CURBSIDE RECYCLING CART-TAGGING PILOT PROGRAM

Planning, Implementation, and Findings

JULY 2022

Solid Waste Agency of Northern Cook County

Acknowledgements

SWANCC would like to express special thanks to the communities and staff members who participated in the 2022 Cart-Tagging Pilot Program.

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Curbside Recycling Cart Tagging Pilot Program: Planning, Implementation, and Findings

July 2022

Overview

The Solid Waste Agency of Northern Cook County (SWANCC) executed a cart-tagging pilot in May 2022. The pilot was proposed to reduce contamination in curbside recycling carts by providing direct feedback to residents on materials observed in their carts. SWANCC is planning to use this pilot to provide resources and guidance to enable its member communities to complete cart-tagging programs of their own, improving the quality of recyclables.

Pilot participation was offered to any interested SWANCC member community at no cost to participants; however, members did need to provide staff and/or volunteer support to complete the program. The pilot included a mailing to households in each pilot area prior to the start of cart tagging to inform them of the pilot and provide recycling guidelines. Carts were then inspected weekly for four consecutive weeks on the regular recycling collection day, tagged based on the observed materials in the cart, and findings of the types of contamination were recorded by the field teams. During the last week of tagging, cart tags included a link to a resident survey to receive community feedback about the pilot.

Principal findings of the pilot include:

- Predominant contaminants by residents: The most frequent contaminant seen in all three communities were single-use items. Many recyclable materials were found dirty, wet, or containing food, all of which contaminate otherwise recyclable material.
- Impacts of cart-tagging pilot: There was a general decline in the number of "Oops!" tags each week, and even in carts where contamination persisted throughout the pilot staff noted a meaningful decrease in the amount of contamination in individual carts.
- Materials for which education is most needed: Cart-tagging observations readily revealed specific materials for which more education is needed, and these materials varied by community. In Mount Prospect for example, the most predominant contamination found was shipping packaging, while in Evanston large amounts of shopping bags and plastic film were seen. These are items that each community can target through updated recycling guidelines and other focused outreach and messaging beyond completion of the pilot.

Cart-tagging pilot materials were revised based on findings and lessons learned during the pilot. Going forward, SWANCC staff is equipped to provide cart-tagging and contamination training to staff in member communities, as well as materials that can be replicated or adjusted per community, for interested members to conduct their own tagging program.

This report documents the cart-tagging pilot program, including the recruitment and planning process, materials used, program costs, data collection and analysis, challenges encountered, and recommendations for future cart-tagging programs.

Recruitment

During SWANCC's October 2021 Recycling Coordinator's meeting, the cart-tagging pilot program was introduced, and members were asked to volunteer to participate with the hope of securing three participating communities. Barrington, Evanston, and Mount Prospect each were interested in participating. From a scheduling and execution perspective, these three communities enabled the pilot to be run in all communities concurrently because they each had different recycling collection days.

After gaining initial interest from the members, SWANCC staff developed a proposal for the cart-tagging pilot for staff in each community to secure administrative approval to participate, including information on cart-tagging in general and its potential benefits (see Appendix A). The approach for the pilot was modeled after experience and guidelines from other entities previously performing cart-tagging or researching contamination reduction strategies, including The Recycling Partnership and Solid Waste Association of North America (SWANA)[1].

Pilot Planning and Parameters for Participating Communities

Working with each community's respective coordinator for the pilot, the proposal was presented to village administration to obtain permission to conduct the pilot. Village staff then worked to identify the pilot program area, with a goal of capturing 100-200 households in each community. The total number of households included was ultimately dependent on housing density, the number of staff and volunteers available for tagging, and collection route boundaries. SWANCC committed two members of its staff to support each community, with additional staff and volunteer support recruited by each community coordinator. It was determined that at least two members of village staff needed to be present for each day of inspections in addition to SWANCC's two staff members, making a minimum crew size of four for each community.

Specific parameters for the pilot varied by community based primarily on the number of staff and volunteers available and the density of housing in the pilot area:

<u>Barrington</u>:

- The neighborhood selected by Barrington had large lots with more distance between homes, so having 3-4 inspection teams of two persons was necessary to complete inspections efficiently.
- Barrington secured significant support for the inspections from their Environmental Advisory Committee, whose members were willing to volunteer their time to complete inspections
- Based on the number of staff and volunteers available to complete the inspections, a pilot area of approximately 200 homes was determined to be feasible.

[1] The Recycling Partnership: "Oops!" tags
Solid Waste Association of North America (SWANA) Applied Research Foundation: *Reducing Contamination In Curbside Recycling Programs*

Evanston:

- Evanston committed two staff members per week, in addition to the two SWANCC staff members. No volunteer support was obtained to supplement staff, so weekly inspections were performed by a crew of four.
- The pilot area selected was comprised of closely spaced homes with alley collection, making approximately 200 homes feasible for the field team to inspect.
- Evanston collects its own recycling, so staff was able to easily coordinate with their collection staff to schedule inspections ahead of collection.

Mount Prospect:

- Mount Prospect committed two staff members per week, in addition to the two SWANCC staff members. No volunteer support was obtained to supplement staff, so weekly inspections were performed by a crew of four.
- The pilot neighborhood was more dense than in Barrington, but less dense than in Evanston. Because of the neighborhood layout and density, and given the staff available, approximately 100 homes were considered feasible.

Maps of each community's pilot area are contained in Appendix B.

Pilot Program Materials

Mailers and Recycling Guidelines: Prior to beginning the cart-tagging pilot, residents received a mailer providing notification of the pilot. The mailer included a letter on letterhead from and signed by the member community outlining the pilot and its purpose, a sample of the tags that would be used, and current curbside recycling guidelines (do's and don'ts) to educate residents on proper recycling. A list of addresses was provided to SWANCC staff for each community to prepare and send the mailing, with SWANCC covering all costs of materials and postage. A copy of the direct mailer to residents is in Appendix C. SWANCC's curbside recycling guidelines were printed, double-sided, on a half-sheet postcard, with one side showing acceptable recyclables and one side showing unacceptable materials. A copy of SWANCC's curbside recycling guidelines is contained in Appendix D.

"Oops!" and "Thank You!" tags: Staff estimated the amount of "Oops!" and "Thank You!" tags needed for the inspections in each community. Considerations for the number of tags required included estimating cart set-out rates and projecting the initial contamination present. Because the pilot was being conducted over a short period in four consecutive weeks, estimates erred to the high side because there was not sufficient time to order additional tags if they were needed. Tags were specific to each community, including their community logos and a QR code linked to a community-specific webpage. For the cart-tagging pilot, SWANCC ordered a total of 3,480 cart tags, consisting of the following quantities and types by community:

- Barrington: 650 Oops! Tags / 650 Thank You! Tags
- Evanston: 760 Oops! Tags / 760 Thank You! Tags
- Mount Prospect: 330 Oops! Tags / 330 Thank You! Tags

In Evanston and Mount Prospect, "Oops!" tags were headed in red with red text, and "Thank You!" tags were headed in blue with blue text so that residents would be able to easily differentiate the two tags.

Based on feedback from Barrington's Environmental Advisory Committee, the tags in Barrington were all headed in green with either red or blue text depending on the tag type, reducing visibility of whether the tag was an "Oops!" or "Thank You!" tag from a passerby to minimize concerns that different colored tags may shame residents for contamination. Images of the cart tags are contained in Appendix E.

Website: SWANCC's website is an established resource the Agency was able to utilize to deliver information to residents in the pilot neighborhoods. SWANCC staff made a page on its website for each community and posted a map of the pilot area, a copy of the mailer and guidelines, and general information on contamination and recycling. A QR code for each community's page was printed on the bottom of each community's tag and recycling guidelines for easy access by residents. A screenshot of Barrington's SWANCC webpage can be found in Appendix F.

Pilot Program Costs

This project was funded by SWANCC, with no direct costs for materials incurred by the pilot communities.

SWANCC's cost for materials and supplies for the pilot was about $2,500 for all three communities. At approximately 500 households included in the pilot, the materials cost approximately $5 per household. Material and supply expenses included:

- Planning expenses (printing costs for direct mailers, envelopes, and postage) $700
- Cart tags & Recycling Guidelines cards (printed by outside contractor) $1,300
- Field supplies (markers, gloves, weather supplies, etc.) $200

SWANCC incurred additional costs for labor associated with recruitment of pilot communities, development of all pilot program materials, creation of community webpages, community coordination, cart-tagging training, field inspections, and post-tagging data analysis and reporting. In total, approximately 700 hours of staff time were invested in the pilot from initial planning through data analysis and reporting. A breakdown of SWANCC staff hours is listed below:

- Tag and materials design: 280 hours
- Pre-tagging planning, coordination, and training: 220 hours (average 70-75 hours per community)
- Field inspections: 48 hours
- Post-tagging data analysis and reporting: 140 hours

Additional in-kind labor support from the communities was provided, including for planning and coordination and weekly field inspections; these labor hours were not tracked by SWANCC staff.

