



Our mission is to reduce waste today through innovative resource management and to reach a waste-free tomorrow by demonstrating that waste is preventable, not inevitable.

February 26, 2010

Jim DeBenedet,
Joan Felice,
Steve Gjerdingen,
Dwayne Stenlund,
Jan Vanderwall

Public Works, Environment and Transportation Commission
City of Roseville
2660 Civic Center Drive
Roseville, MN 55113-1899

Dear Environmental Commission Members:

Eureka Recycling is pleased to present the 2009 report on Roseville's recycling program. As a nonprofit organization with a mission to demonstrate that waste is preventable, not inevitable, we value our partnership with the City of Roseville and are proud to be part of the city's efforts to continually improve its recycling program and reduce waste.

The City of Roseville and Eureka Recycling have partnered since 2006 to design and implement a recycling program that strongly represents the values of the city's residents. These shared values are visible in this program. The City of Roseville and Eureka Recycling are both committed, as a result of our strongly held values, to making certain that all of the recyclable material that residents take the time and effort to set out is actually recycled into new products.

In addition, Eureka Recycling and the city are committed to ensuring that the revenue received from the sale of the recyclable material collected in Roseville stays in Roseville where it is used to keep the cost of the recycling program low for residents and also supports additional waste reduction efforts undertaken in the city.

Since partnering with Eureka Recycling, Roseville has met its goals with a program that represents its values even in the difficult economic environment experienced in 2009.

The Economy Effects Recycling in 2009

2009 was a year of drastic economic downturns in virtually every sector of the global economy. Recycling was no exception. As the economy slowed and manufacturing sectors reduced or ceased production the markets for recycled material experienced significant changes.

2828 Kennedy Street NE \ Minneapolis, MN 55413 \ (651) 222-7678 \ Fax (612) 623-3277 \ www.eurekarecycling.org

Eureka Recycling is an affirmative action, equal opportunity employer. It is our policy to hire without discrimination based on race, creed, religion, sex, color, national origin, sexual or affectional orientation, ancestry, familial status, age, disability, marital status or status with regard to public assistance.

Printed on 100% postconsumer recycled paper that was processed without the use of chlorine.

With demand slowing rapidly the prices being paid by end markets for recycled commodities dropped dramatically over a short period of time and remained low for much of 2009.

In addition, the change in the economy also affected people's lifestyles as they cut back on newspaper and magazine subscriptions and big box purchases. They also ate at home more rather than going out. These changes in behavior have impacts on the recycling program. The composition of materials dramatically shifted with food and beverage containers increasing as a total percentage of recycling while the percentage of newspaper, cardboard and other paper products decreased.

Because of the quality of our material and the deep relationships we have nurtured with our end markets, Eureka Recycling was, and is, still able to find buyers for the materials collected in Roseville and our other partner cities even during times of low demand. This assures that **even in a time of recession in the broader economy, Roseville's material continues to be recycled to the highest and best use possible while simultaneously maximizing the environmental and economic benefits of the program.**

Multifamily Recycling Program

In 2009, Eureka Recycling continued to work closely with multi-family building managers to educate and inspire residents about their recycling program. Every property manager received a report detailing the recycling activity at their property and recommended additional ways that they can improve their program. In addition, Eureka Recycling staff continued to work with multi-family property managers to address any problems and issues that they were having in an attempt to further reduce the barriers to successful recycling in their buildings.

The results of these efforts can be seen in the amount of recycling being set out in these buildings. While the amount of material being set out for recycling in curbside neighborhoods was down approximately 10%, in large part due to the impact of the economy on household purchasing, the amount of recycling coming from multi-family properties was stable, dropping less than 1%. Roseville continues to have one of the most successful multi-family recycling programs in the state.

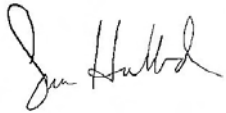
Environmental Benefits of Recycling in Roseville

Reflecting the shared values of Eureka Recycling and the City of Roseville, the recycling program has been designed to produce the maximum environmental benefit from the efforts of the city's residents. In 2009, the residents of Roseville recycled over 3,200 tons of material. To have the same positive impact on the climate as they did in their recycling efforts, Roseville's residents would have had to remove a total of 1,482 cars from the road for one year. To achieve this, approximately 10 % of Roseville's households would have had to give up one car for a year.

In addition to these key highlights, Eureka Recycling continues to provide the City of Roseville with detailed tracking and reporting to help the city meet the goals of its recycling program. This data allows us to measure progress as we move forward and identify the areas to prioritize as part of our annual work plan.

From our close interaction with city staff, attendance at neighborhood events, and hundreds of conversations with Roseville residents, we can see that Roseville is strongly committed to increasing the environmental and economic benefits of their recycling program. We believe the city is now well positioned to implement our recommendations for the 2010 work plan and further improve Roseville's recycling program in 2010. We look forward to working together with Roseville as we work toward a waste-free tomorrow. If you have any questions, please contact us at (651) 222-7678.

Sincerely,

A handwritten signature in black ink, appearing to read "Susan Hubbard".

Susan Hubbard
CEO and Co-President

A handwritten signature in black ink, appearing to read "Tim Brownell".

Tim Brownell
COO and Co-President

CC: Tim Pratt



City of Roseville

Year-End Recycling Report 2009

(651) 222-SORT (7678)
www.eurekarecycling.org

Overview

The City of Roseville and Eureka Recycling have partnered since 2006 to design and implement a recycling program that strongly represents the values of the city's residents. These shared values are visible in this program when Eureka Recycling and the City of Roseville ensure that:

- every recyclable item that residents take the time and effort to set out is actually recycled,
- the environmental benefits from all the recycling activities in the city are maximized,
- the revenue from the sale of the material recycled in the city is shared back with the city to be used locally to reduce the cost of the program and support other waste reduction efforts within the city,
- Eureka Recycling and the city staff provide residents with accurate, consistent and inspiring information about how to recycle as well as the environmental and economic benefits of recycling and other waste reduction opportunities (like composting and producer responsibility) on a regular basis,
- and the City of Roseville has accurate and transparent reporting protocols and information to manage its program for maximum benefits.

Since partnering with Eureka Recycling, Roseville has met its goals with a program that represents these values, even in the difficult economic climate experienced in 2009.

