depending on the speed of the truck and the weight of the load being carried. Trucks with few stops on a block tend to be traveling faster when they begin stopping.

Alternative Systems

Cities such as Minneapolis that have municipal collection have been using city crews and trucks for many years. To start up a system of municipal collection would require a significant investment of money to purchase the trucks and hire the additional staff. That is why few if any Minnesota cities continue to use or are switching to municipal collection. That is also why the Committee chose not to consider municipal collection as an option.

However a number of cities are continuing to use or are switching to other forms of organized collection that use private haulers. Organized collection of waste is when a city arranges for collection services on behalf of residents. Cities do this for a number of reasons including lowering costs to residents, lessening truck traffic on city streets, designating a disposal facility for the garbage in order to meet environmental goals, setting enforceable customer service standards and expanding the number of services available to residents. Organized collection is cheaper for residents because haulers are able to save money with the more efficient system of collection and that savings is passed on to residents.

White Bear Lake and North St. Paul each contract with one hauler to offer garbage and recycling service to residents. Little Canada contracts with four haulers that each serves a specific zone in the City. Vadnais Heights contracts with a consortium of haulers and the members divide up the service zones. Some cities bill residents themselves others have the haulers bill residents.

Officials at these cities say they get very few complaints about garbage service. Joel Hansen City Manager with Little Canada says he takes maybe two or three calls a year from residents wondering why the City has organized collection. Hansen told the Committee that once he explains the benefits of organized collection the residents are satisfied.

Mark Sather City Manager of White Bear Lake says every time a contract comes up the City takes a “zero based budgeting” philosophy, essentially charging themselves to prove the City should continue with organized collection. Every time, the answer comes back “yes.”

In addition to the benefits listed previously, Sather says White Bear benefits because with guaranteed garbage collection there is less storage of excessive amounts of garbage, and the system can support related public policy choices (e.g. discourage grass clipping generation by charging a higher yard waste per bag charge in the summer months).

Sather believes organized collection answers the concerns of those who would prefer to choose their own hauler. For the price conscious, it delivers about the lowest rates possible under any system. For the service conscious, the contract with haulers allows for walk up service and subsidies for the disabled. For those looking for extra services, the contract allows for collection of bulky items at a set rate.

60-Gallon Rate Comparison

Little Canada	\$ 9.77
North St. Paul	\$11.58
Roseville	\$14.46
Vadnais Heights	\$12.48
White Bear Lake	\$10.60
White Bear Twsp	\$11.86

(note Roseville’s rate does not include the cost of recycling that is included in the other’s rates)

Committee members assumed that competition in an open hauling system would ensure residents got the lowest rates. However a survey of Ramsey County cities shows that Roseville residents pay \$1.50-\$4 more a month on their waste collection bills compared to cities with organized collection. Additionally the cities with organized collection include recycling in their fee. Roseville residents pay an additional \$1.75 a month for recycling service. Making comparable Roseville fees \$3.25-\$5.75 a month higher.

Cities with organized collection can also retain the opt-out provision Roseville currently has. For instance Little Canada exempts residents who are out of town more than

30 days, business owners who take their residential trash and dispose of it in their company’s dumpster, and employees who are allowed to dispose of their residential trash in their company’s dumpster. Little Canada also offers a senior discount. We have seen in Roseville that that would be popular. Roseville gives a senior discount on water bills and currently 25.8% of water accounts receive the senior discount.

The City of Hutchinson uses its system of organized collection to steer residents toward reducing

the amount of garbage they produce. Their system includes garbage, recycling and organics collection. However the fee is based solely on the size of a resident's garbage cart. If residents make full use of their recycling and organics collection they can decrease the size of their garbage cart and save money. In the last couple of years 50% of Hutchinson residents have either decreased the size of their garbage cart or switched to less expensive every other week collection.

However switching to organized collection can be politically difficult. According to a 2001-2002 Ramsey County study on organized collection the public supported the County's environmental goals but did not see how organized collection would help the County reach those goals. Slightly more than half of those who responded to the County's study opposed organized collection.

Their five most frequently stated reasons the public gave for opposing it were:

- 🗑️ A desire to maintain choice of hauler
- 🗑️ Opposition to government involvement in collection
- 🗑️ Concern about quality of service
- 🗑️ Concern that costs would go up in an organized collection system
- 🗑️ Concern with the effect on competition, particularly on small haulers

Additionally garbage haulers are opposed to organized collection. At the Committee's focus group with haulers, small haulers said they oppose organized collection because they fear they would be unable to compete for a contract with large haulers and would thus lose customers. Large haulers said they oppose organized collection because if small haulers are forced out of business they could reach a quasi monopoly status that would bring increased government regulation.

Haulers, mostly larger firms, retained a public relations firm and conducted a very active campaign against Ramsey County's 2001-2002 investigation of organized collection.

Ramsey County cited this opposition as a major reason for pursuing a different option for managing waste. It will work with garbage haulers on a voluntary system to try and meet the County's goals while reserving the right to re-examine organized collection if the voluntary system does not meet the goals.

Options Considered: All to include increased educational campaigns to alert residents to the environmental and financial aspects of waste management.

- 1) Preserve Roseville's open collection system. Monitor Ramsey County's voluntary system to see if it will meet City, County and State environmental goals.
- 2) Preserve Roseville's open collection system. Work with haulers to increase services offered in order to reduce waste, increase recycling and increase use of disposal facilities other than landfills.
- 3) Switch to a system of organized collection with one hauler for the City (that may or may not include collection of recycling) that manages waste using a variety of methods according to the State's hierarchy in order to minimize landfilling.
- 4) Switch to a system of organized collection with one hauler per zone or one consortium of haulers per zone in the City (that may or may not include collection of recycling) that manages waste using a variety of methods according to the State's hierarchy in order to minimize landfilling.

- 5) Switch to a system of organized collection that preserves choice by having two haulers per zone in the City (that may or may not include collection of recycling) that manages waste using a variety of methods according to the State's hierarchy in order to minimize landfilling.
- 6) Switch to a system of organized collection in which the City negotiates with a consortium of haulers and allows the haulers to divide the City into service zones that manages waste using a variety of methods according to the State's hierarchy in order to minimize landfilling.

Recommendation:

Committee members unanimously recommend a garbage system that meets the City's environmental goals and the members' top priority of environmentally preferred management of waste. That system should also follow the State hierarchy that prefers waste reduction, reuse and recycling; yard and food waste composting; and resource recovery with landfilling as the least preferred means of management. Of the methods studied by the Committee, an organized collection system run by private haulers appears to give the City the best, and perhaps only, means to meet the City's and State's environmental goals and balance citizen interests and concerns.

Given the current economics of the waste collection industry, the majority of Committee members believe the best way to achieve environmentally preferred management of waste is through a contract with a consortium consisting of all the current haulers in Roseville (as was done in Vadnais Heights and Little Canada). These consortiums typically divide the cities into zones with one hauler assigned to each zone. However, Roseville may require more than one hauler per zone in order to preserve customer choice. Such service may cost residents more than a single hauler per zone system.

That contract is the only way where the City can specify that waste be managed using what is currently the environmentally preferred waste method: a resource recovery facility.

Additionally, and in light of the ever changing waste management landscape, the Committee strongly believes the City should monitor developments by the State, County and private sector to determine if a future alternative might better meet the City's and State's environmental goals and balance citizen interests and concerns.

Furthermore, the Committee believes a waste management system consisting of a consortium of current private waste haulers in collaboration with the City could also provide the following benefits to Roseville residents:

- Negotiated lower rates to customers (the top priority of the majority of residents surveyed – 53%)
- Preserve customer choice (the second highest priority of residents surveyed – 40%)
- Limited truck traffic that reduces wear and tear on streets, thus reducing or delaying property tax assessments for road maintenance or replacement

- Limited truck traffic that reduces air pollution, noise pollution and improves or enhances neighborhood safety and appearance
- Strong performance and incentive-based contract provisions that would guarantee a high level of customer service
- Provide residents with clear, annual delineation of haulers' services and rates
- Expand and enhance residents' knowledge about the full range of public and private services and costs for disposal of difficult items

The Committee recognizes that there are Roseville residents who would not want the City Council to restrict their ability to choose a garbage hauler, and that there are concerns about how government involvement with the consortium of haulers might impact cost, service and small haulers' viability. The Committee understands those concerns and believes a City contract with a consortium of all the current haulers in Roseville will preserve market share for small haulers, and allow the City to set strong performance and incentive-based contract provisions that would guarantee a high level of customer service while meeting residents expressed desires for lower rates and environmentally preferred management of their waste.