In general, time on materials design was an upfront investment by SWANCC staff, which members will not incur when executing future cart-tagging efforts because the program materials are all

developed and available for their use. Time will be required for any program for pre-tagging planning and coordination, field inspections, and data analysis. The amount of time expended will be dependent in part on the number and density of homes included in the tagging program and the number of weeks that inspections will be performed. As a benchmark for field inspections, resource efficiency in the pilot was:

- 8-10 homes per person per hour of field time in low-density areas (e.g., Barrington)
- 12-15 homes per person per hour of field time in medium-density areas (e.g., Mount Prospect)
- 18-20 homes per person per hour of field time in high-density areas / alley collections (e.g., Evanston)

A well-executed cart-tagging program will be labor-intensive and requires focused attention and leadership to achieve efficiency and quality results.

Data Collection and Analysis

Data Collection: Data collected through the pilot program provides great insight into areas where residents are in need of more recycling education. Primary datasets developed and reviewed provide information on:

- Recycling participation rates, quantifying the number of households setting out recyclables weekly within each pilot area;
- The percentage of recycling carts containing any kind of contamination; and
- The types of contamination present and prevalence by contaminant.

Data was collected using Google Forms. Google Forms is free to anyone with a Google account, and accessible to anyone with a link to the questionnaire through any mobile device. This simplified sharing the form with staff and volunteers prior to inspections. A copy of the Google Form is included in Appendix G.

Each household observed was a unique form entry. Data entry started by entering a house number and selecting the street name from a drop-down list for efficiency. Participation was then noted based on whether a recycling cart was present at the collection point and contained material or not. If the household was participating (their cart was on the curb, with materials inside), any visible contaminants were selected from a drop-down list and an “Oops!” tag was placed on the cart identifying the contamination seen. If no contaminants were visible, the “NONE! (Thank You Tag)” option was selected and a “Thank You!” tag was placed on the cart. The form also included a section for the inspector to leave comments about cart contents in case that specific resident called to ask any questions.

Participation Rates: Data on the number of carts set out during each inspection event allowed for calculation of recycling participation rates in each pilot area. The pilot was not intended to impact recycling participation, and in fact participation rates in each community were generally constant throughout the pilot. The participation rate instead serves as a measure of the commitment to recycling as well as quantifying the proportion of households in the pilot area receiving feedback

through the cart-tagging pilot. The average participation rates during the pilot by community are listed below:

- Barrington: 82.5%
- Evanston: 75%
- Mount Prospect: 84.7%

These rates indicate recycling is an established and heavily utilized service in each pilot area, reinforcing the importance of ensuring that residents have sufficient education to recycle correctly.

Presence of Contamination: Inspectors were only able to comment on top-lying materials within the recycling cart. Inspections were strictly visual and limited to the materials visible when lifting the recycling cart lid.

Figure 1 below represents the percentage of "Oops!" tags given per week in each community. In all communities, fewer "Oops!" tags were given in the last week of the pilot than in the first week, indicating that cart-tagging was effective in reducing contamination.

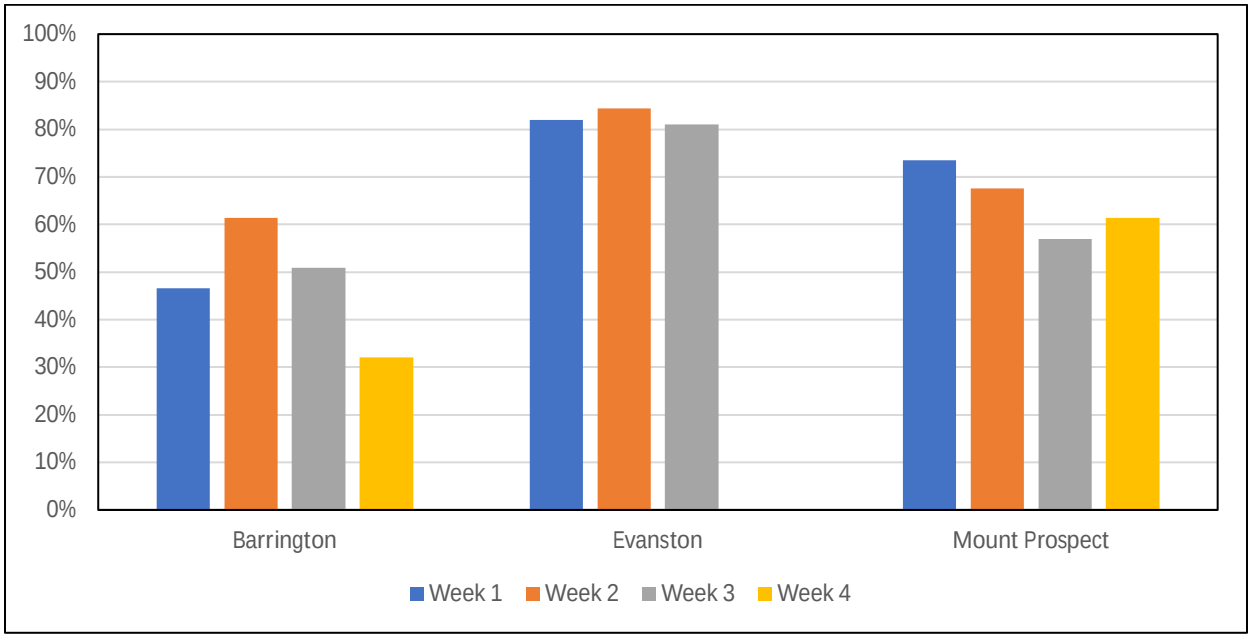


Figure 1. Percentages of "Oops!" Tags Placed by Week

Staff could clearly see an improvement in the quality of material in residents' carts on a weekly basis. Some carts were heavily contaminated the first week, and far less contaminated each week moving forward. Though some carts may have received an "Oops!" tag every week during the pilot, there was notable improvement in those carts with less contamination and/or fewer types of contaminants noted.

This program did not include an assessment of the total amount of contamination in the recycling carts, and therefore it is unknown whether the amount of contamination changed from the beginning to the end of the pilot. However, based on the reduction in the percentage of "Oops!" tags issued and reduction in prevalence of most contaminants over the course of the pilot in both

Barrington and Mount Prospect, it is likely that total contamination within the recycling stream did decline over the pilot period in those communities. Data for Evanston is less definitive, and further discussion of the challenges for cart tagging in the area assessed in Evanston are discussed in the "Challenges and Lessons Learned" section of this report.

Contamination By Type: Staff was able to then track the prevalence of each contaminant by type based on all inspections.

- Many of the contaminants found during inspections consisted of materials that weren't initially expected to be present in such a large quantity, such as single-use cups.
- Single-use items were the most prevalent contaminant, including plastic items like cups, cutlery, wrappers, and packaging, and paper items like napkins, paper towels, tissues, and plates. Examples are shown in Figure 2.