This report includes some highlights from Roseville's recycling program in 2009. Roseville continues to be a strong recycling community. In particular, Roseville's decisions to protect the quality of their recyclable materials, to add new materials to the program, and to continue to educate recyclers about the environmental and economic benefits of recycling have paid off. Just like many industries, the recycling industry has been hit hard by the slumping global economy. Despite what has happened in the recycling industry, the movement of recycling remains strong, especially in Roseville. The environmental, economic and social benefits of recycling have never been more in demand.

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2009 Economy, Markets Update and Revenue Share Summary

Significant changes to the global economy took effect in the last quarter of 2008. Beginning in October 2008 and continuing through much of 2009, Eureka Recycling began to see the impact the troubled economy was having on the prices being paid for recycled material. Demand worldwide for recycled commodities decreased by at least one-third in late 2008 and the beginning of 2009. As a result, the value being paid for many recycled commodities decreased by about two-thirds across the board. A convergence of weak economies, damaged financial institutions, and an expected market correction led to the price downturn in the last quarter of 2008 which continued through much of 2009.

The prices being paid for most commodities have recovered somewhat and bottomed out in the first and second quarter of 2009. However, while the prices are slowly rising, commodities are not expected to rebound to levels as high as those reached in October 2008. Recycling commodity prices were at unsustainable highs at that time and were already trending downward to more sustainable levels.

Despite the apparent moderated turnaround in the recycling markets the amount of revenue that the City of Roseville received in 2009 was 77.5% lower than in 2008 and over 65% lower than in 2006. When Roseville entered into a recycling service contract with Eureka Recycling in 2006, the city began receiving revenue share from the sale of the materials collected in their recycling program. Since 2006, Roseville has received \$366,561.76 in revenue from recycling to continue to invest in the city's recycling program or other environmental programs.

Prior to its partnership with Eureka Recycling the city received **\$0.00** from the sale of recycled materials from previous recycling companies. Eureka Recycling was the first organization to offer revenue share in the Twin Cities marketplace.

	2006 Rev	2007 Rev	2008 Rev	2009 Rev
1st Quarter	\$21,165.32	\$22,749.81	\$33,159.16	\$859.83
2nd Quarter	\$23,403.59	\$27,992.48	\$39,090.85	\$4,810.17
3rd Quarter	\$19,483.86	\$30,002.00	\$47,928.25	\$8,587.23
4th Quarter	\$22,661.14	\$34,551.08	\$14,170.61	\$15,946.38
Total	\$86,713.91	\$115,295.37	\$134,348.87	\$30,203.61

Eureka Recycling continues to share the city's belief that the revenue received from the sale of the material collected in Roseville should be shared back with the city. This will provide revenue to be used locally to maintain the low cost of the program to residents and to support other waste reduction efforts of the city and its residents.

The Silver Linings

Despite what is happening in the recycling industry, the movement of recycling remains strong, especially in Roseville. The environmental, economic, and social benefits of recycling have never been more in demand.

Recycling Has Influenced the Economy

The current economic downturn in the recycling industry parallels those of nearly every other industry worldwide including auto manufacturing, housing, construction, publishing, and consumer products. Although a downturn is never a great experience, one positive element of the economic slump this year is that it showed very clearly that the recycling industry has been completely integrated into the broader global economy.

In the late 1980s and again in the 1990s the recycling industry suffered a different kind of economic downturn that lasted a year or less and market demand rebounded. These previous downturns were caused more because the recycling industry had not grown to the point where it was fully integrated into the larger manufacturing market. In those cases, gluts in the amount of material waiting to be recycled caused sharp and sudden price drops even though the overall economy was stable. Since that time we have all done work together to build recycling into a massive grassroots movement, particularly here in Minnesota where over 75% of the people participate. Manufacturers are also much more on board and recognize the benefits of using recycled material in their products.

What we began experiencing in 2008 and what continued into 2009 is an across the board, massive global slowdown in manufacturing and consumption. This phenomenon temporarily drove down the demand for the recyclable materials collected alongside with all other materials and products throughout the economy. Rather than rising and falling on a separate trend from the rest of the economy, recycling is now a full participant in the global economic market. This integration into the global economy actually strengthens the recycling industry as it shows that other larger manufacturing bases depend on recycling.

Another way that the recycling industry has positively influenced the economy is through job creation. In Minnesota alone, the Minnesota Pollution Control Agency reports that the recycling industry creates 8,700 jobs directly but it is also responsible indirectly (as the "ripple effect") for an additional 19,000 jobs. In 2008 the industry brought in \$93 million in state tax revenue and created \$3.48 billion in gross estimated economic activity! Locally, the recycling industry provides green jobs which stimulate economic growth while caring for the environment. Eureka Recycling has created over 100 quality green collar jobs in the Twin Cities. Every employee of Eureka Recycling earns a living wage while making it possible for all of us to live a more environmentally beneficial lifestyle in our community. As a Twin Cities company, Eureka Recycling reinvests all of its proceeds back into the local economy through revenue share and by supporting local vendors and organizations whenever possible. Since 2001, Eureka Recycling has directly given over five million dollars to the communities we serve and continues to set the standard in Minnesota for giving back revenue from the sale of recyclable materials.

The Economy Has Influenced Recycling

The percentage of papers in the recycling stream as compared to containers has continued to shift for the third straight year. As fewer and fewer residents have newspaper and magazine subscriptions, and conversely, as more people stay at home to eat rather than dining out, the ratio of paper products to containers has changed. Furthermore, communities all over the country are facing the impacts on their recycling program from losing their local newspapers, whether it is a reality or a possibility.

In order to monitor the changes in composition, Eureka Recycling completes an annual study of the types and percentages of materials collected. The annual composition study is conducted early in the year and the numbers reported in the chart below reflect a snapshot of the composition taken at that time. As 2009 progressed, this shift accelerated and each day as trucks returned to Eureka Recycling's processing facility the percentage of the weight of the papers versus containers continued to shift. By the end of 2009 the overall composition of our facility has gone from 74% papers and 26% containers to 70% papers and 30% containers. While this percent change may seem small, it has an enormous impact on the operational side of the recycling program. Containers are much less dense than papers. This means that while the trucks fill up just as fast, they are much lighter. On the processing side, the bottle and cans stream is more expensive to sort than the paper stream.