Household Hazardous Waste

History/Trends: Many household products you use to clean your kitchen and bathroom, maintain your car and home, and control animal and insect pests contain hazardous materials. If you use or store these products carelessly, you can make your family and yourself sick. If you dispose of them improperly, you can harm waste disposal workers, water quality and wildlife. When these products are no longer needed or useful, they are considered household hazardous waste (HHW).



A Roseville resident uses the seasonal HHW site.

Ramsey County began a HHW collection program in 1992. The County pays Bay West to operate a year-round collection site at 5 Empire Drive in St. Paul that opened March 25, 2000 and seasonal collection sites in various cities. One of those seasonal sites is on Kent Street in Roseville. Residents may drop off HHW for free. The County pays for collection and processing of HHW. Waste collection and disposal is funded by the waste management service charge, which is paid with your property tax.

Among the items collected are:

Fluorescent lamps	Pesticides - weed or bug killer
Mercury vapor lamps	Rat or mouse poison
Old gasoline	Mercury thermometers, thermostats, switches, etc.
Spray cans – but not if empty	Used antifreeze
Paint – but not if dried	Used motor oil and oil filters
Paint stripper	Wood preservatives and stains
Paint thinner and other solvents	
...and other products labeled poisonous, flammable, or corrosive.	

Items such as old paint go to Amazon Environmental in Roseville to be blended into new paint. Flammable liquids are sent to a company that blends the liquids into a fuel. Ramsey County and Bay West find markets to recycle or properly dispose of all materials collected by either recycling it, blending it for use as fuel or incinerating it. Companies that receive the material must be inspected annually to make sure they operate in compliance with State and Federal laws.

In a 2002 survey of Roseville homeowners, 42% of homeowners said they used the seasonal site and 94% of those residents said the service was excellent or good. Thirteen percent of homeowners said they used the year-round site in St. Paul (that has only been open two years) and 96% of them said the service was excellent or good. Five percent of multi-family complex residents used the seasonal site and 100% said the service was excellent or good. Seven percent used the year-round site and 100% said the service was excellent or good.

Roseville residents are allowed to use any of the Ramsey County seasonal sites that include: Maplewood, Shoreview, Pleasant Avenue in St. Paul, and White Bear Lake. They may also use collection sites in other metro area counties, but the counties discourage that unless someone lives in a border community and it is more convenient for that person to take their HHW to the collection site in the adjacent county.

Ramsey County attempts to reduce the amount of HHW generated by urging residents to buy only what they need of potentially hazardous materials, to use what they buy, and to give leftover product (except pesticide) to someone who can use it up.

Options Considered:

1) Meet the City's stated environmental goals by continuing to allow Ramsey County to operate a seasonal collection site in Roseville. Coordinate publicity of the seasonal and year-round sites with Ramsey County. Coordinate publicity of waste reduction with Ramsey County.

Recommendations:

Continue allowing Ramsey County to operate a seasonal HHW collection site in Roseville.

Coordinate with Ramsey County publicity of the sites including seasonal sites not in Roseville and publicity about waste reduction.

Expand and enhance promotion of HHW collection sites and waste reduction.

Through education expand multi-family residents use of HHW collection sites.

Leaf Pickup Program

History/Trends: Minnesota banned burning yard waste effective January 1, 1971 and banned putting yard waste in with your garbage effective January 1, 1990. Prior to the bans residents were allowed to dispose of yard waste as they disposed of any other garbage.



In response to the 1971 ban on yard waste burning Roseville began curbside collection of leaves. Roseville is one of few cities in the metro area to offer a Leaf Pickup Program although other cities include leaves in their yard waste collection programs. The Leaf Pickup Program allows

residents to rake leaves from their property to the curb where City crews use a specially equipped truck to vacuum up the leaves according to a published schedule (typically the end of October and beginning of November). Leaves are hauled to the Roseville leaf compost site off Dale just south of County Road C where they are composted. (At other times of the year the Vac-all is used to clean parts of the sewer system and on other related projects.)

The leaves are stored in windrows to speed their decomposition. Roseville contracts with a private company to turn the windrows four times a year. That charge of \$8-10,000 a year is taken out of a budget account that deals specifically with the compost facility. It typically takes a little over a year for the leaves to decompose into usable compost. The compost is available for residents to pick up free of charge. There is a small charge for home delivery. The charge (\$30 a 6 cubic yard truck load) is just enough to cover the cost of delivery; it does not subsidize the facility. Residents use approximately 80% of the compost. The rest is used in City projects. All the available compost is used during the year it is available.

Roseville addressed concerns about runoff from the compost site noted in the 1991 report by constructing a filter berm in 1992 to filter the leachate. That berm will need to be repaired and regraded in a few years.

The leaf pickup program was run at no additional cost to participants until 1997. Homeowners

Leaf Pickup Program Sign Ups

1998	2,500
1999	2,575
2000	2,652
2001	2,750

were then asked to pay a \$15 fee that was added to their water bill. Participation rates fell and the City lowered the fee to \$10 a year. Participation has fallen by 50% since Roseville began charging a fee, however the City still collects 2/3 of the volume. However after the initial decline the number of homeowners signing up for the program has been growing. In 1998 it was 2,500, in 1999 it was 2575, in 2000 it was 2652 and in 2001 it was 2750.

Residents may drop leaves off at the site for free. The site is open in the fall during October and the beginning of November and again in the spring in April and May. According to the 2002 survey of homeowners 38% said they dispose of their leaves by taking them to the City's



compost site. In 2001 4000 tons of leaves were deposited at the site, approximately half of those from residents who brought leaves there themselves and the other half by City crews. Residents also use a number of other means of appropriate leaf disposal. In the 2002 homeowner survey 20% said they arranged a special pick up with their garbage hauler, 11% take leaves to a County compost site, 10% use the leaves themselves by either putting them in their backyard compost or using them as mulch in their gardens and 6% chop the leaves up with a mower and leave them on their lawn.

Roseville publicizes its Leaf Pickup Program and the Leaf Compost site through an annual mailing to homeowners. The mailing includes a reply card for resident to use to sign up for collection. Roseville also publicizes the program in the “Roseville Wrap” and on the City’s website and through a video shown on Roseville Cable Channel 16.

Program Cost

According to Public Works Director Duane Schwartz the average annual cost of the Leaf Pickup Program over the past four years has been \$78,000. Roseville has taken in roughly \$23,000 a year in charges to homeowners who sign up for the program. This results in a charge to the City of approximately \$55,000 a year in labor (Roseville uses 8 full time employees and 11-12 temporary workers), postage, printing, administration and vehicle depreciation. Schwartz said that number does not take into account certain avoided costs. For instance if there were no Leaf Pickup Program City workers would need to clean leaves out of catch basins and gutters. He said the charge for that alone would be \$40,000 a year. There would also be costs associated with pond cleanup and clearing plugged catch basins. He said most cities incur those costs.

Some people who use the drop off site do mix brush in with the leaves. The City spends approximately \$5,000 a year to clean up the site and remove brush.

By encouraging responsible disposal of leaves Roseville also minimizes the amount of leaves that build up in lakes and storm ponds. Decaying leaves use up oxygen in the water reducing the oxygen available for fish and other aquatic life. They also give off phosphorus that promotes weed and algae growth that further threatens water quality in these lakes and ponds.