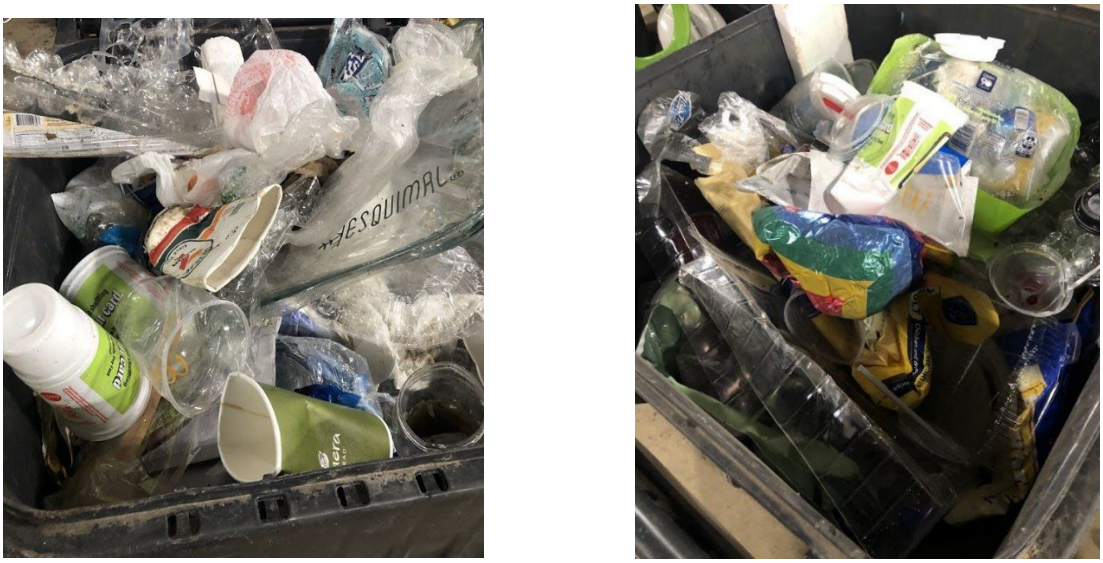


Figure 2. Examples of Single-Use Contaminants

- Many items were observed and marked as contamination that would have been recyclable if they were empty and clean when placed in the cart, or if they had not been contaminated by food or liquid after they were placed in the cart.
- Evanston residents significantly reduced the amount of plastic bag and film contamination, one of the top five contaminants targeted by the tagging materials. Occurrences dropped from 75 the first week to 44 the final week of tagging.
- In Mount Prospect, shipping packaging was shown as the most prevalent contaminant, with more than 50% of carts including shipping packaging that is not accepted in the curbside recycling cart in the first week. Though it remained the most prevalent contaminant at the end of the pilot, carts with this type of contamination dropped by half, and shipping packaging was observed in approximately 25% of carts by the end of the four-week period.

Figures 3 through 5 show the presence of each contaminant in each community by type for each week of the pilot. Percentages reflect the proportion of all carts set out that week that were noted to contain the contaminant. Therefore, the graphs depict the frequency of visible contaminants across all carts in the pilot, not just the carts that had contamination present.