Annual Composition Study

Eureka Recycling and Roseville both share a value that there should be a composition analysis done each year for only the material collected in the City of Roseville and not a larger facility average for all the materials processed in an entire MRF. This information on the specific composition of the material being collected in the City of Roseville is an essential element that helps the city better manage the recycling program. In the recycling collection and processing contract Roseville and Eureka Recycling agree that the composition analysis should be specific to the city's material.

Many cities receive composition information from their recycling provider that is an amalgam of all of the tons being processed in their facility from all sources, residential, commercial and industrial. Each city is different, and if a change in the composition of materials occurs because of a specific education initiative undertaken by the city, or because of changes in the purchasing and recycling habits of the residents, this information would not be seen in a composition report that is not city specific in its scope.

In this year's composition analysis, conducted in February of 2009, Eureka Recycling collected 87,586 pounds of material from routes in each day of collection in the city. This material was run through Eureka Recycling's sorting facility separate from all other materials to breakdown Roseville's recycling into different types (see chart below). In 2009 the City of Roseville had an impressive 0.23% of residual rate, meaning only .23 of a percent of all the total materials collected in Roseville are not recycled. This is the lowest residual rate of any city that Eureka Recycling services and is down one whole percent from 2008. The fact that Roseville's residual rate has decreased (especially in the economic downturn) and remains one of the lowest residual rates in the state of Minnesota is truly astounding and something to be very proud of!

Type of Material	2006 % of Total Tonnage	2007 % of Total Tonnage	2008 % of Total Tonnage	2009 % of Total Tonnage
Total Annual Tons	3441	3681	3556	3281
Papers				
News Mix	63.98%	56.46%	66.00%	61.65%
Cardboard	6.71%	13.23%	4.50%	5.48%
Boxboard	2.37%	7.60%	2.60%	5.48%
Wet Strength	0.36%	0.10%	0.50%	0.00%
Phone Books	1.33%	0.11%	0.10%	0.02%
TetraPak	Not collected	Negligible	Negligible	Negligible
Textiles	0.40%	Negligible	Negligible	0.02%
Residual	0.24%	0.11%	.5%	0.06%
TOTAL	75.40%	76.60%	74.20%	72.72%
Containers				
Total Glass	14.89%	15.15%	16.70%	17.54%
Steel Cans	2.64%	2.00%	2.40%	2.43%
Aluminum	1.48%	1.10%	1.40%	1.40%
Total Plastics	4.70%	4.01%	4.60%	5.75%
Residual	0.89%	0.15%	0.70%	0.17%
TOTAL	24.60%	22.40%	25.80%	27.28%
Total Residual	1.13%	0.26%	1.2%	0.23%

For more information on the methodology of the composition analysis done by Eureka Recycling please see Appendix B

The City of Roseville Assures Its Program Succeeds

The recycling of glass, wet-strength cardboard, and milk cartons and juice boxes in the City of Roseville is something to be proud of. In many cities these items are common examples of materials that may be collected at the curb by the hauler, but in the end, are not recycled and are often needlessly wasted. Materials are only truly recycled if they are sorted at a Material Recovery Facility (MRF) and sold to a manufacturer who uses the materials to make new products.

The Story of Glass

There is no better material than glass to use as a measure of how successful a recycling program is at meeting the waste reduction goals and values of a community. The environmental benefits of recycling glass bottles back into glass bottles are significant in terms of saving energy in manufacturing and avoiding the mining of raw materials. Glass as a material can be recycled over and over again creating a near infinite source of energy savings and the perpetual use of natural resources. When you make a glass bottle out of raw (virgin) materials (sand, soda ash, limestone, and feldspar), it requires a great deal more energy than when you make it from recycled bottles. Conversely, when glass is wasted, so is all the embedded energy it took to make that bottle in the first place and it must be replaced with a new item made from virgin material.

In other cities in Minnesota, residents set out their glass thinking that is it being recycled when it is not. Unfortunately, much of the glass in Minnesota is not recycled but is instead used as an aggregate, a sandblasting medium, or in landfill operations as roadbed. When residents learn that materials are not being recycled as they expected, they become skeptical, which understandably detracts from their willingness to take the time and energy to participate in the program and further reduces the environmental and economic benefits that recycling provides.

Because the City of Roseville and Eureka Recycling share a value that the items that residents take the time to set out should actually be recycled, we have taken steps to ensure the glass collected in Roseville is recycled back into glass bottles. For glass to be recycled into new bottles it must be separated by color. Clear bottles are recycled into clear, brown into brown, green bottles into new green bottles. If the glass is not color-separated it is much harder, if not impossible for glass manufacturers to use it.

The way in which glass—or any material—is collected and sorted impacts the quality of that material and the ability for that material to be recycled. Eureka Recycling uses a two sort system of collections. All paper types are collected in one compartment of the truck and all container types are collected in another. These materials are not compacted so there is much less breakage and embedding of glass.

In contrast, in single-stream programs glass is collected with other materials like cardboard and paper. These materials are often compacted during collection and must be run across more processing machinery, resulting in higher amounts of breakage. This not only makes the glass much harder to sort out but it also significantly decreases the value of the paper and cardboard because glass is embedded into those materials. (This not only reduces the amount of glass being recycled, it also lowers the quality of the paper being sent to the mill for recycling.)

In addition to two-stream collection, Eureka Recycling has also demonstrated that glass can be recycled by investing in optical-sort equipment at our MRF. This equipment utilizes color recognition technology that separates glass by color as well as contaminants from the finished product that are incompatible with the glass manufacturing process. The result is that glass collected in Roseville is color-sorted on location at Eureka Recycling's facility and can be easily recycled back into glass bottles. This not only benefits Roseville, but it supports our local glass market (Anchor Glass in Shakopee, MN) and the local economy.

Roseville is one of the few cities in the Twin Cities that can claim their glass is truly recycled because they partner with Eureka Recycling, ensuring that the environmental benefits of recycling are maximized and that actions taken by residents are honored.

The Story of Pop and Beer Boxes, Milk Cartons and Juice Boxes

At most MRFs, pop and beer boxes, and milk cartons and juice boxes are mixed and bailed with other papers and cardboard into “Mixed Paper Bails”. These mixed bails are then sent to paper mills where the fibers are dumped into a pulper to begin their journey to being new paper products. This is where the problem occurs.

