

City of Roseville 2018 Year-End Recycling Report



Roseville's recycling program continues to be a leader in the country. Outreach and education elements of the program are an important part to ensuring good participation and helping residents understand the benefits of recycling. Participation continues to be at or among the highest in Ramsey County at 92%. Despite the continued lightening of packaging, the tons of recycling collected in Roseville in 2018 stayed steady with only a small decrease. Roseville residents demonstrate a genuine desire to support the program, understand what can truly be recycled, and recycle as much as possible.

There has been significant decrease in the value of sorted recycling across the globe in 2018 and through 2019. This has been a challenge for recyclers and cities across the country. Despite the challenges, recycling still plays a key role in benefitting the health of our communities and preventing the negative impacts of waste. Communities are increasingly aware of the impacts of waste to our health and studies show significant amounts of micro plastics in our lakes and rivers and soil here in Minnesota. Although the financial value for recycling has decreased, the cost of wasting material to our communities increases and therefore it is important to look at the benefit of recycling from a social and environmental perspective and look at the true cost of wasting.

In the current recycling climate, it is even more critical to work to keep Roseville's recycling clean and free of contamination, which is one of the reasons Eureka Recycling decided to launch a recycling app in 2018. By working with a company called ReCollect, we launched a recycling app that Roseville residents can use online at eurekarecycling.org or can download to their mobile device for free by searching for "Eureka Recycling" in their app store. The app allows residents to look up individual items to find out if they are accepted in their recycling program or not, and can also be connected to Ramsey County listings and resources for guidance in handling hard to recycle items like electronics, scrap metal, and appliances. The app also allows residents to see their recycling schedule and sign up for reminders to support their participation in Roseville's recycling program. Overall, 814 unique Roseville addresses have been searched through the app, and 746 materials have been looked up to see if they can be recycled. There are currently 200 Roseville residents signed up for recycling day reminders, with 67% of those residents being signed up through a mobile app and the rest being signed up for email, text, or phone call reminders. We look forward to working with the City to further promote this new app and expand on this success.

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This year-end report contains information on several areas that Eureka Recycling tracks to monitor the success of Roseville's zero waste recycling program over the course of each year. As a non-profit social enterprise we believe tracking and reporting this data is an essential way to ensure program transparency. It also gives Eureka Recycling and city staff the tools needed to successfully manage the program.

ENVIRONMENTAL BENEFITS SUMMARY

The environmental benefits of Roseville's zero-waste recycling program are quantified transparently using a widely-accepted environmental model. This ensures that all residents have a chance to see how their efforts can be measured and quantified.

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.

Because of the increasing societal focus on both the causes of and the solutions to climate change, it has become imperative to measure waste reduction (and all of our activities) in terms of its impact on the environment. 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.

In addition to climate change mitigation, there are other environmental benefits to recycling, including saving energy, protecting air quality, water quality, natural resources, natural beauty, habitat, and human health. There is an increasing awareness of micro plastic pollution in our rivers and lakes and soil and recycling is ever more important to strengthen to combat plastics toxins showing up in our food supply.

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 will vary from calculator to calculator.

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 Waste Reduction Model (WARM). WARM was designed to help solid waste planners and organizations track and voluntarily report greenhouse gas emissions reductions from several different waste management practices.

According to the WARM model, Roseville's recycling activities in 2018 reduced greenhouse gas emissions by 1,589 MTCE (metric tons of carbon equivalent) or 5,825 MTCO₂E (metric tons of carbon dioxide equivalent).

What do all these numbers mean?

In addition to preventing pollution, an important impact of recycling is that it conserves a huge amount of energy. Making products and packaging from raw materials harvested from nature uses a much larger amount of energy than using recycled materials.

Every manufactured item has the energy used to make it "embedded" into it. Recycling takes advantage of that energy, as it is easier and more energy efficient to make a glass bottle from another glass bottle than from raw materials.

The WARM model and other calculators measure the difference between recycling all these tons of materials and using them to make new products versus sending them to an incinerator and making replacement products from raw materials. This difference is expressed as the amount of CO₂ that was not produced because we did not have to make and use all the energy that would have been needed if we used raw materials.