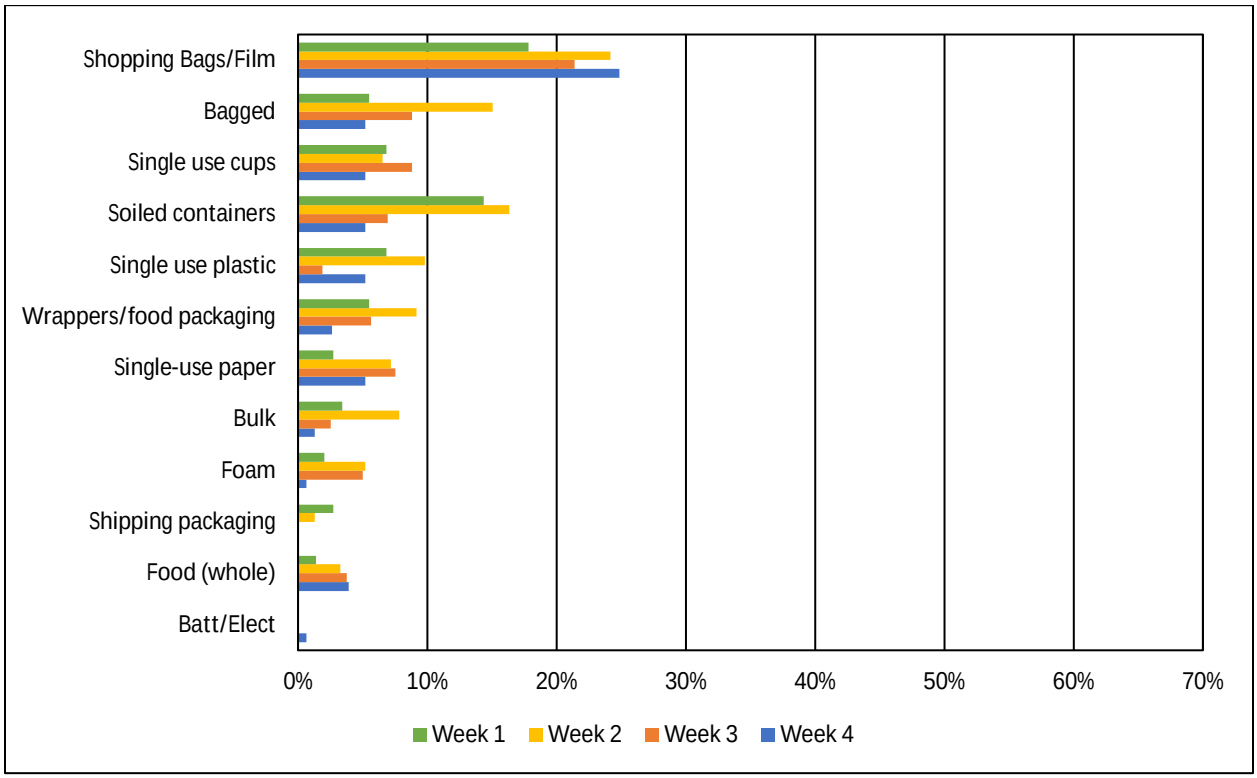


Figure 3. Contaminants by Type in Barrington

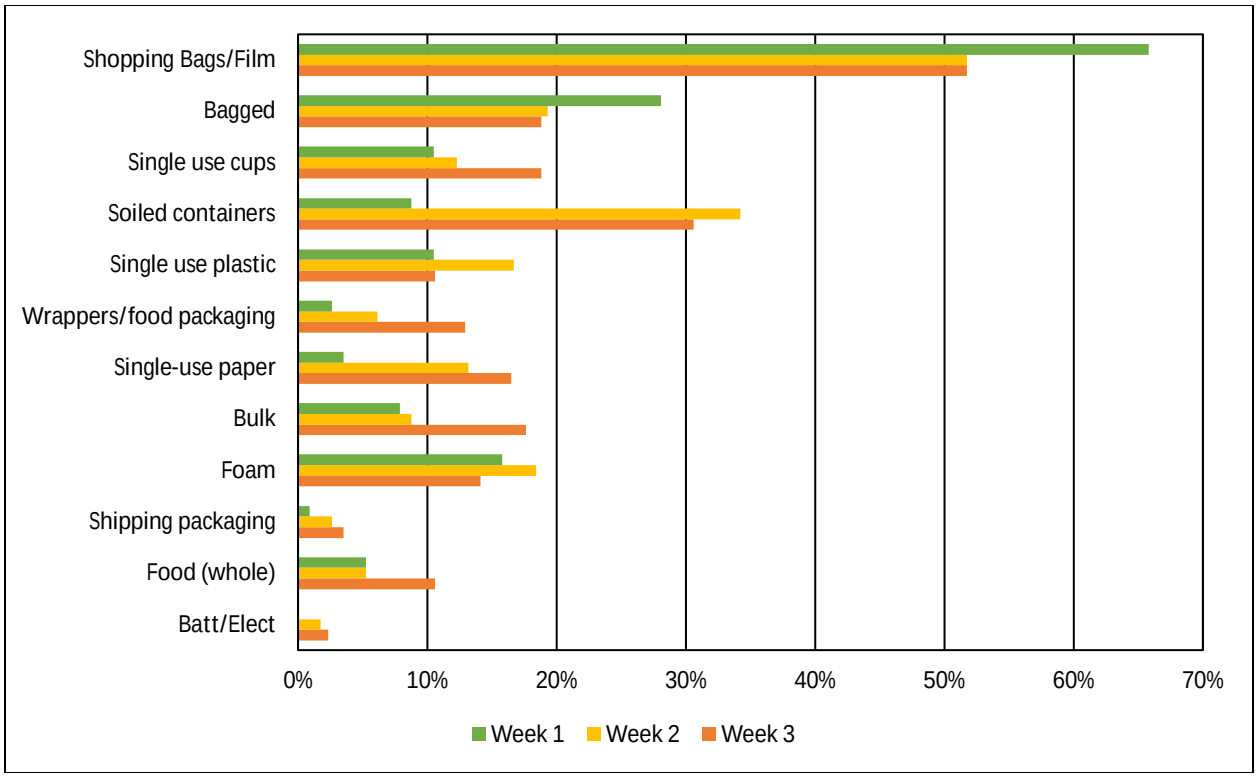


Figure 4. Contaminants by Type in Evanston

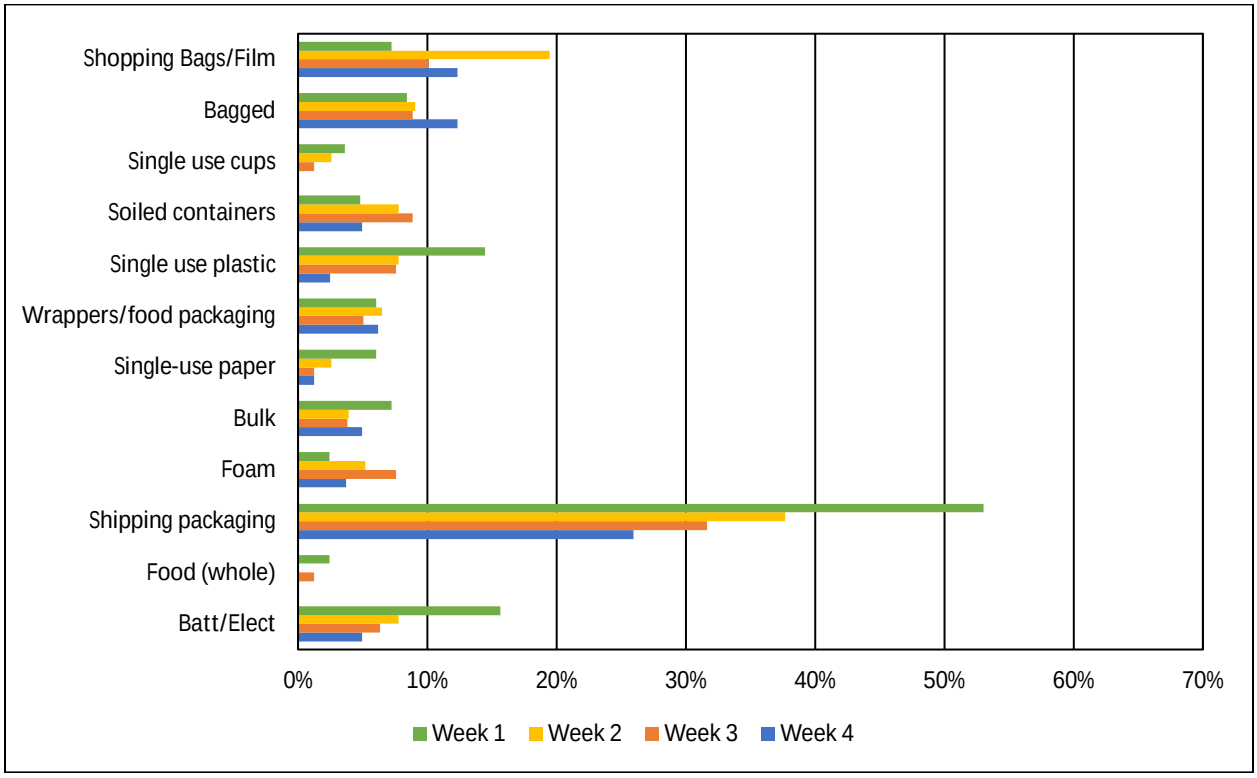


Figure 5. Contaminants by Type in Mount Prospect

Resident Feedback Survey: During the last week of inspections in each community, a card with a link to a resident survey was attached to each tag. The survey included seven questions asking residents about their recycling knowledge prior to the pilot and after it was completed, and how they felt about the pilot program. The survey was easily accessible through a QR code printed on the card attached to the tag.. There was also an incentive to win a $50 Visa gift card for taking the survey. Figure 6 is an example of the card with the QR code, which was printed on yellow cardstock. The full list of survey questions can be found in Appendix H.

Figure 6. Example Resident Survey Card

In addition to the formal survey, SWANCC staff engaged in a lot of direct communication and education with residents while completing inspections on the street. Staff was able to tell some residents exactly what items were considered contamination, and why. Staff found some residents were confused as to whether they were being cited for contamination or being thanked for recycling correctly because the cart tags had the same information discouraging bagged recyclables on the back, whether it was an "Oops!" or "Thank you!" tag. This confusion was also reflected in the survey responses. Two residents stated:

- "I'm not sure if we got a pass or fail. One side says Lookin good the other side says leave materials loose."
- "You cannot differentiate the times of good job or not so good. The tag does not explain it clearly."

With respect to knowledge gained and the quality of materials provided, residents in each community found value in the cart-tagging program:

- Residents rated their knowledge about recycling higher after the pilot than before;
- Residents indicated that participating in the pilot increased their knowledge of what can be recycled at the curb; and
- Residents felt the recycling information provided in the mailing and through the cart tags was very clear.

A full list of resident responses can be found in Appendix I.

The survey was voluntary, and not all residents who participated in the cart-tagging pilot responded. The response rate in each community was:

- Barrington: 16%
- Evanston: 5%
- Mount Prospect: 13%

These rates are consistent with, and in Barrington and Mount Prospect higher than, expected voluntary survey response rates would be when the survey is not directly administered through one-on-one communication with each resident and where no follow-up attempts are made to secure a response.

Challenges and Lessons Learned

Part of the purpose of a pilot program is to identify the unforeseen challenges or weaknesses within a program protocol to make adjustments before advancing a more established program. This section summarizes the most notable challenges that were encountered during the cart-tagging pilot and identifies solutions that were implemented real-time as the pilot continued or are noted for future implementation of similar programs.

Data Collection

Challenge 1: After the first week of tagging, several contaminants not directly included on the "Oops!" tag or in the Google Form were noted to be prevalent in recycling carts. These were identified by the inspectors in the "Other" category on the Google Form and largely consisted of single-use items. This required a large amount of time to type the various contaminants in addition to noting them in handwritten comments on the cart tag. Additionally, it would have required a large amount of manual effort to complete data analysis.

Solution: To make data collection more efficient and enable better post-tagging data analysis, SWANCC staff added seven more categories to the contaminant listing in the Google Form based on observations after the first week of inspections, including:

- Single-use cups
- Single-use plastic
- Single-use paper (napkins, paper towels, paper plates)
- Food (whole food items)
- Soiled containers
- Shipping packaging
- Wrappers (food packaging, candy wrapper, chip bags)

By adding these options to the form, the data was clearer and more concise, and the "other" category was limited to items that were far less common. "Other" items continued to be hand-written on the tags since the tags were pre-printed.

Challenge 2: There were some homes, especially in Evanston where carts were in alleys behind the homes and house numbers were not visible, that were difficult to get an address from.

Solution: The field crew made its best guess or used a description of the home in lieu of an address. Data analysis on a home-by-home basis was not of interest for the pilot, so the impact of logging an incorrect house number on data quality was immaterial. House numbers were tracked primarily to give accurate feedback to residents if they inquired about the tag they received; however, throughout the duration of the pilot neither SWANCC staff nor the participating communities had any residents reach out to ask why they received an "Oops!" tag.

Tag Design:

Challenge 1: The original tag design was based on The Recycling Partnership's "Oops!" tag which identified the same top five contaminants used on SWANCC's tags. SWANCC staff reached out to many contacts within the Illinois Recycling Contamination Task Force and to local MRFs, and they agreed that the selected contaminants are a continuous problem.

Similar to the data collection challenge encountered by identifying only five contaminants on the cart tag, staff realized it was difficult to educate residents from the limited tag categories. It was apparent that many contaminants were present that weren't listed on the tag, and contaminants present but not noted on the tag needed to be written in the comments section of the tag. This made communication with residents confusing, because even though none of the five contaminants were checked on the tag, they were still receiving an "Oops!" tag for contamination.

Challenge 2: The back of the tag, with the constant message of "Don't Bag Recycling" on both "Oops!" and "Thank You!" tags, proved to be confusing to residents. Many residents were confused and thought they were being cited for bagging their recycling even though they had received a "Thank You!" tag.

Challenge 3: Barrington's tag design was different from the other two communities because they had chosen to make all their tag headings green so residents would not be shamed for contamination. Many residents were confused whether they were getting an "Oops!" or "Thank You!" tag each week because of the visual similarity with all tags being green.

Solution: With feedback from village staff and volunteers, as well as the field and data recording observations, SWANCC staff redesigned the "Oops!" and "Thank You!" tags. A copy of the revised "Oops!" and "Thank You!" tags can be found in Appendix J.

The new "Oops!" tags feature checkboxes for more types of contaminants, along with explanations of specific categories of contaminants. The back side includes information on "Wishcycling", giving residents more answers as to *why* contamination is harmful, instead of just instructing residents what to do. The revised "Thank You!" tags now have resources for special materials and collection on the back side instead of the constant "Don't Bag Recycling" message.

Revised tags have been made to be universal, so they can be used in any member community, with a QR code linking to SWANCC's recycling guidelines rather than community-specific pages. At the option of the community, the tag can still be personalized with the community logo and a link or QR code to education information hosted by the community.

Weather:

Challenge: Rain proved to be the biggest challenge faced during the cart-tagging pilot, and a week of cart tagging in Evanston was canceled because of rain. Though SWANCC staff, member staff, and volunteers were equipped or able to be suitably outfitted to physically complete the inspections in the rain, the tags were not waterproof or durable to water. When tagging the carts in the rain, the tags began to rip, and markers and pens were impossible to use when wet. The tags would also be sitting outside in the rain until the resident brought the cart and/or tag inside.