Wet Strength Cardboard is the packaging material that beer and pop bottles and cans and other (non-freezer) food items are packaged in. Pop and beer boxes are meant to contain items (bottles or cans) that will be chilled. When metal and glass is chilled condensation forms and comes into contact with the box. This liquid would normally degrade the box and cause it to tear open. To prevent this, manufacturers coat the material with a small amount of plastic to repel the liquid. This coating protects the boxes, but makes the boxes break down slower during the pulping process.

Similarly, milk cartons and juice boxes are high grade paper layered with plastic to allow them to contain the liquid within without breaking down.

When the paper mill dumps all of the tons of mixed paper into the pulper it is pulped for a certain standard amount of time based on what the mill believes the bails are made of. Not knowing the amount of wet-strength cardboard and milk cartons and juice boxes in the bails means that these items have not been fully pulped by the end of the pulping process. This material is then considered waste and is skimmed off and landfilled or burned.

What does this mean? It means that:

1. After the resident took the time to set the material out, taking their time and energy,
2. After the recycling company was paid to collect and transport the material from the curb to the processing facility, taking fuel and time,
3. After the processing facility sorted all of the material and bailed it up, taking a good deal of energy and time,
4. After all those bails were shipped to the paper mill, taking fuel and energy,
5. After the paper mill attempted to pulp the material and it didn't work, taking energy and time,

The material was wasted, costing tremendous amounts of energy, fuel, time and money.

This does not happen in Roseville. The reason again, is that the City of Roseville and Eureka Recycling share a value. This value is that if a resident takes the time and effort to set out something that can be recycled their efforts should not be wasted any more than the materials they set out should. Eureka Recycling prevents this waste by further sorting the paper products collected in Roseville. Rather than stopping at mixed papers, we sort wet strength, milk carton and juice box material into their own categories. This means that when the paper mill buys these specific materials they know that it will need to be pulped a little longer. They take this step, and the valuable fibers in this material are preserved and recycled into new products. This is only possible because Eureka Recycling takes the time to sort this material. As a result, over 9 tons of material collected from residents of Roseville was recycled into new products, whereas if it was collected elsewhere it would be wasted.

Because Eureka Recycling further sorts the materials into bails of only these items the paper mills can recover these valuable fibers. It is one of the reasons why Eureka Recycling has such an excellent reputation with end markets and why Roseville continues to get the highest value of the material residents set out for recycling.

Roseville's quality materials make a big difference in this economy.

It is a fact that companies still need our recyclables and there is still a tremendous environmental impact from our efforts. Eureka Recycling and the City of Roseville have carefully and thoughtfully designed the recycling program to share the risk and help weather these storms. Eureka Recycling has built strong partnerships with the end markets where all of the recyclable commodities are sold for manufacturing into new products. During these economic times, these markets have acknowledged the superior quality of materials collected in Roseville and other Eureka Recycling partner cities, and have rewarded this continued commitment to quality that is a hallmark of Roseville's recycling program. Because the materials are of the highest quality available, Eureka Recycling is able to continue selling these materials to be recycled for their highest and best use. As partners dedicated to eliminating waste, the City of Roseville and Eureka Recycling can guarantee that the positive environmental and economic impacts of recycling will continue.

For years there has been surplus profit from the materials we sell to recycling markets. If there is not a financial profit to be made from recycling, or even if we must start to pay a little to recycle, recycling is still cheaper than disposal and the environmental benefits are extraordinary. Recycling is one of the easiest, cheapest, and quickest ways to reduce our energy use. For example, making a new aluminum can from old cans results in 90-97% energy savings compared to making a new can from bauxite and other raw materials. The recycling industry also contributes in important ways to the economy and is already a leader in the national movement to create new green jobs.

Annual Participation and Set-Out Rate Studies

Roseville is one of the few cities in the metropolitan area in which actual participation information is gathered that is city specific. Each year Eureka Recycling counts set-out rates in each collection day for four straight weeks. This study yields information on how many residents set out material in any given week as well as on the total percentage of the residents that take part in the program.

This information is vital in targeting recycling education messaging to the specific area that has the most need for improvement. This information gives city and Eureka Recycling staff the ability to target efforts and messages to the areas that need it the most. This not only saves in the cost of sending unnecessary mailings, it provides the opportunity to examine the specific areas that need improvement and find ways to reduce the barriers to participation on a more personal level.

	2006	2007	2008	2009
Set Out Rate	60%	50%	58%	53%
Participation Rate	74%	75%	82%	78%

Eureka Recycling conducted the annual participation and set-out rate study from October 20 to November 14, 2008, and from October 5 to November 4, 2009. (See Appendix C for the definitions and methodologies of the participation and set-out rate studies.)

The small 4% drop in participation this year may be the result of an increase in the number of vacant properties. The participation study is conducted in the fall at a time that many properties are in transition with people moving in and out of homes.

Roseville's strong participation rate can be attributed to the consistent and high quality education and information that Roseville provides to its residents. This information both informs them of new materials like milk cartons, juice boxes and wet strength packaging, but also inspires them with information about the economic and environmental benefits of recycling. This information gives the residents the tools they need to participate and the motivation to take the steps in their own households to help reduce waste.

Tonnage Summary

2009 has been a period of dramatic economic downturns in every sector of the economy. With family incomes and purchasing being curtailed as people cut back their spending there are fewer boxes and other packaging brought into the house that eventually needs to be recycled. As a result of this change in the habits of residents the tons of overall material recycled in 2009 was down 7.7% over the amount recycled in 2008.

Route	2006 Total Tons	2007 Total Tons	2008 Total Tons	2009 Total Tons
Monday	852	893	832	740
Tuesday	464	500	467	420
Wednesday	454	457	461	420
Thursday	706	736	719	669
Friday	482	507	465	426
Curbside Total	2,958	3,094	2,994	2,675
Multifamily Total	483	587	612	606
Roseville Total	3,441	3,681	3,556	3,281

There are some important positive aspects of this decrease in material. As a city that is dedicated to reducing waste, it is good to see that there is less unnecessary purchasing and unwanted packaging being generated. Source reduction is a legitimate element of waste reduction.

Multi-Family Building Recycling

The multi-family recycling program in Roseville is a stable program. A total of 5,851 residential units are serviced by the program. Roseville continues to play a role in the metropolitan area as a leader in establishing successful multi-family recycling programs for its residents.