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 <https://www.epa.gov/warm>.

These numbers, however, don't have much meaning 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.

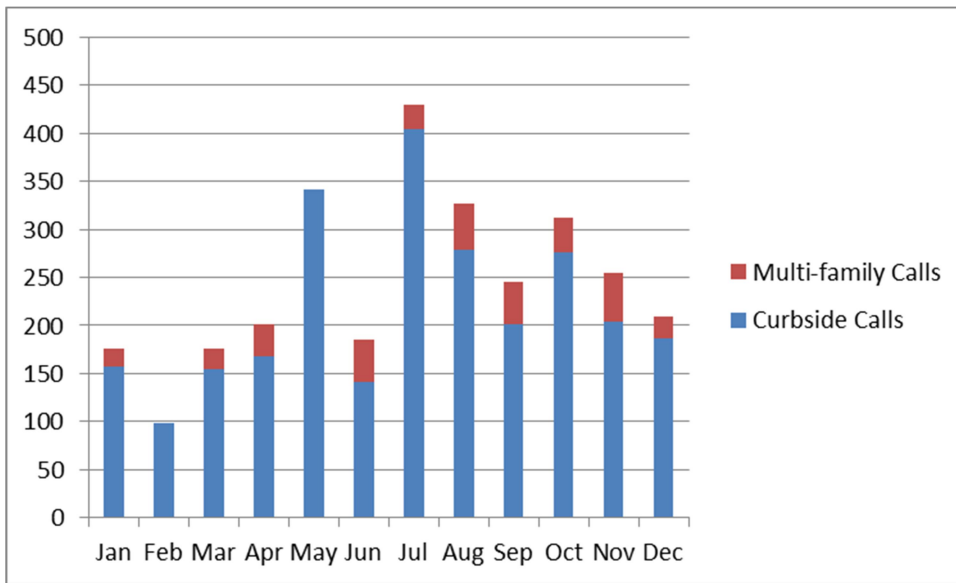
- For example, using the figures above, the EPA estimates that **Roseville would have had to remove 1,589 cars from the road for one year to have had the same environmental impact in 2018 as they did by recycling.** To achieve this, 10% of Roseville's households would have had to give up one car for a year.
- Another way to look at it is that the residents of Roseville saved an amount of energy equivalent to 242,703 backyard barbeques worth of propane.

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, but it offers a conservative starting place to measure our impacts and work towards our goals. Even with these conservative calculations, the impacts of Roseville's recycling program prove to be quite significant.

2018 Roseville Annual Report from Eureka Recycling

Education Summary for Curbside and Multifamily Programs

ROSEVILLE	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Hotline Calls and Emails													
Curbside Calls	157	98	155	168	341	141	404	279	201	276	204	186	2610
Multi-family Calls	19	0	21	33	0	44	26	48	44	36	51	23	345
Total Calls	176	98	176	201	341	185	430	327	245	312	255	209	2955
Requests for Printed Materials	10	8	2	4	16	8	9	8	12	7	3	7	94



Total Number of Stops

Single Family Homes	9,411
Multifamily Buildings	88
Parks	23
Total Number of Stops	9,522

Total Number of Tags Left

Eureka Recycling drivers educate residents at the curb using educational tags for specific problems. In 2018, drivers left approximately 482 educational tags on recyclers' carts. By simplifying the program to a single sort process, using carts provided to the household, and by adding additional plastics we eliminated many of the issues that generated tags in the past.

The most common reason residents received a tag in 2018 were:

1. Repeatedly having excess recycling placed next to cart while having a small or medium sized cart. The tag recommended that the resident call the hotline to request a larger, or even a second cart.
2. Cardboard not been broken down to a size that will fit in the cart. To collect extra cardboard the driver tips the cart and then puts the extra cardboard into the cart and tips it again. Cardboard too big for the cart is difficult for the driver to collect.

Amount stored, by recyclable material

No recyclables have been stored at our facility longer than needed to generate quantities to ship.