Figure 7. Bagged Cart Tag to Protect the Tag from Rain

Solution 1: Little flexibility existed in the scheduling for the completion of the pilot, so when rain was forecasted SWANCC staff pre-bagged the "Oops!" and "Thank You!" tags in a zip-top plastic bag before inspections were completed that day. While this was a time-consuming preparation step, it enabled inspections to continue and residents to receive feedback without losing information with the rain. Staff and volunteers were able to write with a waterproof marker on the outside of the bags, or if the rain was lighter the tag could be removed from the bag, marked, and re-bagged. Bagged tags were then taped to the handle of the recycling cart (see Figure 7).

Solution 2: Setting an inspection schedule that affords flexibility to accommodate rainy or other inclement weather for future cart-tagging efforts is recommended. Drier periods of the year may be preferred if the schedule must be more fixed before the pilot begins, or water-resistant tags may be procured (though these will come at a much higher cost). Establishing protocol that achieves the primary goal of providing residents with feedback on tags in good condition is an important consideration in the planning process.

Next Steps

Having village staff assist in performing inspections enabled them to directly observe where their residents need more education and/or where guidelines or resources provided by the community can be improved. For example, Evanston is assessing options to better communicate with residents who receive alley collections because the cart tags were not as readily seen when the carts do not need to be moved after collection. In Mount Prospect, it was discovered that the stickers on top of resident's recycling carts were outdated and provided inaccurate information. As a result of that finding, Mount Prospect has redesigned its recycling cart stickers and will be placing the new stickers on carts in the future to provide current, accurate guidance to residents. The updated cart sticker is shown in Figure 8.

Figure 8. Updated Recycling Cart Sticker in Mount Prospect

Since the pilot concluded, two communities have implemented their own cart-tagging programs drawing on lessons learned in the pilot and utilizing materials developed by SWANCC staff:

- Skokie hired a college intern to inspect recycling carts and leave an "Oops!" or "Thank you!" tag. Skokie has given out about 5,000 tags in its program as of August.
- Glencoe started a cart-tagging pilot consisting of about 220 households on September 9.

Going forward, SWANCC staff is available to provide the electronic files for the cart tags and recycling guidelines for community use and printing, as well as consulting on cart-tagging program parameters and providing education and training pertaining to contamination inspections and cart-tagging. It is staff's hope that more members utilize the learnings from the pilot to conduct their own cart-tagging efforts, providing direct feedback to their residents to improve the quality of recyclables collected at the curb.

APPENDIX

(A) Cart Tagging Pilot Proposal
(B) Maps of Pilot Areas
(C) Direct Mailer
(D) Recycling Guidelines
(E) Cart Tags
(F) Screenshot of Barrington's SWANCC Webpage
(G) Google form sheet used to collect data
(H) Survey Questions
(I) Resident Survey Results
(J) Revised Cart Tags

APPENDIX A

Cart Tagging Pilot Proposal

The problem: Cart Contamination

Throughout the past few decades, recycling has become increasingly accessible to residents at home. When curbside recycling first began, recycling bins were very small, and recyclables were organized by residents based on material. Haulers would collect materials and separate them directly into separate compartments on their collection trucks. With the development of Materials Recovery Facilities (MRFs) to process collected residential material, recycling has evolved into a single-stream system. MRFs use optical sorters and other mechanical means to separate recyclables by material. MRFs have proven to be highly efficient and have allowed for a simpler collection process in curbside recycling. Taking advantage of the efficiencies of the MRF many cities have upgraded to 65-gallon, single stream carts that are collected as is by collection trucks. Many materials now found in the collection carts cannot be recycled due to the risk they cause to MRFs and their employees. “Tanglers” for example are considered contamination because they get tangled in sorting machines, which can cause fires and mechanical failure. Tanglers include string lights, plastic bags, clothing and textiles, etc. Aerosol cans also pose a safety risk in the bailing process of recycling if they still have contents under pressure. If aerosol cans are not fully and completely empty, they can cause explosions and fires within bailers or during transportation. Recycling contamination can be dangerous for recycling haulers and their employees. Once all the recycling material is sorted, it is condensed into bails to be exported as raw material.

Recycling is extremely important for keeping solid waste out of our landfills, and providing raw, renewable materials that can be reused and potentially sold for profit. The single-stream system of recycling also resulted in a large influx of information and inconsistent messaging regarding recycling. This information is distributed through the media, schools, advertisements, packaging, etc. The inconsistent information can make it difficult to differentiate what you can and cannot recycle. Many people have the best intentions when recycling but end up “wish-cycling” which creates more problems than not recycling at all. Wish-cycling involves recycling items you think, or “wish”, could be recycled, but end up contaminating the entire recycling cart. Wish-cycling then leads to the disposal of perfectly good recyclable materials, through contamination at the cart or at the processing facility into our landfills, a greater influx of solid waste, and contamination fees from haulers.

Cart tagging

Communities have thought of ways to improve their residential participation and reduce unwanted materials that are placed in the recycling cart. In casual monitoring of recycling carts on collection day in any community, one can observe recycling material that is contaminated. Cart tagging is a method that has been successfully used in multiple communities to reduce cart contamination as well as to promote recycling education. Residents are categorized based on their level of understanding for curbside recycling. There are:

- **High performers**: educated on proper recycling practices and contaminants; added effort to be involved in recycling programs
- **Learners**: Willing to learn proper recycling methods; needs more education on proper recycling practice
- **Underperformers**: Not willing to learn recycling practices; unaware of recycling programs or parameters

Figure 1

Cart tagging would be the first step in raising awareness to cart contamination before more serious penalties can be issued. Cart tagging involves a group of staff or community members physically checking recycling carts for contamination. If contamination is found, an "oops" tag

will be placed on the cart to inform the resident on what they are doing wrong. If the resident is recycling correctly, a green "shine-on" tag is left on the cart. An example of an 'oops" tag provided by *The Recycling Partnership* can be found to the right in Figure 1. A common mistake is to recycle plastic bags or place your recycling into a plastic bag prior to placing it in the cart. An "oops" tag can harmlessly inform the resident that they need to keep their recycling loose, not bagged. "Oops" tags can also raise awareness of dangerous/hazardous materials than pose safety concerns when placed in a curbside cart. Products like batteries, textiles, string lights, pressurized cans (not emptied), are hazardous and can cause injuries to respective recycling staff. Many residents are not aware of safety concerns, and a simple "oops" tag can provide that information.

Cart tagging in Fort Worth, Texas

Fort Worth has a continual cart tagging program in place. Fort Worth has a "Blue Crew" of 6 members who inspect carts on a weekly basis. Their target area includes 291,739 households. *The Solid Waste Agency of North America (SWANA)* completed a cost-benefit analysis for Forth Worth's cart tagging program as seen in *Figure 2* below. This analysis is based on a $90.36/ton Material Recovery Facility fee, and a $10.52/ton contamination disposal fee.

Table 3-3: Fort Worth, TX: Estimate of Annual Savings Due to Reduced Contamination

	Units	Value
Single-stream recyclables/contamination collected per household	Tons/household/year	0.23
Households served	Households	291,739
Single-stream recycling mix collected and processed	Tons/year	67,100
Assumed MRF processing costs	Per ton	$90.36
Hauling of contamination to landfill	Per ton	10.52
Original contamination rate		28%
New contamination rate		21%
Reduced contamination	Tons/yr	4,697
Annual Savings		$473,833

Figure 2

Fort Worth estimates they would save $473,833 dollars by reducing contamination. This covers 95% of the annual fee for the cart tagging program itself ($500,000). This is a very large-scale example of how cart-tagging can benefit a community economically as well. The savings are also based on a decrease in contamination only by 7%.

SWANCC's Cart tagging Pilot Program

In an effort to better understand the issue of contamination, SWANCC staff has been attempting to do a cart tagging pilot in one of our member communities for years. SWANCC has a plan to begin its initial cart-tagging pilot in May of 2022. SWANCC is looking to expand this project as continual, and potentially annual event after the pilot. SWANCC's cart-tagging pilot is a free, volunteer-based program available to any of SWANCC's 23 member communities based upon availability of staff and volunteers.

Once SWANCC obtains pilot area approval, we will send out direct mailers and information about the cart tagging pilot in April of 2022 to the selected pilot area. Once community permission to begin is granted and residents are notified, we will be inspecting recycling carts once a week for four weeks. We will have one touch point per week on the respective hauler's pick-up day. Our initial goal is to cover a span of six to ten blocks. Our area will most likely differ for each community and will depend on the number of volunteers that are willing to assist with the cart inspections. We are more than willing to cover more ground so long as we have the team to do so.