The Environmental Benefits of Roseville's Recycling Program in 2008

There are many ways to calculate the benefits of recycling. To better explain these benefits in commonly understood terms, government agencies, research scientists and economists have created several "calculators" to translate the amounts of recycled materials collected and processed into equivalent positive societal and environmental benefits.

Most recently, it has become imperative to measure waste reduction (and all of our activities) in terms of its impact on climate change. This allows us to speak in a common language, understand the impact of our choices, and help us prioritize the personal and policy actions that we take.

Many cities around the country work with the International Council for Local Environmental Initiatives (ICLEI) to quantify and now register the climate change impacts of their city. It is also important to calculate the carbon impact of waste reduction as the global effort continues to enact a carbon "cap and trade" system.

In addition to climate change mitigation, there are other environmental benefits to recycling, including saving energy and protecting air quality, water quality, natural resources, natural beauty, habitat and human health. Some of these human health benefits are quantified in the Jeffrey Morris Calculator below.

The benefits of recycling and composting

In 2008, Eureka Recycling completed the report *Recycling, Composting and Greenhouse Gas Reductions in Minnesota* to calculate and explain the significant reductions in greenhouse gases through a zero waste approach. (The report can be downloaded from Eureka Recycling's website.)

"Recycling, composting, and producer responsibility are powerful tools to reduce waste and therefore, our greenhouse gas emissions. Specifically in Minnesota, reducing our waste has a greenhouse gas reduction impact equivalent to shutting down 20% of our state's coal power plants, or reducing every car usage in the state by two-thirds, or using 75% less electricity in our own homes." Page 2.

These calculations were added to the Minnesota Energy Challenge, a website designed for people to calculate their carbon footprint and learn how to save money and energy at home. Now, residents can calculate and see just how beneficial their household waste reduction activities are in addressing climate change. These same calculations can be applied to Roseville's citywide program to demonstrate the programs benefits to the environment in terms of climate change.

The Environmental Protection Agency (EPA) WARM Calculator

The equations used in environmental calculations try to take into account the "full life cycle" of each material... everything from off-setting the demand for more virgin materials (tree harvesting, mining, etc.) to preventing the pollution that would have occurred if that material were disposed of (burned or buried). Different calculators may include some or all of the many factors that contribute to the "full life cycle," so results from calculator to calculator will vary.

While there are many models emerging to calculate greenhouse gas reductions, the most recognized and standard model is the U.S. Environmental Protection Agency's WARM model. The Waste Reduction Model (WARM) was designed to help solid waste planners and organizations track and voluntarily report greenhouse gas emissions reductions from several different waste management practices. The WARM model was last updated in November of 2009 and recognizes 34 material types.

Roseville	Total Recycling	Carbon Equivalent Reduction	Carbon Dioxide Equivalent Reduction
2006	3,441 tons	2,328 metric tons (MTCE★)	8,537 metric tons (MTCO2E)
2007	3,682 tons	2,460 metric tons (MTCE★)	9,018 metric tons (MTCO2E)
2008	3,556 tons	2,383 metric tons (MTCE★)	8,736 metric tons (MTCO2E)
2009	3,281 tons	2,206 metric tons (MTCE★)	8,090 metric tons (MTCO2E)

★MTCE (Metric tons of carbon equivalent), MTCO2E (Metric tons of carbon dioxide emissions) are figures commonly used when discussing greenhouse gas emissions.

What do all these numbers mean?

The numbers above help municipalities calculate and track their environmental footprint. For more information about the process of measuring the environmental benefits of waste reduction, visit: <http://epa.gov/climatechange/wycd/waste/measureghg.html#click>.

These numbers, however, don't make much sense to the average person. To help recyclers understand the significance of their actions, the EPA has also developed tools to translate these numbers into equivalent examples that people can more easily understand.

- For example, using the figures above, the EPA estimates that Roseville would have had to remove a total of 1,482 cars from the road for one year to have had the same environmental impact in 2009 as they did recycling. To achieve this, approximately 10 % of Roseville's households would have had to give up one car for a year.
- Another example of how these efforts can be translated into energy savings can be found in the EPA calculator. It shows that the energy savings gained by the recycling efforts of Roseville's residents in 2009 could power the homes of over 460 of their neighbors for one year.

Although WARM is the most widely peer-reviewed and accepted model, it is considered to have several flaws. Many believe the use of this calculator is conservative and understates the real impact of waste reduction efforts. However, despite these flaws, WARM is a well-recognized, published calculator. Until a better calculator is peer reviewed and accepted, WARM gives us a conservative starting place to measure these impacts and work towards our goals. Even with WARM, as you will see, the impacts are quite significant.

http://epa.gov/climatechange/wycd/waste/calculators/Warm_Form.html

Jeffrey Morris Calculator

Jeffrey Morris, Ph.D. Economist at Sound Resource Management in Seattle has developed a calculator that begins with the EPA's calculator and expounds upon it to gather information on not just Carbon and CO2, but also several other important environmental and human health indicators. Although new and not yet widely-used, this calculator shows the significant benefits that WARM does not consider.

Roseville	2006	2007	2008	2009
Total Recycling	3,441 tons	3,682 tons	3,556 tons	3,281.20 tons
Carbon Dioxide Equivalent Reduction (MTCO ₂ E)	9,437.3 metric tons	9,619.0 metric tons	9,683.5 metric tons	8,814.0 metric tons
Human Health – Non-Carcinogen Toxins Reduction	4,609.7 tons	5,253.0 tons	4,665.7 tons	4,452.0 tons
Human Health – Acidification (SO ₂) Reduction	26.9 tons	27.0 tons	27.3 tons	25.3 tons
Human Health – Particulates Reduction	4.4 metric tons	6.6 metric tons	4.2 metric tons	4.4 metric tons
Human Health – Carcinogens Reduction	1.9 metric tons	1.9 metric tons	1.9 metric tons	1.9 metric tons

For more information about the process of measuring the environmental benefits of waste reduction, visit <http://epa.gov/climatechange/wywd/waste/measureghg.html#click>

Running a Green Fleet in Roseville Maximizes the Environmental Benefit of Recycling

Trucks run on fuel. Fleets of all kinds run on diesel fuel—from snow plows to school buses to recycling trucks. Diesel exhaust is made up of small particles that can penetrate deep into the lungs, and pose serious health risks. These particles can aggravate asthma and bronchitis and can cause lung damage and pre-mature death. Diesel exhaust is also a likely human carcinogen. Children are more susceptible to this pollution than healthy adults because they breathe 50% more air than adults.