Roseville’s 2002 Parks Natural Resource Management Plan addresses water quality issues in Langton Lake and Lake Bennett. Both lakes have elevated levels of phosphorus. The report recommends a treatment program as well as an abatement program in nearby residential areas. The plan calls for educating residents about water quality problems in the lakes and for setting up barriers to prevent yard runoff from reaching the lakes.

Options: All include education by the City on the importance of proper leaf disposal and the consequences of leaves building up in storm ponds and lakes.

1) Meet the above stated environmental goals by continuing the Leaf Pickup Program with the understanding that avoided costs such as those for cleaning catch basins and gutters offset most if not all of the cost of the program.

2) Discontinue the Leaf Pickup Program at a direct savings of approximately \$55,000 a year knowing that most if not all of the savings would be consumed by charges for other services such as cleaning catch basins and gutters.

3) Increase participation by shifting the fee to the storm water sewer charge on utility bills and pick up leaves from all households.

4) Expand and enhance education campaigns to alert residents to the need to properly dispose of leaves and to fully inform residents of haulers' disposal options and services.

Recommendations:

Continue the Leaf Pickup Program with the understanding that avoided costs such as those for cleaning catch basins and gutters offset most if not all of the cost of the program.

Expand and enhance education campaigns to alert residents to the need to properly dispose of leaves.

Multi-Family Complex Recycling

History/Trends: Roseville has an organized collection system for recycling collection at single-family homes, duplexes, triplexes and four-plexes. Roseville has never included multi-family complexes in the City recycling program. The City has traditionally treated multi-family complexes more as businesses instead of residential dwellings. This has led to some confusion in City policy the most glaring example of which is that multi-family complexes are charged for the City's curbside recycling program but not provided with the service.



Roseville's policy of treating multi-family complexes as a business is also in conflict with State law and Ramsey County policy. Minnesota law requires counties to provide for recycling services to all residents at the place they live. Ramsey County interprets that to include multi-family complexes.

Ramsey County monitors Roseville's compliance with State law. Ramsey County has informed Roseville that the City's annual SCORE grant may not be awarded if Roseville does not have a system to assure on-site recycling service to multi-family complex residents (additionally the service must collect four distinct categories such as glass, aluminum, cardboard and newspaper). The SCORE grant of more than \$60,000 is used to offset the cost of the curbside recycling program thus reducing the quarterly charge assessed.

The 1991 report Options for Residential Waste Collection and Recycling for Roseville recommended establishing a committee of multi-family complex residents, building owners/managers, and haulers to explore and recommend ways and means for separating and collecting recyclables generated by these residents. To the best of our knowledge that committee was never established.

Currently 25 complexes with 2,601 units contract with private haulers to offer recycling services to their residents. Seventy-five complexes with 4,444 units do not. Most collect newspaper and commingled containers. A few also collect cardboard.

Sixty-two percent of multi-family complex residents surveyed in 2002 said they would like to join the Roseville recycling program.

The survey shows that residents of multi-family complexes say they recycle a significantly lower percentage of their waste. For instance only 28% recycle junk mail while 63% of homeowners recycle junk mail. That is just one reason why paper products make up 35% of our garbage by weight.

Concerns

Multi-family residents are traditionally more transient than homeowners. Sixty percent of the multi-family residents in the 2002 survey have lived in Roseville six years or less. Twenty percent are 25 years old or younger.

While it's desired that more residents get the opportunity to recycle, it can be difficult to get multi-family complex resident to use recycling programs. Because they may be new to the area,

have no responsibility to arrange garbage and recycling service, or feel less connection to the City, it can be harder to inform and engage multi-family complex residents in recycling programs.

The keys to getting multi-family complex residents to recycle are continuing education and convenience. That point was stressed in the committee's discussion of multi-family complex recycling with Marilynn Corcoran Recycling Coordinator for Brooklyn Park, Brooklyn Center, Crystal and New Hope and in focus group discussions with multi-family residents, multi-family complex owners and managers, and with garbage haulers.

Cities with successful multi-family recycling programs use multiple means of educating residents. The cities work closely with private recycling companies and building managers to create simple, easy to understand education pieces. Those pieces are usually given out when residents move in and are re-sent to residents periodically thereafter. Another key is to find a resident or manager who serves as a contact and information source for residents. There also need to be clearly labeled recycling containers preferably with pictures.



Brooklyn Park's apartment recycling totes

A little innovation can also make the program convenient for multi-family complex residents to recycle. An example is Corcoran's award winning recycling tote bag (see photo at right). Owners and managers mount Velcro strips in units. The totes have Velcro and are attached to Velcro strips. The bags provide a convenient storage place for the recycling that can easily be taken and dumped into a central recycling bin. The bags can be washed to prevent odor and stains. The cities Corcoran works for paid for the bags and she coordinated with the complex owners and manager to have them installed.

Multi-family complexes use storage bins in designated locations for collection of recyclable material. The recycling hauler then empties the storage bins. This system saves on storage space and makes it more convenient for residents to use. However the bins can appear to be similar to garbage bins and contamination is a significant problem at multi-family complexes according to recycling haulers, multi-family residents and multi-family managers and owners that took part in focus group discussions.

An additional hurdle found in growing suburbs such as Brooklyn Park is the growing population of residents who speak English as a second language. Based on focus group conversations with multi-family residents, owners and managers this does not appear to be a significant issue in Roseville yet. However with approximately 18% of Roseville's population living in multi-family complexes the potential is there for language barriers to become a significant issue.

Results on English as a second language have not been released from the 2000 Census yet. According to the 1990 Census 1.7% of Roseville residents said they did not speak English well. About half of those residents (0.8%) spoke an Asian or Pacific Island language. The only other

language of note was Spanish (0.3%). The rest are not listed.

Corcoran also found it important to meet regularly with multi-family complex owners and managers to discuss their concerns about how the program was operating. She found that even though all owners were assessed a recycling fee, a small percentage refused to participate in the collection program.

In a focus group discussion with multi-family owners and managers in Roseville not all expressed a desire to participate in the City's recycling program. Some said their complexes were built before central storage of garbage and recycling became wide spread. Thus they could not easily site recycling bins without having to eliminate parking spots. Others felt a requirement to add recycling would interfere with their ability to operate their buildings.

What Other Cities Do

Fifteen Ramsey County cities (out of 17) have organized collection of recycling. Six of those 15 include multi-family complexes in their recycling program (two, North Oaks and Gem Lake, do not have any multi-family housing). Haulers charge by the unit. For instance Waste Management charges Shoreview \$1.09 per unit to collect recycling at multi-family complexes and Brooklyn Park \$1.12 per unit. Those cities pass that fee along to multi-family complex owners.

Not all Minnesota cities where recycling is made available to multi-family complex residents do so by including those residents in the city's program. For instance in Mounds View all licensed garbage haulers are required to offer recycling service as well. The City leaves it up to building owners and garbage haulers to work out the details of how that service will be provided. Mounds View provides no oversight. Dakota County sets minimum standards for what products are to be accepted for recycling, but again leaves it up to building owners and haulers to work out details.

Options Considered:

- 1) Maintain current program without incurring the additional cost of providing recycling service to multi-family complexes. Work aggressively with multi-family complex owners and managers to convince them to offer recycling services.
- 2) Meet the above stated environmental goals by expanding the current program to include multi-family complexes. The cost of approximately \$1.10 per unit per month be assessed to multi-family owners and managers. Work aggressively with multi-family owners and managers to coordinate implementation and on-going education campaigns on recycling.
- 3) Meet the above stated environmental goal by requiring all licensed garbage haulers that service multifamily complexes offer recycling service as well, leaving details for owners and haulers to determine.
- 4) Stop billing multi-family complexes for recycling at a cost to the City of 8,145.36 while providing no service and risk losing SCORE funding of more than \$60,000 a year.

Recommendation:

Meet the City's stated environmental goals and provide multi-family complexes the service for which they are currently paying, but not receiving, by expanding the current program to include multi-family complexes. The committee recommends the City phase in the addition of multi-family complexes beginning with all townhome and condo complexes not currently in the curbside collection program and eventually include apartment buildings. The current fee system would be scrapped. Multi-family complexes would be assessed the recycling fee the City pays the hauler only after the complex is added to the program. Work aggressively with multi-family owners and managers to coordinate implementation and on-going education campaigns on recycling.