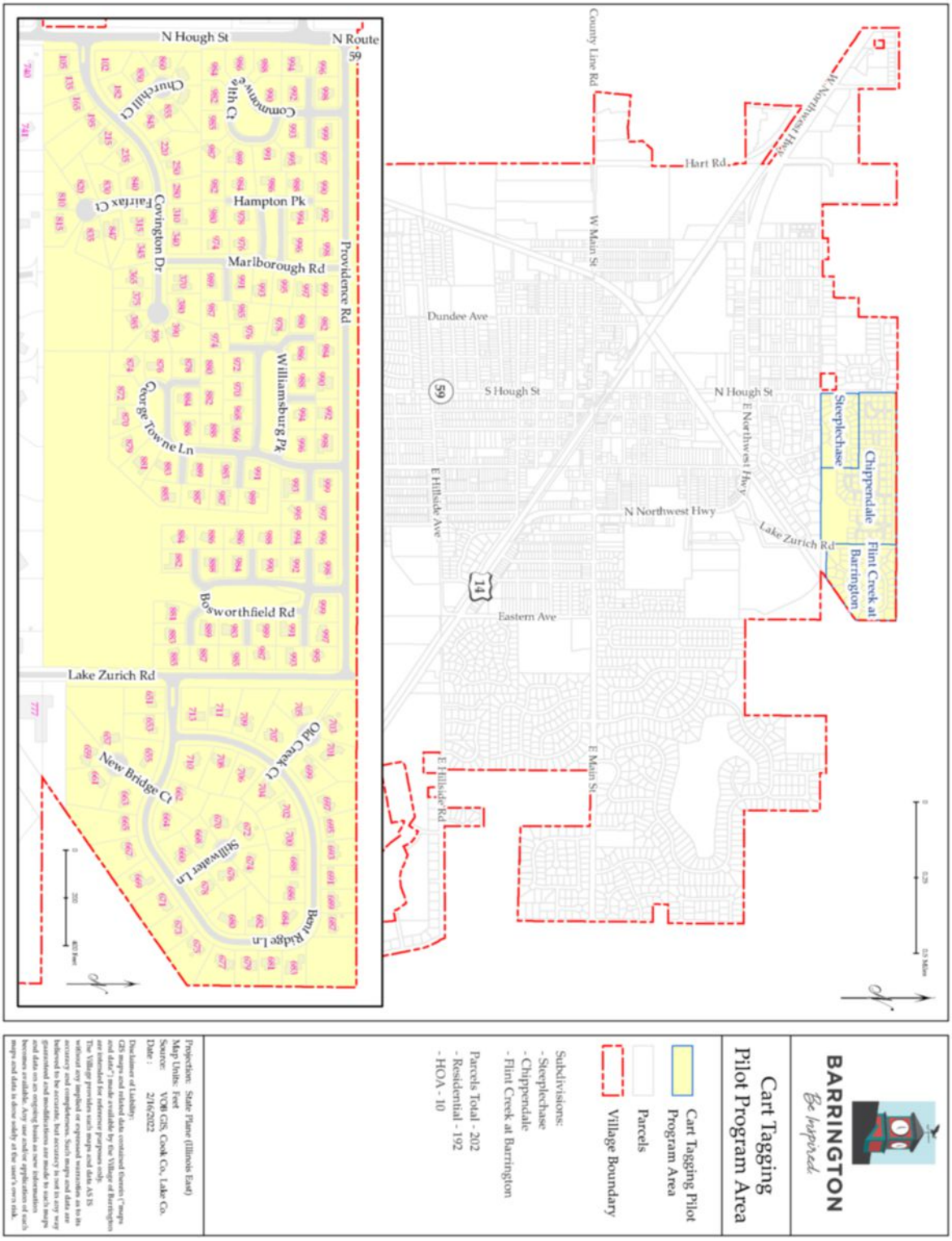
We will be collecting data on types of contaminants, and the levels of resident participation based upon our lifting of the recycling cart lid and visual inspection of the material included. This data will provide communities with information the success as well as what types of contaminants their residents need more education on, as well as show the willingness of residents to participate in recycling programs.

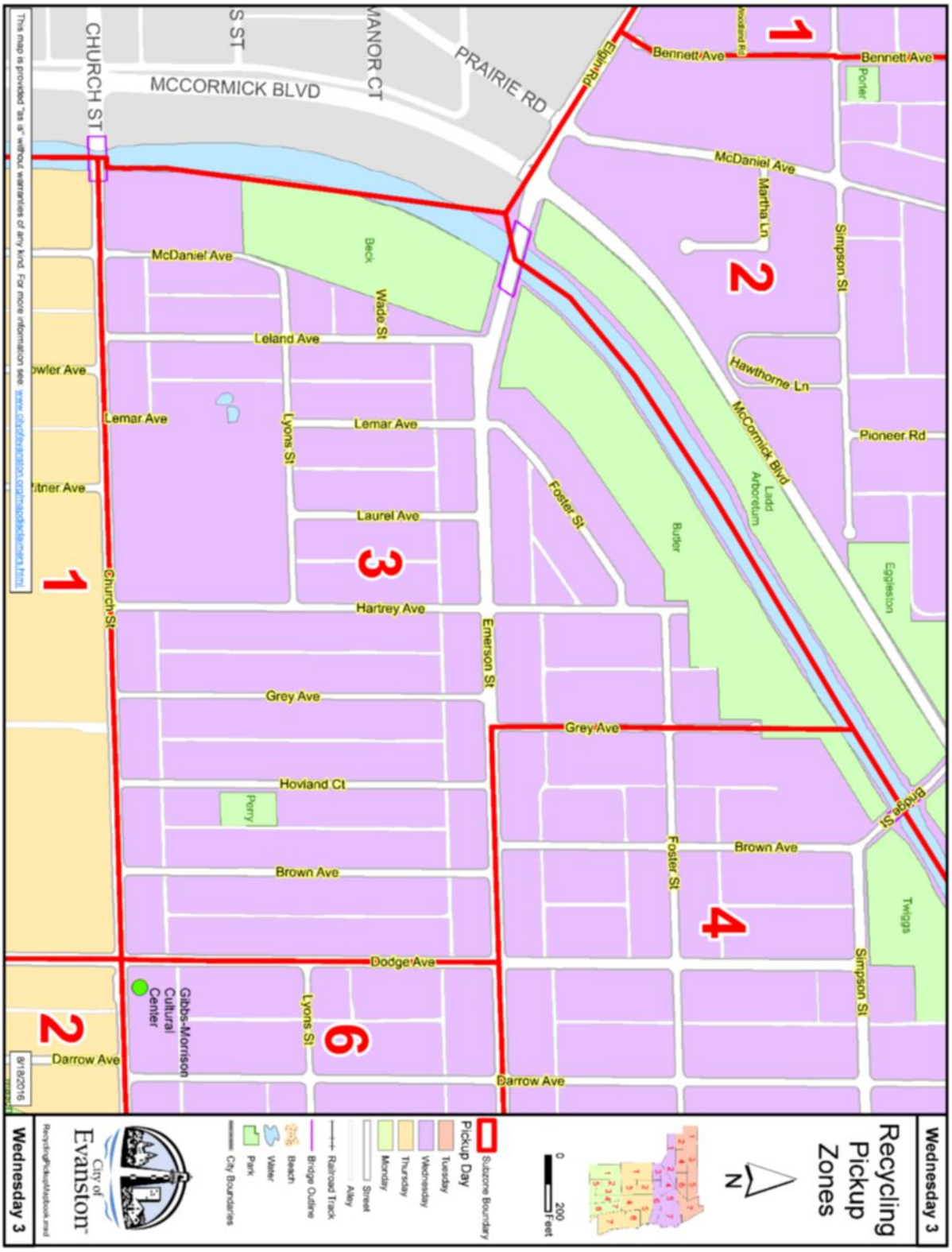
Should a community agree to be a part of the pilot, they will be able to reap the benefits of receiving recycling education to reduce contamination at no additional cost. Effective solid waste disposal has proven to be an important part in climate change mitigation as well. By collectively doing our part to reduce contamination, we can make a positive impact on our environment by keeping as many reusable materials out of landfills as possible, thus reducing greenhouse gas emissions.