Roseville and Eureka Recycling share a value that the collection of material should be done in a way that maximizes the environmental benefits gained by recycling that material.

Even though the environmental benefits of recycling far outweigh the environmental impact of collection recycling with trucks, Eureka Recycling has taken many steps to minimize the environment impact of its fleet.



- Eureka Recycling has installed diesel oxidation catalysts (DOC) on several of our trucks to specifically reduce our particulate emissions and is committed to retrofitting the remainder of the trucks in our fleet. According to the EPA, DOCs reduce emissions of particulate matter by at least 20%, reduce emissions of hydrocarbons by 50% and reduce carbon monoxide emissions by 40%. A diesel oxidation catalyst (DOC) is a device that uses a chemical process to break down pollutants in the exhaust stream into less harmful components.
- Eureka Recycling fuels our trucks on a 20% biodiesel blend, which further reduces greenhouse gas, particulate, smog and ozone depleting carbon monoxide and other hydro carbon emissions.
- Eureka Recycling has a strongly enforced No Idling Policy. When our drivers are stopped for any length of time they are required to turn the trucks off. This may seem like a small thing but idling trucks pollute the air in and around the vehicle and waste fuel. Reducing emissions in any situation where those emissions are not directly contributing to the collection and recycling of materials is an important way to make sure that the collections program is as environmentally beneficial as possible.

City of Roseville

Outreach and Education Summary 2009

In 2009, Eureka Recycling and the City of Roseville focused curbside education efforts on communicating with current recyclers about their recycling program. This included the continued conversation with residents on the economic, social and environmental benefits of recycling and providing additional educational information whenever possible. Eureka Recycling and Roseville staff also worked together to make the Roseville Earth Day event, the Roseville Home Improvement Fair, the Run for the Roses, and the Wild Rice Festival all zero waste events.

Recycling Hotline

In 2009, Eureka Recycling's hotline staff had 480 conversations with residents about the curbside recycling program.

Hotline staff also answered 35 calls from building contacts and residents participating in the multi-family recycling program that were calling with standard service questions. Eureka worked with these callers to help them manage their multi-family recycling set-ups, add carts or pick-ups, provide them with education material for their residents, and help improve their service in many other ways.

	2006	2007	2008	2009
Hotline Calls				
Curbside Calls	1000	425	540	480
Multi-family Calls	60	49	78	35
Total Calls	1060	474	618	515
Requests for Printed Materials				
Curbside	290	41	74	21

Requests for Printed Education Materials

Throughout the year Eureka Recycling mailed specific curbside recycling schedules, sorting information and clothes and linens stickers to 21 Roseville residents in response to their questions and calls.

The decrease in number of calls and requests for printed materials is a good sign because it signifies that the residents understand the recycling program and the information we provide about it is clear and helpful.

Curbside Recycling Program

Guide to Recycling

All Roseville residents in the curbside recycling program received the 2009 Guide to Recycling through direct mail. In addition to the basic instructions for how recycling should be set out, the guide included information about the economic, social and environmental benefits of recycling. Eureka Recycling strives to provide residents with information about how their recycling efforts benefit their community, their economy and their environment. We also want to empower them to seek additional information about any area of recycling or waste reduction that they are curious about. The annual guide invites them to contact our hotline to talk with one of our staff.



Direct Education

Eureka Recycling and the City of Roseville share a value that all the material that can be recycled should be and that material that cannot be recycled should not be collected. Taking non-recyclable items on a ride in a recycling truck and through a processing facility not only wastes the fuel and energy to transport and process the material, but it also leaves the residents with the mistaken impression that the material can be recycled when in fact it cannot. Eureka Recycling drivers educate residents at the curb using educational tags for specific problems. In 2009, drivers left approximately 13,565 educational tags in recyclers' bins.

	2006	2007	2008	2009
Driver Tags	9,540	10,156	7,367	13,565
Postcards	650	822	451	742
Personalized Letters	30	51	0	3

This is a significant increase in tags used. Our experience has shown that the absolute best place to educate residents about their recycling program is right at the curb and we work with our drivers to ensure they take every advantage of every opportunity to provide additional education. This is not only efficient in that drivers can educate the residents that are confused, but it also begins a conversation with the residents. All Eureka Recycling's tags (see examples on page 3) encourage residents to call our hotline where waste reduction educators are waiting to clear up any confusion about why certain items are not recyclable or on how their efforts at the curb can have such a important impact on the value of the material and the environmental benefits of recycling.

Direct Education (continued)



Sample Tags

When there are no bins available in which to leave a tag, drivers report any issues on a separate form, and in order to communicate with these recyclers directly, we send educational postcards. These are similar to the tags and encourage residents to give us a call with questions. Drivers and hotline staff worked together to send out 742 educational postcards in 2009. Again this is an increase from 2008 and can be attributed to taking advantage of more education opportunities. 2009 was definitely a great year for our education team, drivers were diligent in their educational tagging and the Eureka Recycling staff made sure residents received all the extra education they needed to successfully participate in the program.

Personalized letters with detailed information and instructions to residents about setting out recycling are used when the usual tags and postcards have not been successful in correcting repeated problems. These letters help residents better understand the program and are a more personal way to begin having more detailed conversations with residents about issues that may be confusing to them. This year Eureka Recycling sent personalized letters to three residents.

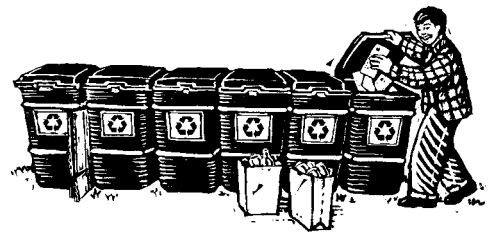
As in previous years, the most common issues for residents that required direct education were confusion about plastics (what types of plastic are recyclable) and proper sorting.

Special Pickup Addresses

To ensure that every resident has the opportunity to recycle, Eureka Recycling offers to collect recycling from locations other than the curb for residents who request special pickup service due to short- or long-term physical limitations. This service is provided free of charge to ensure that anyone who would like to recycle has the opportunity and to help remove any physical barriers residents may have. Currently, this service is extended to 88 Roseville residents.