Residential curbside recycling

History/Trends: Roseville has contracted for curbside recycling of single-family homes, duplexes, triplexes and four-plexes since July 1987. Super Cycle was the contractor from the program's inception until January 1999. Since then the City has contracted with Waste Management.

Roseville's curbside recycling program began in July 1987 with once a month pickup of newspapers, cans, bottles and corrugated cardboard. In January 1991 magazines and two types of plastics (HDPE and PETE) were added. The curbside recycling program was once a month pickup from July 1987 through July 1988. From August 1988 through December 1996 it was two pickups per month. Since January 1997 pickup has been every other week. In January 1999 boxboard, junk mail, phone books and books were added. At the same time the sorting guidelines were simplified. Residents are only required to sort recyclables into two categories: paper products and containers. Despite these changes of more frequent collection and simplified sorting, tonnages collected and the number of participating households has remained relatively stagnant since 1992. Annual set out rates in the past ten years have averaged between 54 and 68 percent with no pattern of growth. Recycling tonnages have been between 2,500 and 3,000 since 1992 with no pattern of continuing growth.



Informing Residents

Roseville provides information to residents about how to use the curbside recycling program in a number of formats. Articles on waste reduction and recycling have been included in every edition of the "Roseville Wrap" bi-monthly resident newsletter since June 2001. Information is also included in New Resident packets, on the City's website, on the City's cable channel and in brochures and fliers available at City facilities.

In a 2002 survey of Roseville residents 74 percent said they get information on recycling from the "Roseville Wrap," 26 percent get information from Waste Management, 21 percent from newspapers, 19 percent from friends and neighbors, six percent from New Resident Packets, four percent from the City's website, and three percent from City Staff.

Residents in a focus group of homeowners said they would like additional information about recycling. Many said it was because they were not sure what is and is not acceptable in the curbside recycling program. This prompted staff to put additional information in the Roseville Wrap newsletter to meet these residents' needs.

Roseville used to have volunteers that would put up yard signs to remind their neighbors when to put out their recycling (see photo above). In 1999, the City surveyed sign volunteers and found that most were not using the signs so the program was discontinued.

Cost

Roseville pays Waste Management \$2.05 per household per month (\$19,003.50) for collection.

All residential dwellings whether they are single-family homes or apartment complexes are charged a recycling fee assessed on their quarterly water bill. Each household pays \$1.75 a month for recycling (there is no senior discount as there is on the water use portion of the bill). Multi-family complexes are charged based on the number of units. The fee pays for City supplied recycling bins as well as the cost of collection (although multi-family complexes do not receive service). The City pays approximately \$3,500 a year for 500 recycling bins. Roseville began providing free 18-gallon blue recycling bins following a recommendation in the 1991 report.

Roseville collects \$188,000 in recycling fees while paying \$250,000 in expenses. The difference is offset by more than \$60,000 in an annual SCORE grant from the state and administered by Ramsey County. (Note: SCORE grant funding may be cut as the State deals with a budget shortfall). The money is from sales tax on garbage collections that the State gives to the counties to distribute. While Roseville uses the SCORE grant to reduce residents' monthly fee, SCORE grants can pay for a variety of programs including: waste reduction, recycling, managing problem materials, waste processing at a resource recovery facility, education and technical assistance, developing markets for recycled products, and litter prevention.

Roseville used to include in its recycling contract profit sharing in which the City would receive a portion of the money raised from selling of recyclable material. Typically this was a few thousand dollars a year. Profit sharing was discontinued in 1996. Other cities such as Shakopee and Lauderdale include a profit sharing provision in their contracts.

Where Recycling Goes

Waste Management takes recyclable material collected in Roseville to its processing facility in Northeast Minneapolis that opened in January 2002. The facility was designed to take material from single stream collection cities (everything is co-mingled) but material from two sort cities (such as Roseville) and even cities with seven separate sorting categories (such as St. Paul) may be mixed together. (St. Paul requires the paper products and containers are not to be co-mingled when they are dropped off there.)

The material goes through hand sorting and screen sorting to separate the various recyclable materials for sale to private companies. For instance newspaper is separated and sold to paper companies such as Bowater in Thunder Bay to be turned back into newsprint. Glass bottles go to Anchor Glass in Shakopee to be turned into new bottles (see appendix I). Sometimes the material is turned into non-recyclable items such as paper sold to a company that makes insulation and plastic bottles sold to a company that makes plastic lumber and lawn edging. While there are no regulations as to what the end product should be, State and Ramsey County agencies prefer the recyclable material be sold to companies making products that can be recycled again.

Other companies such as BFI operate recycling processing facilities that take two-sort material. The City of St. Paul is in the process of building a two-sort facility to process recycling. It is also creating a non-profit company to collect the recycling and may compete with the private sector for municipal recycling collection contracts.

Concerns

While the rate of recycling has stagnated throughout Minnesota, the rate of garbage generation has increased. Statewide each person generated 1.14 tons of garbage in 2000 up from 0.93 tons in 1993. A 1999 study shows that 35 percent of our garbage by weight is paper and 26 percent organic material such as food scraps much of which could be recycled or composted. It appears Roseville residents could be doing a better job recycling paper. The 2002 survey of Roseville residents shows almost all those who recycle put out newspapers. Approximately 90 percent set out food and beverage cans, glass bottles and jars, cardboard and plastic bottles. While eighty percent set out magazines and only 63 percent set out junk mail.

What Do You Recycle?

Newspapers	97%
Cans	92%
Plastic Bottles	91%
Glass	91%
Cardboard	87%
Magazines	78%
Junk Mail	63%

Households with older residents typically have a lower volume of recycling because there are fewer people than in homes with families. However we do not know if per household volume of recycling will decrease as Roseville's population continues to age.

The survey also suggests there may be a problem with storage of recycling. Fifty-four percent of residents said the 18-gallon bins did not meet their needs. When those residents were asked what would make it better, 66 percent said make it larger, 61% said make it wheeled and 34% said make it covered. In the focus group of homeowners one resident admitted he does not recycle glass simply because he does not have the room in his garage for storage. When offered a second blue bin, he declined saying he did not have additional surface area in his garage to store the second bin. Roseville allows residents who request an additional bin to pick one up for free at City Hall. A number of residents use multiple bins to ease their sorting. Typically they put containers in one bin and paper products in the other.

The bins can be retrofitted to add wheels and covers, but containers cannot be made much bigger before running into conflict with OSHA regulations.



An additional problem is that a few years back Roseville ordered a bad batch of bins (see photo at left). They are substandard and have a much higher rate of cracking and breaking than the current bins. The new bins are guaranteed to last at least 5 years. Roseville replaces one to two of the old bins every week.

Extra Recycling

When residents call the City wondering what to do with recycling that they don't wish to keep in their house until the next collection day the residents are referred to Vasko Recycling at 309 Como Avenue in St. Paul. Vasko is a private company that works in conjunction with St. Paul's Eureka Recycling (formerly the Neighborhood Energy Consortium) to operate a free drop off site for recyclables. Generally the calls to Roseville's Recycling Coordinator about this are from

people who have returned from vacation or finished cleaning out their home.

What Other Cities Do



Newspapers in a Single Stream Recycling Cart

Some Minnesota cities have begun addressing storage and convenience issues by using wheeled 64-gallon carts for recycling. Brooklyn Park, Brooklyn Center, Crystal and New Hope are using a system called single stream. All recyclable material goes into a single cart. In a pilot program in 2001 these cities found participation went from 58 percent under to current two-sort bin system, to 74-87 percent participation in the single-sort system. They averaged 23 pounds of recycling set out per household versus 18 pounds per household with the bin system.

While this appears to be moving forward, there are some significant concerns about single stream recycling. The major drawbacks are inability to monitor what is collected at the curbside and additional processing at the facility both of which lead to contamination of recyclables.