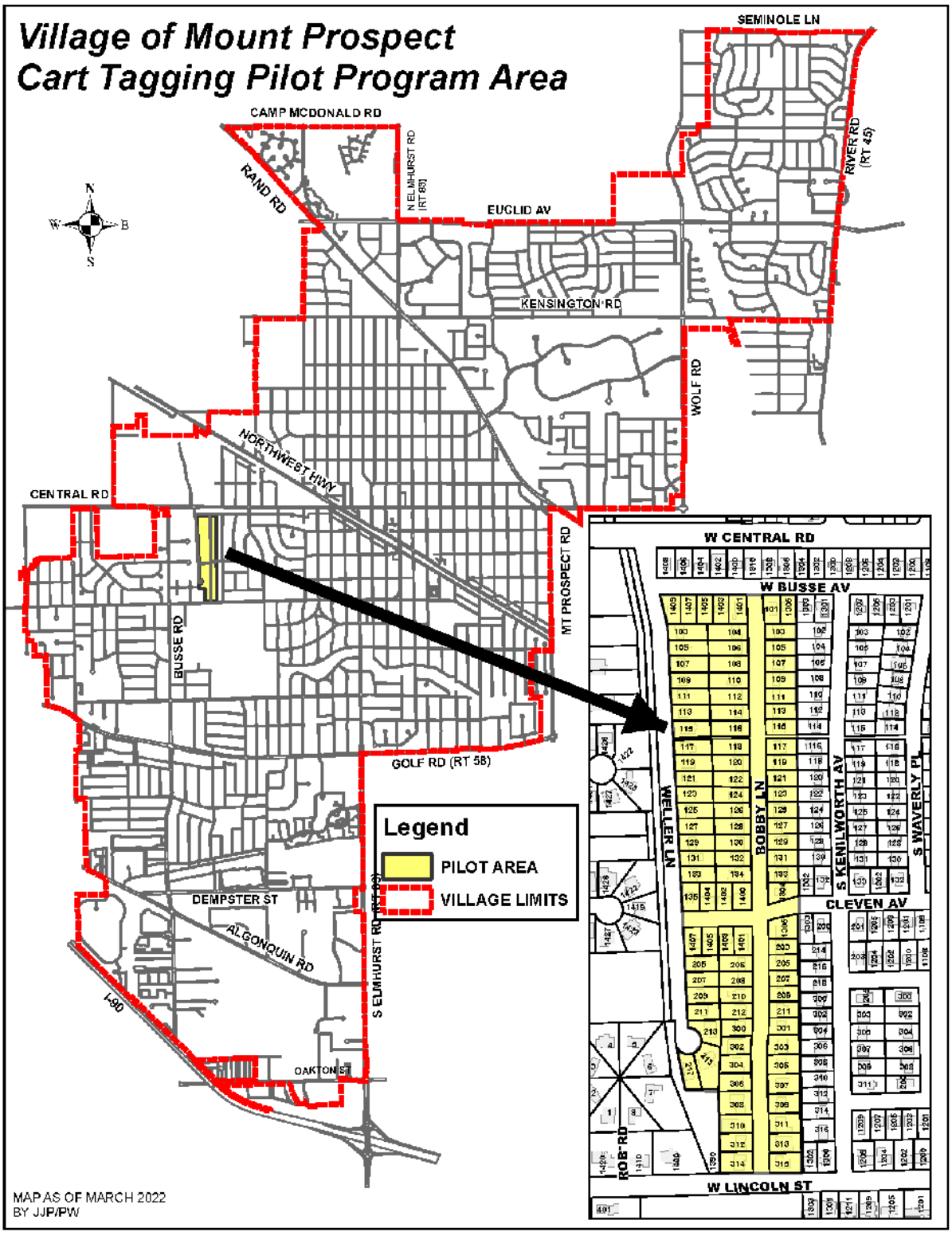
****Note:** This will be a very small scale, pilot sample of cart tagging in a specific location within the community. This will be a very limited study performed by the SWANCC team to gather initial data before prospecting future cart tagging programs.

APPENDIX B

Maps of Pilot Areas




Recycling Pickup Zones
Wednesday 3
Wednesday 3
City of Evanston
Pickup Day
Tuesday
Wednesday
Thursday
Monday
Street
Alley
Railroad Track
Bridge Outline
Beach
Water
Park
City Boundaries
Subzone Boundary
0
200
Feet
N
CHURCH ST
MCCORMICK BLVD
MANOR CT
PRAIRIE RD
Bennett Ave
McDaniel Ave
Martha Ln
Simpson St
Hawthorne Ln
McCormick Blvd
Pioneer Rd
Leland Ave
Lemar Ave
Laurel Ave
Hartrey Ave
Grey Ave
Hovland Ct
Brown Ave
Dodge Ave
Darrow Ave
Wade St
Lyons St
Foster St
Emerson St
Church St
Beck
Perry
Butler
Ladd Arboretum
Eggleston
Twiggs
Porter
Gibbs-Morrison Cultural Center
1
2
3
4
6


Village of Mount Prospect
Cart Tagging Pilot Program Area
SEMINOLE LN
CAMP MCDONALD RD
RAND RD
N ELMHURST RD (RT 83)
EUCLID AV
RIVER RD (RT 45)
KENSINGTON RD
WOLF RD
NORTHWEST HWY
CENTRAL RD
MT PROSPECT RD
BUSSE RD
GOLF RD (RT 58)
DEMPSTER ST
ALGONQUIN RD
I-90
S ELMHURST RD (RT 83)
OAKTON ST
Legend
PILOT AREA
VILLAGE LIMITS
W CENTRAL RD
W BUSSE AV
WELLER LN
BOBBY LN
S KENILWORTH AV
S WAVERLY PL
CLEVEN AV
ROB RD
W LINCOLN ST
MAP AS OF MARCH 2022
BY JJP/PW

APPENDIX C

Cart-Tagging Notice to Residents

BARRINGTON
Be Inspired.

April 25th, 2022

Dear Barrington Resident:

This notice is to inform you about a pilot program being conducted by Barrington in partnership with the Solid Waste Agency of Northern Cook County (SWANCC). Your subdivision has been selected to participate in a recycling *cart-tagging program*. Because not everything can be recycled at the curb, a cart-tagging program works directly with residents to educate them about the "Dos" and "Don'ts" for using their curbside carts.

Recycling service providers across the nation report that households are contaminating their recycling carts by putting items there that don't really belong at a higher rate than ever. As a result, contamination levels have increased from 12% to as much as 45% over the last few years. We know there can be confusion about what can be recycled. Many people have the best intentions when recycling but end up "wish-cycling", placing items you think (or "wish") can be recycled in their carts. "Wish-cycling" contaminates the acceptable items in the cart which requires more processing to remove the "wish-cycled" items and ultimately creates more problems than not recycling at all.

Negative Impacts of Cart Contamination

- **Increases your cost to recycle –** More contamination requires more processing after collection which means costs for recycling increase. These additional costs get passed on to you, the resident.
- **Sends more, not less, material to the landfill –** If contamination is significant, all materials in the cart – or worse, an entire truckload from hundreds of carts – will be landfilled despite some being "good" recyclables.
- **Impacts climate change –** Increasing the amount of solid waste sent to landfills leads to an increase in greenhouse gas emissions.

Throughout May, a small group of Village and SWANCC volunteers will be completing visual inspections of your recycling cart before it is picked up on collection day. Please do not be alarmed if you see a vested volunteer looking in your recycling cart, as they are solely there to view the items in the cart and provide feedback. We ask that you **please have your cart at your curb by 6:30 A.M. on collection day**. If unacceptable items are seen in your cart, an "Oops" tag will be put on the cart to identify those items that should not be put in the cart. If no contaminants are found within your recycling cart, a "Thank You! Lookin' Good" tag will be placed on your cart.

Feel free to engage in conversation with the volunteers if you are curious about the cart-tagging program. Data will be collected by the volunteers on participation and types of contaminants found. While no individual household findings will be provided, a summary of findings will be provided to the Village and participating residents once the cart-tagging pilot program has been completed.

Enclosed are the recycling guidelines to review and examples of the tags for carts. For more information, visit SWANCC.org/barr-cart-tag.

Thank you in advance for your cooperation and support in helping to create a more sustainable community!