Multifamily Recycling Program

The City of Roseville has a very organized multifamily recycling program. This year one more building was brought on to the city program once their old service contract expired and is now serviced by Eureka Recycling. The building was visited by Eureka Recycling staff to determine the proper setup and distribute educational materials to help the management



ensure participation in the program. We now have a total of 82 multifamily complexes, 161 residential buildings, 12 city buildings, for a total of 5,851 residential units being serviced in Roseville's multifamily program.

In February of 2009 Eureka Recycling mailed reports to all of Roseville's multifamily building managers providing them with the data on the tonnage recycled for their buildings and the environmental benefits of that effort. This communication provides the building managers with a concrete tool to work with their residents to get them inspired and motivated to increase their recycling rate. Eureka Recycling's staff update building managers' contact information whenever possible and this small routine has a huge impact on staying connected with buildings and the residents that live there. If it were not for the diligent work of Eureka Recycling staff to ensure correct and updated data, effective and timely communication, like the tonnage summaries for building, would not be possible.

Multifamily Educational Materials and Customer Service

Eureka Recycling continues to monitor the performance at each account on an ongoing basis in order to improve participation. Our drivers track issues and staff are able to follow up immediately by offering suggestions that address the specific needs of the building and providing educational materials for residents. Eureka Recycling provided 220 pieces of recycling education (instructional posters and brochures) to the building management and residents of the newly established and existing multifamily accounts in 2009.

Eureka Recycling continues to monitor the performance and service issues at each account in order to adjust service levels on an ongoing basis. Capacity for storage is an issue that gets addressed through our attentive drivers and involved on-site contacts so that more carts get added as residents recycle more.

Special Education and Outreach

Roseville's Earth Day

On April 18, 2009, Eureka Recycling participated in the City of Roseville's Earth Day event at Harriet Alexander Nature Center. Approximately 500 Roseville residents enjoyed getting up close to Rosie, the award-winning recycling collection vehicle that was named in Roseville. Eureka Recycling staff had many conversations with residents about the recycling program and about waste reduction. In addition Eureka Recycling provided Zero Waste services, allowing residents to really experience that waste is preventable! At the Roseville Earth Day event 92.5 pounds of recycling and 33.18 pounds of compostable materials were diverted from the waste stream.

Zero Waste Composting/Recycling services

The City of Roseville's strong commitment to waste reduction allowed additional events to benefit from zero waste services. The City of Roseville collected recycling and composting at the Roseville Home Improvement Fair, the Run for the Roses, and the Wild Rice Festival and partnered with Eureka Recycling to ensure these materials were diverted from the waste stream.



Appendix A

Roseville – 2009 Multi-Family Tonnage by Property

Property Name	# Units	2006 Total lbs.	2007 Total lbs.	2008 Total lbs.	2009 Total lbs.
1144 Dionne Street	23	7,150	8,457	5,961	5,167
1363 County Road B	11	1,892	1,910	2,744	2,629
161 McCarrons Street	11	439	198	-	0
161 Minnesota Avenue	6	148	678	423	646
1610 County Road B	11	2,266	2,324	1,967	2,396
1614 Eldridge Avenue	11	1,424	1,280	2,651	4,237
1615 Eldridge Avenue	11	1,809	1,091	1,721	2,076
1624 Eldridge Avenue	11	2,541	2,029	1,996	2,629
1629-1635 Skillman Avenue	14	2,505	3,002	2,951	2,686
1635 Eldridge Avenue	11	3,284	1,702	1,650	2,333
1705 Marion Street	3	1,437	1,578	224	291
1750 Marion Street	24	3,511	3,576	4,317	3,906
2125 Pascal	22	2,514	3,184	5,239	4,717
2180 Haddington Road	5	964	1,285	737	1,690
2275 Rice Street	8	1,924	2,830	2,852	2,973
2447 County Road B	17	2,584	2,867	3,143	2,519
2610 Snelling Curve	17	2,929	2,696	3,164	3,113
2900 Highcrest Road	11	4,581	4,436	2,715	2,534
2950 Highcrest Road	12	2,980	2,295	2,486	2,685
Applewood Pointe	94	47,799	58,215	46,499	39,220
Aquarius Apartments	99	-		15,391	17,449
Bonaventure	30	7,490	8,105	7,033	5,367
Centennial Gardens East & West	190	26,759	21,852	22,677	23,021
Coventry Seniors Apartments	149	19,939	19,110	22,729	24,917
Dale Terrace Apartments	42	9,360	7,793	12,033	13,323
Dellwood Condominiums	12	1,226	1,923	2,650	2,630
Eagle Crest	216	13,892	60,799	56,057	57,249
Executive Manor Condos	72	12,385	14,530	17,674	17,185
Garley Apartments	11	2,153	1,161	1,415	1,547
Greenhouse Village	102	19,032	37,098	28,751	24,581
Hamline House Condos	150	34,102	33,973	32,182	29,441
Hamline Terrace	102	12,817	12,230	17,366	19,233
Har Mar Apartments	120	9,199	9,683	9,659	11,486
Heritage Place	50	21,892	23,110	17,258	16,066
Hillsborough Manor	120	16,298	17,755	28,418	35,852
Karie Dale Apartments	44	6,691	7,455	9,794	8,483
Lake Josephine Condominiums	23	9,411	8,313	7,040	6,632
Lar Dale Apartments	17	2,068	2,189	2,348	1,546
Lexington Court	52	3,390	2,970	4,293	5,076
Lexington Twin Apartments	22	5,674	5,519	5,456	5,689
Lexlawn/Roselawn Apartments	34	3,142	2,888	3,774	4,033
Marion Street/ Brittany Apartments	277	11,980	16,150	17,191	17,485