Data on current single stream recycling facilities shows the amount of material collected that is not recyclable (out throws) is 5% or greater and the material not able to be recycled (residual) to be 15-25%. Numbers on Waste Management's facility in Minneapolis show a lower rate of residual but are preliminary because the facility opened in January 2002 and is not running at full capacity. Also the numbers will be skewed because single sort materials are mixed with two sort and source separated (seven sorts) systems. Another factor influencing this is that Waste Management collects broken glass and sends it to its landfills for use as drainage or cover material. That material is not included in the facility's residual rate even though it ends up in a landfill. Residual for Roseville's current two-sort system when it was being processed at a two-sort facility was approximately 7 percent; out throws closer to 1%. Thus the net amount of material that is successfully processed in a single stream system can go down even though the amount collected goes up.

It's not necessarily the single stream method that leads to increased participation. In 2001 St. Paul's Eureka Recycling that runs recycling programs for the City conducted a pilot program on recycling behaviors. The study included single stream with carts, two stream with carts, two stream with bins with weekly collection and two stream with bins with every other week collection as well as a pilot area using St. Paul's current seven sort system. Statistics show the most significant gains in recycling tonnages collected and in tonnages successfully processed where in the area that had weekly collection using bins and in the area that had biweekly collection using wheeled carts. This suggests that elements of convenience such as carts or weekly collection are what increase participation instead of being able to put recyclables into one container.

Meanwhile Roseville residents seem cool to the idea of using a single stream system. In the 2002 survey, Roseville homeowners were asked if they would like to use a single stream system. Fifty-one percent said yes, 49 percent said no. The group that said yes was asked how much more per month they would be willing to pay to use a single stream program. Thirty-nine percent said they would not be willing to pay more while 24 percent said they would pay \$2 more a month and 19 percent said \$1.

Currently Waste Management is the only company in Minnesota offering single stream recycling. While it reduces the labor costs for collection, Waste Management says those savings are eaten up by the increased cost of processing the material for sale. As a result Brooklyn Park, Brooklyn Center, Crystal and New Hope went from paying \$2.05 per household per month for weekly collection of recycling in bins to paying \$2.25 per household per month for every other week collection of recycling using carts. The cost of the carts is included in the recycling charge, however at the end of the contract Waste Management retains ownership of the carts.

Some cities have found it more convenient for residents to have once a week collection. There are various ways to do this. Fridley, Plymouth and Farmington contract for once a week curbside collection. Fridley pays BFI \$2.09 per household per month for weekly curbside collection while Plymouth pays Waste Management \$2.23 per household a month and Farmington pays Lakeville Sanitation \$2.77 per household a month.

Other cities combine recycling and garbage collection under a system of organized collection. For instance, Little Canada, North St. Paul, Vadnais Heights and White Bear Lake contract with haulers to collect both garbage and recycling weekly. The cities then prescribe the details of the recycling program such as what is collected. North St. Paul and White Bear Lake contract with one company to serve the entire city. Little Canada and Vadnais Heights contract with a consortium of haulers. One hauler in Little Canada (Horrigan) does not offer curbside recycling collection so it has worked out a deal with another consortium member to provide recycling collection in Horrigan's zone.

Other cities such as Mendota Heights, Mounds View and Chaska have open collection. They require licensed garbage haulers to offer recycling service as well. Residents are then free to pick their garbage and recycling hauler and level of service with little oversight from the city.

Options Considered: All would include exploring avenues to increase frequency and variety of recycling information campaigns that would include information on waste reduction, reuse and recycling. Monitor the recycling program for effectiveness in actual recovery rates, customer service standards and education of residents.

- 1) Continue current two-sort with biweekly collection recycling system using City supplied bins.
- 2) Switch to a two-sort with weekly collection recycling system using City supplied bins at an increased cost of at least \$.05 per household per month.
- 3) Switch to a program of a single stream with biweekly collection using wheeled carts at an increased cost of approximately \$.20 per household per month.
- 4) Switch to a program of two-sort with bi-weekly collection using wheeled carts at an increased cost of more than \$.20 per household per month.
- 5) Discontinue the City's curbside recycling program. Require all licensed garbage haulers offer recycling service to customers with details to be worked out between haulers and customers.
- 6) Switch to a system of organized collection of garbage and recycling in which hauler(s) would be required to provide recycling service.
- 7) Offer a senior discount on the recycling fee.
- 8) Initiate pilot programs on single stream and weekly collection.

Recommendations:

Clearly there are problems with the current system. Roseville has stagnant recycling rates and data that suggest the current system has storage problems that inhibit full participation.

While option three of single stream collection appears to closely meet the goals of a convenient system that would increase participation in recycling, there are some serious concerns about how the system operates. Similarly there are drawbacks to the main alternative, option two of weekly collection of two-sort material, that suggest it might not meet the needs of our elderly residents. Instead the committee is listing the pros and cons of our current system, options two and three and will allow the City Council to make a decision.

	Pros	Cons
<u>Option 1</u> Current System	—Residents are familiar with it —Less residual and out throw —Lower processing cost —Bins can be modified to add lids and wheels —Lowest cost (\$2.05 per household, per month)	—Participation rates and tonnages are stagnant —Higher collection cost —Difficulty of getting bins to the curb —Storage concerns inhibiting full participation
<u>Option 2</u> Weekly Collection	—Abates storage concerns because of less build up —Less residual and out throws —Lower processing cost —Bins can be modified to add lids and wheels	—Difficulty getting bins to curb —Higher collection cost —Less convenient —Increased truck traffic —88% of residents surveyed said every other week collection is often enough —Higher Cost (\$2.10-2.25 per household, per month)
<u>Option 3</u> Single Stream	—Convenient (no sorting) —Wheeled and covered containers —Lower cost of collection —Provides additional storage space —Less truck traffic because trucks don't fill as quickly since they can compact material —Higher participation/ More tonnage collected	—Higher cost of processing —Higher residual and out throw rates —Only one vendor —If City doesn't own bins, would have to buy a new set if new vendor —Waste Management has less incentive to recover glass and sell it to a manufacturer for recycling —Residents surveyed split 50/50 on whether they want it —Highest cost (\$2.25 per household per month)

Yard Waste, Brush and Organics

History/Trends:

Yard Waste: Minnesota banned burning yard waste effective January 1, 1971 and banned putting yard waste in with your garbage effective January 1, 1990. Prior to the bans residents were allowed to dispose of yard waste as they disposed of any other garbage. However the yard waste contributed greatly to overburdening landfills and straining the Resource Recovery Facility in Newport. As a result of the bans Roseville and Ramsey County enacted programs and policies to deal with yard waste disposal.



In response to the ban on putting yard waste in with other solid waste Roseville required all licensed garbage haulers to offer separate yard waste and/or brush collection. In this report we will define yard waste as grass clippings and other soft-bodied plants. Brush is considered to be tree branches and other woody materials.

Twenty percent of homeowners said in a 2002 survey they arrange a special yard waste pickup with their hauler. Forty-three percent arrange a special pickup for their brush. Some residents set out separate bags containing their yard waste and/or brush; others have separate wheeled carts they use to hold their yard waste and/or brush. Some residents use the service infrequently and pay per pickup. Others contract yearly or seasonally. One hauler, Walters, does not charge extra for yard waste disposal and one homeowner in the resident survey said that is why he chose Walters to be his garbage hauler. One resident in a focus group of homeowners said he switched garbage haulers because the one he originally had refused to arrange a special pickup of his yard waste.

Haulers take that yard waste and brush to a variety of locations that they list on their annual license applications. Four send all or part to S.K.B. Environmental in St. Paul, two to the NRG compost facility in Rosemount, two to Burberl Compost in Stillwater, one to Nick Ries Farms in Hastings, one to J&J Recycling in St. Paul, one lists only “Compost Facility” and one does not list where yard waste and brush are taken.

In 1983 Ramsey County opened seven compost sites where residents may drop off yard waste for free. Brush and food waste are not accepted at these sites. Brush decomposes too slowly to managed through composting at these sites. The sites were not designed to manage food waste as it done at private food waste compost sites.