The markets generally used for the sale of recyclables

Eureka Recycling continues to use the same markets for recyclables as were noted in the RFP. Eureka Recycling has always prioritized supporting local markets. Currently 85% of the material we process is sent to an end market within Minnesota, 95% is sold to an end market in the Midwest, and 100% of our materials stay within North America.

Parks Recycling

We provided service to a total of 23 Roseville Parks in 2018, with most of them being serviced as part of our regular routes collecting from multifamily or single family homes.

As agreed, we separately tracked tonnage for the 37 carts located in Central Park Lexington and Central Park Victoria West at the pavilions, near the ballfields, and along the pathways. The tonnage for these two parks is listed below.

Month	Pounds of Recycling Collected
May	780
June	980
July	1580
August	1040
September	1300
October	100
Total	5780

Participation Trend Study Report

Roseville	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Set Out Rate	60%	50%	58%	53%	50%	53%	57%	53%	76%	78%	77%	76%	75%
Participation Rate	74%	75%	82%	78%	76%	75%	80%	76%	93%	93%	94%	93%	92%

Please note: This data does not represent a full participation study. It is only a trend study, meaning the numbers are useful to compare year to year but do not represent a full (statistically significant) representation of the actual participation level in the city of Roseville. See attached Participation Study Methodology for more details.

Recycling Market Outlook for 2019

2018 has been a difficult year for the sale of recyclable materials. From a zero-waste perspective we appreciate the efforts China is making to insist on quality materials and build their internal recycling system. In the long run, this could help the U.S. clean up our recycling stream and build up our capacity to recycle plastics and paper domestically. We see investment in increased capacity but it is yet to be determined how exactly these investments will impact capacity and pricing for both paper and plastics. Furthermore, until that capacity is built, we can expect to continue to see depressed paper markets. At this point, we expect the current pricing will continue through the year, though it could get a bit better or even a bit worse – industry experts aren't sure.

Although there were predictions that China's National Sword and Blue Sky policies would impact plastics pricing, we were fortunate not to see that in 2018 and that helped counter some of the decrease from significantly depressed fiber prices. That said, oil prices have been decreasing and that tends to bring lower plastic pricing so we expect those commodities to depress a bit.

Metals markets were thrown into chaos the fall of 2018, and we expect to see that volatility continue in 2019 and likely get even worse. This depression was caused by a few different factors including:

- one of the major aluminum markets deciding to close one of their aluminum can manufacturing facilities, thus flooding the market with aluminum cans that had limited places to go,
- the uncertainty around tariffs which discouraged businesses from making investments and made it difficult to consistently market metals to other countries,
- and the decreased production in the auto market which has historically been a large purchaser of recycled steel and aluminum.

We expect the metals market to continue to decrease at least through the beginning of the year and are unsure of what will happen long term. There are plans to increase beverage can manufacturing in the U.S. but it will take a few years before that has an impact on aluminum demand so won't impact pricing in 2019.

Trucking also continues to impact pricing negatively as there is a shortage of truck drivers and much stricter limits on how long they can drive. This is increasing the cost of transportation which can negatively impact pricing – especially for materials that are shipped out of state such as tin and aluminum.

Although the pricing for recyclable materials is not very optimistic, Eureka Recycling continues to have good relationships with our end markets and has not had any problem moving material in 2018. We have at least three markets interested in each material except for glass and regularly get positive comments regarding the quality of the recyclables we sell. Additionally, we continue to focus on local markets when possible – in 2018 85% of the material we processed stayed in Minnesota, 90 percent in the Midwest, and all of it stayed in North America. These business practices have been in place for years as a reflection of our values around the environmental, economic, and human impacts of recycling, and we have seen the benefit of these relationships even more than usual in the current market environment.

The current policies in place in China and the flooded domestic markets have created an industry-wide focus on reducing the contamination in our recycling stream, and the focus is now on "recycling better" rather than simply "recycling more".

Eureka Recycling Composition Analysis Methodology

Eureka Recycling collects materials in a single sort collection system with all paper, cardboard, metal and plastic, steel, aluminum and glass containers combined by residents into one cart. Each year we conduct an annual composition study of the single sort material to determine the percentage each material represents in the overall composition.