Property Name	# Units	2006 Total lbs.	2007 Total lbs.	2008 Total lbs.	2009 Total lbs.
McCarrons Apartments	67	5,092	4,919	5,543	5,039
Midland Grove Condos	174	48,162	60,937	50,758	45,718
MSOCS - Group Home	1	-	0	0	615
Northwestern College Apartments	40	6,061	7,839	4,941	4,379
Northwestern College/Snelling Terrace	48	7,386	16,027	12,542	12,253
Palisades	330	40,078	41,635	55,306	51,667
Parkview Estate	204	28,447	29,206	30,816	29,683
Parkview Manor	34	4,931	4,553	5,085	5,612
Parkview Terrace	105	3,960	33,244	28,285	23,919
Ramsey Square Condos	192	-	35,796	34,991	35,127
Riviera Apartments	64	12,473	13,597	19,108	17,369
Rose Hill Estates	51	4,341	4,904	5,880	5,345
Rose Mall Apartments	54	37,328	41,412	43,984	47,376
Rose Park Apartments	22	4,757	5,426	6,065	6,466
Rose Vista Apartments	175	19,697	18,366	24,634	26,822
Rosedale Estates North	180	21,885	24,253	33,475	34,083
Rosedale Estates South	180	20,750	23,864	26,581	27,377
Roselawn Village	32	5,576	5,950	5,616	5,417
Rosepointe	190	32,645	29,485	33,312	31,688
Roseridge Estates	12	2,653	3,099	3,829	4,537
Rosetree Apartments	48	12,251	12,394	12,654	11,831
Roseville Apartments, LLC	11	2,037	2,546	1,833	2,106
Roseville Arms Condos	34	789	1,565	3,269	3,068
Roseville Commons	30	8,332	7,515	8,281	9,065
Roseville Estates	107	5,593	9,842	12,312	10,028
Roseville Seniors	127	25,581	33,600	30,521	27,577
Roseville Terrace	36	5,363	4,785	5,032	5,469
Roseville Townhomes	40	-	13,423	20,619	24,021
Rosewood Estates (Roseville)	106	20,205	22,122	23,413	21,614
Rosewood Village	201	44,374	41,062	34,271	43,368
South Oaks Apartments	25	4,067	5,951	6,751	5,930
Sun Place Apartments	30	5,169	4,093	4,926	6,107
Sunrise Assisted Living	77	17,031	16,647	15,869	16,693
Talia Place	11	2,790	1,683	1,761	2,569
Terrace Park	36	12,784	13,045	9,853	8,911
The Lexington (Roseville)	150	37,081	30,796	35,417	35,409
The Riviera 2	32	6,562	6,602	8,968	8,053
Valley 8 Apartments	85	11,085	9,910	12,626	13,491
Victoria Place	58	-	14,911	16,130	14,015
Villa Park Community Condominiums	95	15,890	14,276	18,589	16,924
Villas at Midland Hills	32	2,873	11,653	12,600	11,506
Total Pounds - Residential	5,793	889,659	1,103,172	1,161,075	1,154,984

Municipal Buildings

Property Name	# Units	2006 Total lbs.	2007 Total lbs.	2008 Total lbs.	2009 Total lbs.
City Hall (Roseville)	0	28,244	28,474	24,682	20,562
Evergreen Park Ballfield	0	497	515	456	818
Fire Station 1 Roseville	0	3,226	3,630	2,134	2,058
Fire Station 3 Roseville	0	1,564	2,786	3,604	2,960
Golf Course (Roseville)	0	2,729	2,654	2,080	2,149
License Center	0	79	178	10	38
Owasso Ballfields	0	120	36	400	361
Public Works Garage (Roseville)	0	8,341	12,089	13,916	13,566
Skating Center	0	4,877	5,038	5,244	3,938
State Farm Insurance	0	0	0	705	1,758
Wildlife Rehabilitation Center	0	14,607	13,948	12,726	12,513
Total Pounds - Municipal		64,283	69,348	65,957	60,720
Total Roseville Pounds	5,793	953,942	1,172,520	1,227,032	1,215,704
Total Units in 2008	5,781				
Total Units in 2007	5,662				
Total Units in 2006	5,367				

Eureka Recycling Composition Analysis Methodology

Eureka Recycling collects materials in two streams: a “papers” stream consisting of various grades of paper (including cardboard), and a “containers” stream consisting of food and beverage containers (including glass, plastic bottles, and metal cans). As outlined in our contract, Eureka Recycling conducts an annual composition study of the two streams to create a basis on which the percent of each commodity collected in the two-stream commingled program can be estimated based upon total weight collected in the truck.

Composition by Stream

During the composition study, Eureka Recycling weighs each truck before and after tipping the papers to determine the weight of the papers and containers streams. Each truck has a stored tare weight that is updated regularly for accuracy. This weighing process allows us to determine what percentage of the total recycling collected makes up the papers stream, and what percentage makes up the containers stream.

Composition by Commodity of Each Recycling Stream



The composition study starts with Eureka Recycling storing all of the materials collected in the city in the containers stream during a one-week period in a separate bunker from all other materials at the facility. Eureka Recycling sorts these containers by material separately from all other containers at the facility using the sort line.

The sorted materials are then baled or put into a hopper and transported with a forklift to the truck scale to be weighed. Finally, Eureka Recycling weighs the total amount of each sorted material grade (including residual) to establish a percentage of composition each grade represents within the containers stream.

The entire process is then repeated with the papers stream to establish a composition percentage of each grade of paper within the stream.

(651) 222-SORT (7678)

www.eurekarecycling.org

Our mission is to reduce waste today through innovative resource management and to reach a waste-free tomorrow by demonstrating that waste is preventable, not inevitable.

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Eureka Recycling Participation Analysis Methodology

Eureka Recycling conducts an annual participation study in which both set-out and participation rates are analyzed and documented.

The **set-out rate** is the average number of households that set materials out for recycling collection on a given day. For example, every Monday for one month, collection drivers count the number of households that set out recycling on that day. Then the four numbers are averaged to determine the average number of households who set out recycling on a given Monday.

The **participation rate** is the number of households who set materials out for recycling collection at least once over a period of one month. The participation rate is a better indication of overall recycling participation because it includes households that recycle at least once a month, recognizing that some households may not set out recycling every week. It more accurately indicates how many households are participating in the recycling program *overall*, as opposed to the number of participants on a specific day.

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Summary of Process

The study spans one month of collections. Eureka Recycling selects random sections to study for each daily recycling route, each section being comprised of about 200 households per day, for a total study of over 1,000 households. These same sections will be studied every year for consistency. Over a four-week period, Eureka Recycling tallies the exact number of households that set out recycling for collection in the morning of their collection day, before the driver services the section. The four-week study tracks recycling set-outs over the five days of collections during the week, totaling 20 days of set-out tracking.

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