In 2000, there were 353,000 drop offs at the sites. Eleven percent of Roseville homeowners surveyed in 2002 said they used a County compost site to drop off their leaves, 14% used the sites to drop off their yard waste. Material is composted on site at three locations. Material collected at the other four sites is taken to commercial compost/land application sites.

The yard waste sites are in danger of running out of room or of losing their leases. An eighth compost site in Maplewood that opened in 1984 was closed in 2000. Mounds View wants Ramsey County to close the site there. The Midway site is in danger of losing its lease when it

expires in 2003. The White Bear Township site is threatened by possible encroachment from neighboring North Oaks. There is little or no room to expand at other sites. Ramsey County says it will not replace any yard waste sites that close. Roseville, Ramsey County and state environmental organizations are addressing the space crunch by encouraging backyard composting and by continuing with efforts to decrease the amount of yard waste generated by residents. Metro area counties have sold reduced price backyard compost bins in 2001 and 2002. They may extend the program into 2003, but it's not likely to last beyond that. Residents are encouraged to mulch their grass, mow less often and use other low maintenance lawn care techniques.

In 1990 the Roseville Citizen's Advisory Committee for Residential Solid Waste Management held a public seminar with Ramsey County Master Gardeners on lawn and garden care. The Committee also authored a four-page handout on dealing with yard waste, and articles in the June 1990 Roseville Newsletter on mulching and composting of yard waste. The March/April 2002 Roseville Wrap included an article on low maintenance lawn care using material generated by the Minnesota Office of Environmental Assistance for a campaign it will launch later this year.

The information appears to be sinking in. Fifty-nine percent of Roseville homeowners surveyed in 2002 said they mulch their grass clippings and 20% compost some or all of their yard waste in their backyard.

Backyard Composting: Metro area counties are encouraging residents to do more backyard composting and to include food waste in their composting. A 1999 study showed that 26% of our garbage by weight is organic material such as food scraps much of which can be composted or recycled. In 2001 the counties began offering reduced price recycling bins to residents. The response was high so the counties are continuing the program in 2002. In 2001 243 Roseville residents bought a bin through the program. In 2002 Roseville and Ramsey County are coordinating publicity to increase that number. The March/April Roseville Wrap included an article about the compost bin program and order forms are available at City Hall and the Harriet Alexander Nature Center. The counties are considering extending the compost bin program into 2003.



Following a 1991 study of solid waste and recycling practices in Roseville the City adopted an ordinance on backyard composting. The ordinance allows backyard composting that may include yard waste, brush and kitchen waste, must not be unsightly, must not cause offensive odors and must not attract rodents. Twenty percent of homeowners surveyed in 2002 said they composted yard waste in their backyard, 14% composted brush and 8% composted leaves.

What Other Cities Do About Yard Waste

Some cities with organized collection of garbage such as Hutchinson, Minnesota and Mesa, Arizona offer curbside collection of yard waste as part of the City's waste and recycling collection program. Households are provided a 90 gallon wheeled cart similar to a garbage cart. In both cases the cities use green carts for yard waste and other colored carts for garbage. Yard waste is collected weekly and taken to a compost facility. Hutchinson residents pay a monthly fee for garbage, recycling and collection of yard waste and other organics. Mesa residents are

charged \$3.50 a month for their program.

Ramsey County cities with organized collection such as Little Canada and North St. Paul require haulers offer yard waste collection. Residents can choose a yearly rate or a charge per bag similar to what is done in Roseville.

Brush: Roseville used to accept brush during City sponsored Clean Sweep days. Residents brought brush to the Ramsey County site on Larpenteur east of Dale. There was a nominal charge for dropping off brush. Roseville discontinued its Clean Sweep days in the early 1990's because the City could not find a contractor to run the white and bulky goods portion.



There does not appear to be strong interest among Roseville residents in offering a brush drop off service again. In the 2002 resident survey 55 percent of homeowners said that if Roseville operated a brush drop off site they were not likely to use it.

However there was high usage of curbside collection of brush following the windstorm in 2000. City crews targeted the northeast quadrant of Roseville that was the area with the most damage. Residents could also use a drop off site at the Arboretum. It cost the City \$116,496 to run that special brush collection. Much of that was offset by reimbursement from FEMA. (Some residents were disappointed Roseville did not offer curbside collection of brush throughout the City as was done in Shoreview). The brush was chipped and made available for residents to take with them or pick up from bins at the leaf compost site. Residents used many of the chips and the rest were donated to the Tri-District School for use in a prairie restoration project.

Forty-three percent of Roseville homeowners surveyed arrange a special brush pickup with their garbage hauler. Although some residents don't like that hauler require brush to be cut up before pickup. Twenty-four percent burn their brush in their backyard or fireplace. Fourteen percent chip their own brush, 14% compost it in their backyard and 11% take it to a private company for disposal. The nearest private company is Treecycle near Hamline University. Treecycle does not require brush be cut up before it is dropped off.

Illegal dumping of brush on City property does not appear to be a problem in Roseville. According to Streets Supervisor Steve Zweber and Park Maintenance Supervisor Ken Hoxmeier City crews deal with 6-12 cases of illegal dumping (including brush, furniture, tires and appliances) on City property each year. That brush is chipped and made available at the leaf compost site.

However Permits Coordinator Don Munson and Code Enforcement Officer Rick Talbot say illegal storage of brush and large items on people's property is a significant problem.

What Other Cities Do About Brush

Neighboring communities offer brush drop off as part of their community clean up days. Shoreview even conducts extra brush drop off days. Residents of these communities are charged

a fee for disposal of brush. Little Canada and Shoreview as do other cities chip the brush, use some for City projects and make the majority available for residents to pick up free of charge. Shoreview Environment Officer Gene Kruckenberg says the program is so popular the City will offer once a month brush drop off days throughout the summer in 2002. The drawbacks are that the program is labor intensive and Shoreview has to pay to dispose of stumps that can't be ground up with the City's chipper.

Organics Collection: Organics are plant, food and paper products that can be easily composted into a desirable product. Organics can be separated from other trash and collected as part of a municipal program. As mentioned earlier, commercial organics composting facilities are able to accept meat and dairy products that shouldn't go in backyard composts. That's because compost piles at commercial facilities reach higher temperatures that kill bacteria in meat and dairy products. Commercial compost facilities can also accept pizza boxes and waxed containers that can't be put in with curbside recycling.

The City of Hutchinson operates a curbside organics collection program with its hauler Waste Management. Each participating household is given a 90 gallon wheeled organics cart similar to a trash cart (see photo at right) and 8 special 20 gallon kitchen waste compostable bags per month (residents can buy more bags or use paper shopping bags if they have greater volume). Residents can put in food waste; compostable cardboard such as pizza and freezer boxes; paper products such as paper plates, napkins and paper towels along with yard waste (yard waste doesn't need to be bagged). A Food Waste Recovery truck picks up the organics and hauls them to the City run compost facility.



Hutchinson actively promotes organics collection as a way for residents to reduce their garbage and that if residents switch to a smaller size garbage container and/or to every other week service it will save residents money. The participation rate is right around 85% (3,900 residential homes). Approximately 50% of residents have downsized their garbage container.

The City pays for the program through resident fees, a state grant, funding from McLeod County, general City funds, sale of finished compost and through reduced landfill tipping fees.

In 2001 St. Paul conducted a pilot program on curbside collection of organics. Participants were given biodegradable bags for residents to collect the food waste and non-recyclable paper products such as pizza boxes and waxed cartons. The organics were then put in a wheeled cart. Crews collected the organics weekly. The organics were taken to the Food Waste and Compost Facility in Rosemount. Eureka Recycling (formerly the Neighborhood Energy Consortium) which coordinates St. Paul's recycling programs found a high level of participation in the pilot area and residents wanted to continue with organics collection. Eureka Recycling is currently exploring ways that it might be able to offer curbside organics collection.

In 2002 Wayzata and Burnsville are conducting pilot programs of organics collection.