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Composition by Commodity of Each Recycling Stream

During the composition study we weigh each truck before and after to determine the weight of the material. Each truck has a stored weight that is updated regularly for accuracy. This process allows us to determine the initial weight of the material set out by residents during the period being analyzed.

The composition study starts with Eureka Recycling storing all of the materials collected in the city during a one-week period. These materials are stored in a separate bunker from all other materials at the facility. We sort the material separately from all other recycling at the facility.



The sorted materials are then baled or put into a hopper and transported with a forklift to the truck scale to be weighed. Finally, we weigh the total amount of each sorted material grade including the non-recyclable material (residual) to establish the percentage of the total tonnage that each material type represents in the overall composition.

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Participation Trend Analysis Methodology

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

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The **set-out rate** is the average number of households that set materials out for recycling collection on a given day. Not every household sets out their recycling each week. If they are out of town, forget, or simply don't have very much in their cart they may not have a cart out for collection on their day. The set-out rate is the average percentage of households that set out material on a weekly basis during the study period.

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The **participation rate** is the number of households who set materials out for recycling collection at least once over the period of the study.

The participation rate is a better indication of overall recycling participation because it includes households that recycle at least once over the course of six weeks, 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.

Summary of Process

The study spans six collection weeks. Each time the truck tips a cart, that collection is recorded for that specific address. This data allows us to analyze all collection during a specific study period. The percentage of all addresses in each day's routes that register a tip in a given week is recorded as that week's set out rate, which is then averaged over the course of the study.

The reports are then sorted by address and duplicates are removed for households that set out more than once during the study period. The remaining list of addresses represents all households that participated in recycling at least once during the study, to arrive at the participation rate for the city.

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2018 Annual Roseville Tonnage and Revenue Report

Tonnage Summary (Gross Amount Collected)

Curbside Tons-	2,617.81
Multifamily Tons-	569.74
Total Tons	3,187.55

Net Amount Marketed by Commodity and Residual Rate*	Composition*	Gross collected and Net Tons Marketed	Index Value in December 2018	Total Annual Revenue	Markets Generally Used for Sale of Materials
Single Stream Composition					
News Mix	38.60%	1207.90	\$35.00	\$48,647.94	PPW/OBM - Sorted Residentail #56 High side Chicago
Cardboard	11.87%	374.20	\$70.00	\$27,274.31	PPW/OBM - OCC #11 High side Chicago
Mixed Paper	12.31%	410.18	\$5.00	\$3,841.40	PPW/OBM -Mix Paper #54 High side Chicago
Textiles	0.01%	0.32	\$80.00	\$25.50	US'Again
Aluminum Cans	1.13%	37.61	\$1,240.00	\$54,085.98	Recycling Market.Net Regional Average
Steel Cans	2.16%	66.73	\$212.50	\$14,453.33	Recycling Market.Net Regional Average
HDPE NAT	1.06%	33.11	\$830.00	\$25,857.26	Recycling Market.Net Regional Average
HDPE Col	0.59%	18.66	\$370.00	\$6,057.98	Recycling Market.Net Regional Average
PET	3.93%	121.56	\$311.67	\$38,324.55	Recycling Market.Net Regional Average
Tubs and Lids	0.20%	6.22	\$20.00	\$124.47	Recycling Market.Net Regional Average
Mix Glass	20.25%	660.02	(\$16.97)	(\$10,811.59)	Recycling Market.Net Regional Average
Milk Cartons/Juice Boxes	0.24%	7.50	\$38.75	\$354.99	Recycling Market.Net Regional Average
Residual	7.65%	243.54	(\$91.49)	(\$21,734.91)	Actual Cost of Disposal and Transport
SubTotals	100.00%	3187.55		\$186,501.21	
				58.51	
Rev Share at 80%		80%		\$149,200.97	
Processing Fee		\$58.00 Per Ton		\$184,877.90	
Net Revenue to Roseville				(\$35,676.93)	

* Based on Composition Analysis Completed Spring 2018

None of Roseville's materials have been stored.

Market certifications available on request.