Christmas Trees: Ramsey County is the only county in the metro area that does not organize a campaign on Christmas tree disposal. Other counties either run drop off sites or work with a contractor to publicize and/or run a drop off site(s). Some offer free drop off, others require a fee. In Roseville six garbage haulers say they will take Christmas trees, two left that section of their license application blank. Five of the haulers charge a fee, one offers to take the first tree for free. Roseville residents may also take trees to private disposal facilities such as Treecycle in St. Paul and pay to dispose of them there.

Options Considered: All options include: continuing education campaigns about proper yard waste disposal including, but not limited to, information about Ramsey County yard waste sites, information on mulching, composting, phosphorus in lawn fertilizer ban and low maintenance lawn care. These campaigns should be coordinated with relevant State and County agencies and divisions and enlist the aid of community groups when possible.

- 1) Continue requiring garbage haulers to offer yard waste and brush pick up service. Add as a requirement for licensing that haulers annually give customers, and file with the City, a clear delineation of rates and services.
- 2) Begin again a Citywide cleanup day that includes yard waste and brush drop off service in which residents would pay to drop them off. The items would be collected by a private contractor and taken to a proper disposal facility.
- 3) Begin a brush drop off program where residents could bring brush to a designated drop off site run by City crews and pay to drop it off. The brush would be chipped and made available for residents to take with them or pick up.
- 4) Begin a curbside brush collection program where residents could pay a fee to have City crews collect their brush, chip it and make it available for pickup.
- 5) Urge Ramsey County to coordinate a Holiday tree disposal information campaign. Increase the City's educational efforts about Holiday tree disposal.
- 6) Initiate a City-run Holiday tree drop off program.
- 7) Encourage Roseville's Parks and Recreation Department to offer educational classes in yard and garden maintenance in cooperation with the University of Minnesota Extension Service's Master Gardener program (from the 1991 report).
- 8) Construct demonstration plots with information stands in several City parks on backyard composting, lawn maintenance techniques, mulching, etc (from the 1991 report).
- 9) Expand Roseville's curbside recycling program to include collection of organics.
- 10) Roseville study more organics collection programs and decide within the next few years if the City should include organics collection.
- 11) Following major storms or other events that generate a significant amount of downed trees and limbs Roseville have curbside collection of tree debris.
- 12) Speed up implementation of the State's phosphorus in lawn fertilizer ban by enacting a ban in Roseville beginning January 1, 2003.
- 13) Expand the State's phosphorus in lawn fertilizer ban by including professional lawn services among those banned for using phosphorus in lawn fertilizers.

Recommendations:

Continue requiring garbage haulers to offer yard waste and brush pick up service.

Include in a Citywide clean up day areas for yard waste and brush drop off.

Roseville study more organics collection programs and decide within the next few years if the City should include organics collection.

Continue education campaigns about proper yard waste disposal including, but not limited to, information about Ramsey County yard waste sites, information on mulching, composting, Minnesota's phosphorus in lawn fertilizer ban, and low maintenance lawn care. These campaigns should be coordinated with relevant State and County agencies and divisions and enlist the aid of community groups when possible.

Urge Ramsey County to coordinate a Christmas tree disposal information campaign. Expand and enhance the City's educational efforts about Christmas tree disposal.

Encourage Roseville's Parks and Recreation Department to offer educational classes in yard and garden maintenance in cooperation with the University of Minnesota Extension Service's Master Gardener program.

Construct demonstration plots with information stands in several City parks on backyard composting, lawn maintenance techniques, mulching, etc.

Following major storms or other events that generate a significant amount of downed trees and limbs Roseville have curbside collection of tree debris.

Speed up implementation of the State's phosphorus in lawn fertilizer ban by enacting a ban in Roseville beginning January 1, 2003.

Expand the State's phosphorus in lawn fertilizer ban by including professional lawn services among those banned for using phosphorus in lawn fertilizers.

Additional Areas of Concern

During the course of our work we discovered some areas of concern that fell outside our scope. Nonetheless we feel it is important to call attention to these areas and urge Roseville to address them.

Establish a permanent advisory commission to address environmental issues. There has been tremendous change in solid waste, recycling and other environmentally related issues in the past decade. Serendipitous timing has allowed this committee to hear presentations on two groundbreaking studies (on single-stream collection in Brooklyn Park and on methods of collection and their impact on behavior in St. Paul) as well as Ramsey County's investigation of public collection. If a committee had not been formed, Roseville residents may have missed out on opportunities to be aware of and respond to opportunities that would ensure they receive the best and most cost-efficient recycling and garbage service. Additionally there are other areas just beginning to be addressed such as organics collection and electronics collection. We feel that in order for the City to be fully involved in discussions of such major issues a permanent committee must be established.

Urge the City of Roseville to become a role model in sustainable business practices.

We applaud the City's forward thinking practices such as the use of organic fertilizer at parks and the golf course and use of the rock screen that filters debris out of rock collected during street sweeping so the rock can be reused. We feel the City should investigate more practices that can lead to environmentally friendly policies. Some examples: more use of recycled products, composting of lunchroom wastes, more efforts to reduce, reuse and recycle. To sustain this suggestion we urge the City Council to make it a policy that the City of Roseville use environmentally preferred practices. We also feel the City should do more to share with other cities the benefits of our systems.

Urge the City of Roseville to use green building practices as defined by the MOEA when building new and expanding existing facilities. Green building practices will save the City money in the long run through decreased heating and cooling bills, lower water usage and reduced maintenance. These savings will more than offset the additional time needed for planning and design as well as certain up-front costs that may be higher. We urge the City Council to explicitly state the City will use green building practices when building new and expanding existing facilities.

Work with businesses to reduce waste, increase recycling and reduce the toxic/hazardous character of their waste. The amount of garbage and recycling produced by Roseville businesses surpasses the amount produced by residents. The State and County run numerous free programs to help businesses reduce waste, recycle more and reduce the toxic/hazardous character of their waste. By following these practices businesses can save money and help save the environment.

It is fully in keeping with Roseville's stated environmental goals that the City should work with businesses to encourage them use more environmentally friendly business practices. For instance less toxic practices will result in fewer future brownfields that require taxpayer dollars to make attractive to development and reduce potential harm to City parks.

We urge the Community Development Department and the Recycling Coordinator to develop programs to educate Roseville businesses about State, County and private programs and practices to help them reduce waste, increase recycling and reduce the toxic character of their waste.

Support the efforts of Ramsey County and the State of Minnesota to increase recycling, reduce waste and develop programs of product stewardship. We have made recommendations to improve the system of waste management in the City of Roseville. But some efforts require partners with a broader reach. We know that Ramsey County and the State of Minnesota are working on systems to increase recycling, reduce waste and develop programs of product stewardship. It is fully in keeping with Roseville's stated environmental goals that the City should support those efforts through encouragement, education of residents, and hosting facilities and programs when practical. We urge the City Council, appropriate departments and the Recycling Coordinator to remain engaged with the State and County on these efforts and to participate when appropriate.

The members of the Residential Solid Waste and Recycling Citizen Advisory Committee respectfully submit this report, May 20, 2002.

Roseville Public Works, Environment and Transportation Commission

Agenda Item

Date: January 22, 2013

Item No: 7

Item Description: Look Ahead Agenda Items/ Next Meeting February 26, 2013

Suggested Items:

- Review recycling community values and discuss content of Request for Proposals draft
- LED retrofit plan

Recommended Action:

Set preliminary agenda items for the February 26, 2013 Public Works, Environment & Transportation Commission meeting.

Roseville Public Works, Environment and Transportation Commission

Agenda Item

Date: January 22, 2013

Item No: 9

Item Description: Tour of Xcel LED Street Lighting Pilot Project in West St Paul

Background:

After the presentation on the West St. Paul LED Streetlighting Pilot Project by Xcel Energy the Commission asked for a tour of the project after it is completed and before daylight becomes an issue to view them at a reasonable time. The project is complete and we have set up a route based on discussion with Xcel. This project replaced all Xcel owned streetlights with mainly 100 watt equivalent LED lights. There are approximately 35 lights of 150 watt equivalent and 9 lights of 250 watt equivalent. The 100 watt equivalent lights use approximately 67 watts of energy. The route will take us past an installation where actual light measurements and energy metering is taking place for the study. This is a 2 year pilot with the objective to determine a rate for LED lighting for regulatory approval. Staff will have a city van for the tour to leave around 7:30 pm after the adjournment of the shortened meeting. The tour should last approximately one hour.

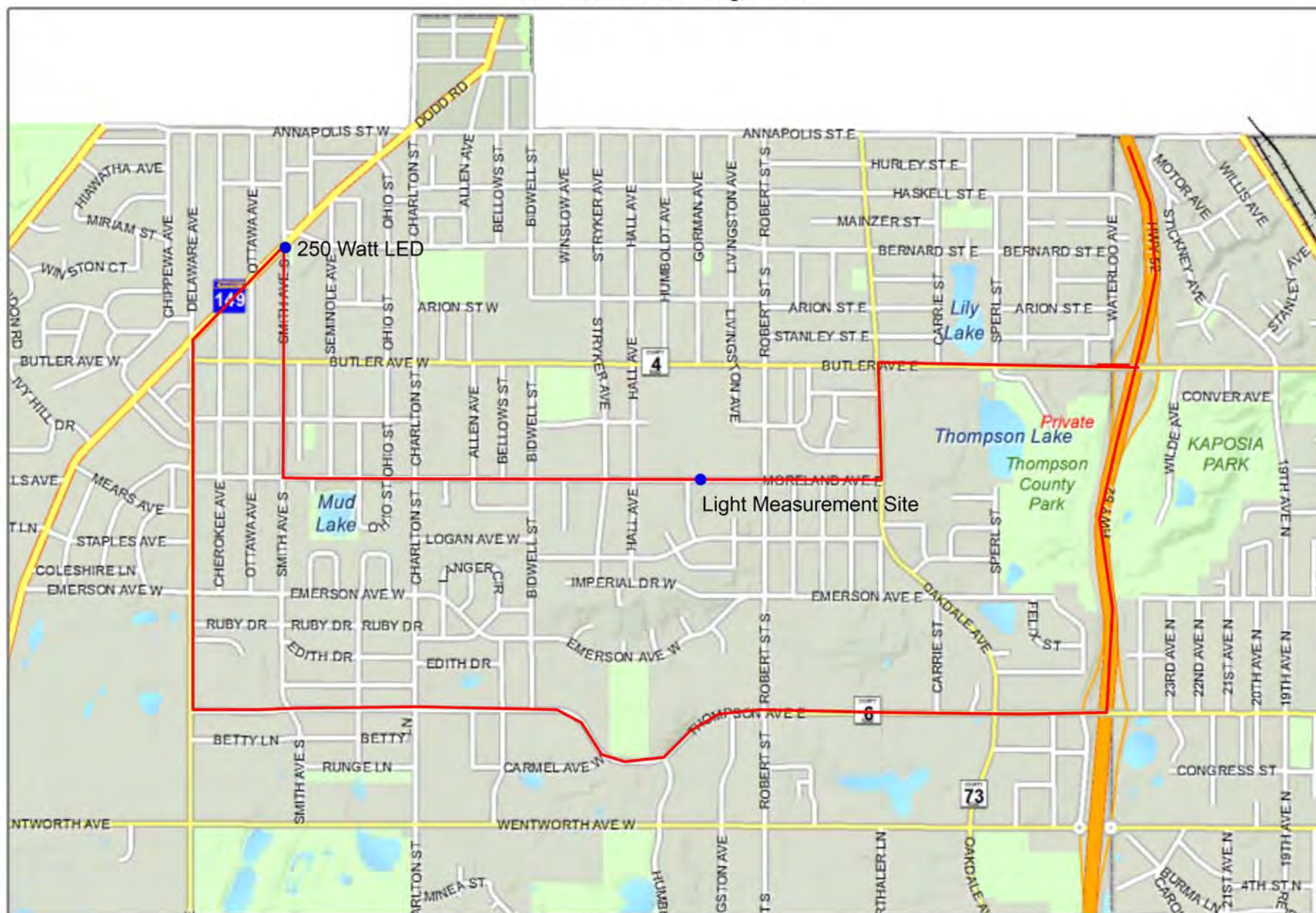
Recommended Action:

None

Attachments:

- A. Tour Map
- B. Frequently Asked Questions about LED Street Lighting

West St. Paul LED Light Tour



Disclaimer: Map and parcel data are believed to be accurate, but accuracy is not guaranteed. This is not a legal document and should not be substituted for a title search, appraisal, survey, or for zoning verification. Dakota County assumes no legal responsibility for the information contained in this data.

Map Scale

1 inch = 1599 feet

1/15/2013

INFORMATION SHEET

LED Street Lighting Information and Frequently Asked Questions



LED (Light Emitting Diode) street lighting has gone through many changes in recent years and is gaining in popularity because of the advancements manufacturers have made in the following areas:

- **Cost** – LED street light fixtures range from about \$300 to \$600. They are still more expensive than high pressure sodium, but the gap is closing.
- **Photometrics** – LED cobra head roadway street light fixtures can now mirror very closely what HID (High Intensity Discharge) cobra head roadway street light fixtures can deliver.
- **Thermal management** – This component is critical to the longevity and light output of LEDs and the large manufacturers have been able to control this well.
- **LED fixture durability** – LED luminaries should not retain any water or dirt, which minimizes maintenance visits and component failure.
- **LED color** – LED is a white light, which is a more natural color that allows better color rendition and resolution.

LED is becoming a viable street lighting source for municipalities and utilities across the country. Xcel Energy continues to research LED

street lighting from a reliability, operations and cost perspective. We acknowledge the pressure cities are under to reduce their street lighting operating costs and to implement environmental improvement measures. It is our intention to provide an LED lighting option to our customers that is based on sound technical facts and will provide a dependable, safe and cost effective street lighting option for a long period of time.

To accomplish this, Xcel Energy is implementing company-wide, comprehensive LED Pilot program that will result in an LED lighting solution available to all communities we serve. The program will be multi-faceted and include:

- A large pilot in Minnesota
- Small site pilots throughout other states
- Collaboration with vendors
- Study other LED programs in other states with other utilities
- Customer feedback through surveys and focus groups

The data Xcel Energy collects during this pilot will allow us to better understand maintenance costs, reliability and energy savings as well as assist in the creation of LED street lighting rates.

In the meantime, LED manufacturers will continue to solicit your business with promises of cost reductions in operations and maintenance budgets, and kilowatt hour usage. To help you make sound decisions about LED street lighting, we have provided the following questions for you to use as a guide:

1. How much money has your company spent on research and development for LED street lighting?

Large street light manufactures have spent billions of dollars on research and development to develop high quality LED street light fixtures. If the vendor cannot answer this question, it may warrant more research on your end prior to purchasing.

2. What is your warranty?

Most warranties for LED street light fixtures will vary from five to 10 years, but the largest manufacturers have gone to a 10 year full coverage warranty. If the company does not offer a full coverage warranty it may be difficult for you to get reimbursed if something doesn't work.

3. Why is your LED fixture much less money than other brands?

LED street light manufacturers may try to sell a lower cost LED street light fixture. A low cost LED street light fixture typically means a less technically sound design, which means the LED fixture could have a reduced useful life.

4. Why do you say that your LED street light is the best?

Many companies can say they have been in the LED business, but may have not been in the street lighting business. The expertise that comes with a long-term street light manufacturer will be valuable.

5. What is the payback for LED street lighting?

There are many factors to consider when determining the payback timeframe for LED street light systems. Some of them are:

- Number of street lights installed (pricing discounts for large quantities)
- Decorative or standard cobra head lights (decorative will be much more expensive and have a longer payback)
- Cost per kilowatt hour (kWh) - as a rule of thumb: the higher the kWh charge, the shorter the payback

If you have any questions about LED street lighting please contact **Ed Bieging**, Xcel Energy Outdoor Lighting at **651-229-2400**.



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