Sincerely,

Jeremie Lukowicz
Director of Public Works

VILLAGE HALL
200 S. HOUGH ST.
BARRINGTON, IL 60010
(847) 304-3400

VILLAGE PRESIDENT &
VILLAGE MANAGER'S OFFICE
T. (847) 304-3444
F. (847) 304-3490

PUBLIC WORKS
300 N. RAYMOND AVE.
BARRINGTON, IL 60010
T. (847) 381-7903
F. (847) 382-3030

PUBLIC SAFETY
400 N. NORTHWEST HWY.
BARRINGTON, IL 60010

POLICE
T. (847) 304-3300
F. (847) 381-2165

FIRE
T. (847) 304-3600
F. (847) 381-1889

BARRINGTON-IL.GOV

APPENDIX D

Curbside Recycling Guidelines

APPENDIX E

Cart Tags

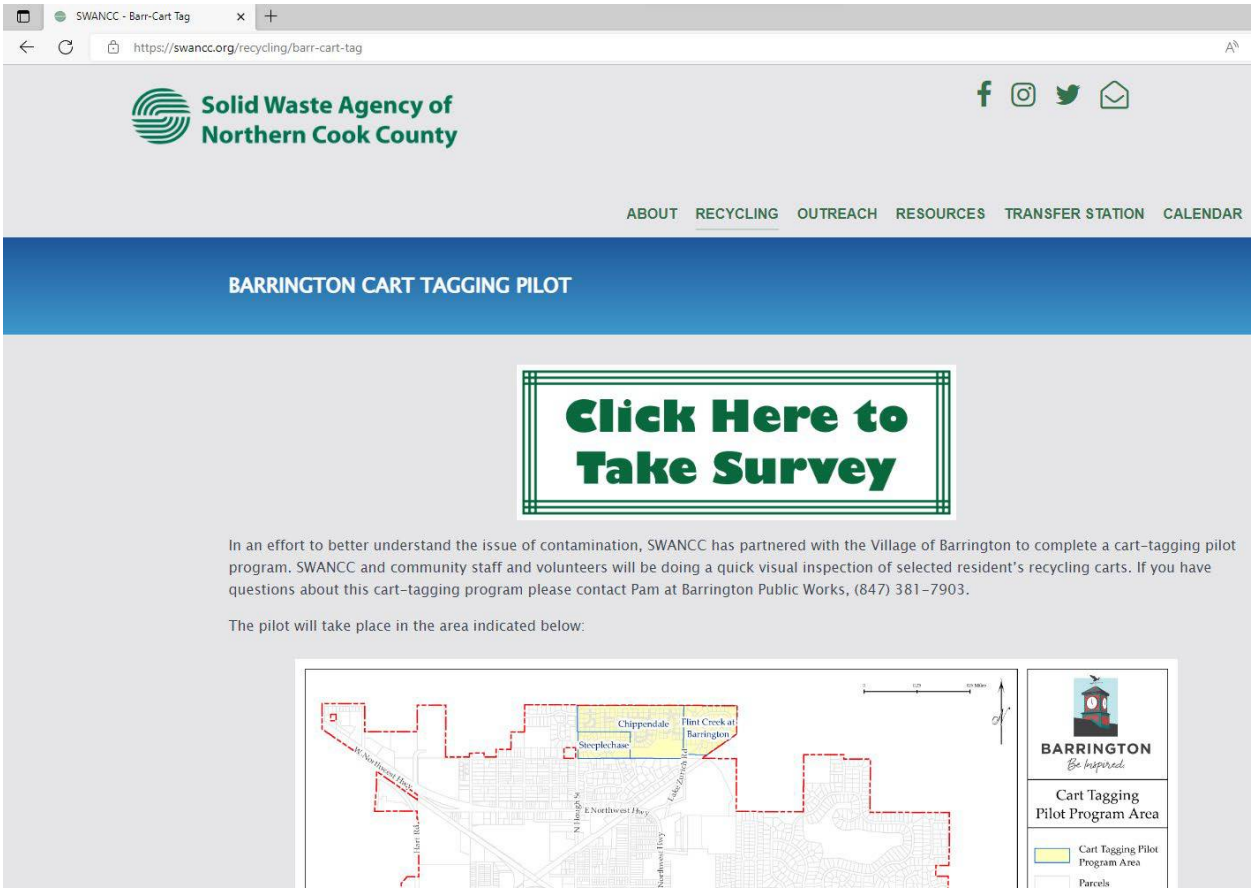
Back of all “Oops!” and “Thank You!” tags used the same “Don’t Bag Recycling!” message and graphics

Evanston and Mount Prospect tags (community logos and QR codes were different for each; Mount Prospect’s tags only are shown for reference as all other content was identical):

Barrington tags:

APPENDIX F

Screenshot of Barrington's SWANCC Webpage



APPENDIX G

Google Form Sheet Used to Record Data

House Number *

Short answer text

Street Name *

- Hartrey Ave
- Grey Ave
- Hovland Ct
- Brown Ave
- Dodge Ave

Participate? *

- Yes
- NO

Select all of the contaminants found

- [ ] Bagged (Recycling is in a bag)
- [ ] Batteries/Electronics
- [ ] Shopping Bags/ Plastic Film
- [ ] Foam
- [ ] Bulk items
- [ ] NONE! (Thank You Tag)

- [ ] Single-use cups
- [ ] Single-use Plastic
- [ ] Single-use paper (Napkins, Paper Towels, Paper Plates)
- [ ] Food (whole food items)
- [ ] Soiled Containers (not cleaned, food remnants)
- [ ] Shipping Packaging (Amazon Envelopes)
- [ ] Clothes Hangers

- [ ] Wrappers (food packaging, candy wrappers, chip bags)
- [ ] Other...

Comments for record/resident

Long answer text

APPENDIX H

Survey Questions

Mount Prospect Cart-Tagging Resident Survey

Please take a few minutes to answer a few survey questions as a participant in SWANCC & Mount Prospect's Cart-tagging pilot program. At the end of the survey, we will ask you to provide some information to be entered into a raffle for a $50 gift card. We appreciate your participation in our program, and your feedback is very important to us!

Did you receive a letter and recycling guidelines in the mail prior to the start of the cart tagging program? *

- ○ Yes
- ○ No

Did participating in the cart-tagging program increase your knowledge of what items can be recycled at your curb? *

	1	2	3	4	5	
Not at all	○	○	○	○	○	I learned a lot!

Before the cart tagging program began, rate your recycling knowledge *

	0	1	2	3	4	5	
bad	○	○	○	○	○	○	good

After the cart tagging program was completed, rate your recycling knowledge. *

	0	1	2	3	4	5	
bad	○	○	○	○	○	○	good

Did you use the QR Code printed on the cart tags to get additional information on SWANCC's website? *

- ○ Yes
- ○ No

Please rate the clarity of recycling information provided to you (via recycling guidelines in mail, or QR code linking to SWANCC's website) *

	1	2	3	4	5	
Very clear	○	○	○	○	○	Unclear

We'd love to hear your feedback! If you have any comments, concerns, or suggestions please list them here

Long answer text

In order to be entered into the raffle for a $50 gift card, you MUST provide your name, email, and address. If you would like to be entered, please list your information below.

Long answer text

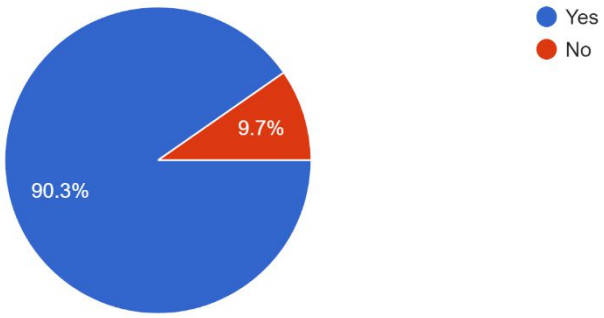
APPENDIX I

Resident Survey Results

Barrington Resident Survey Results

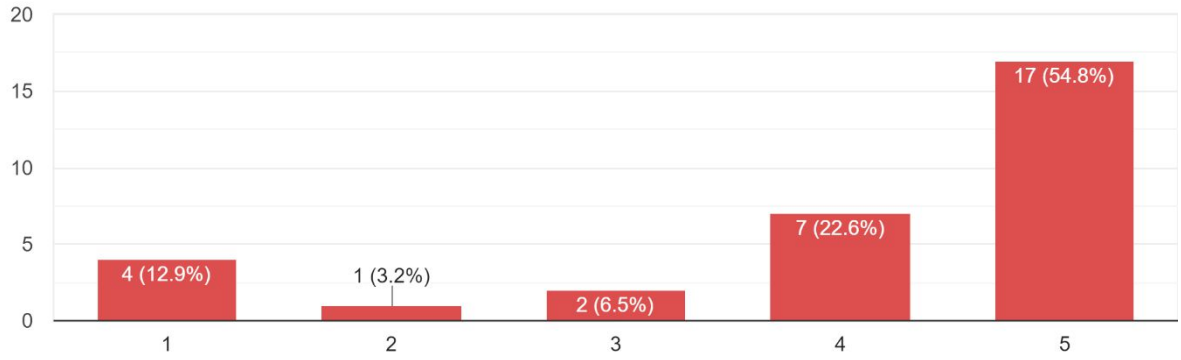
Did you receive a letter and recycling guidelines in the mail prior to the start of the cart tagging program?

31 responses



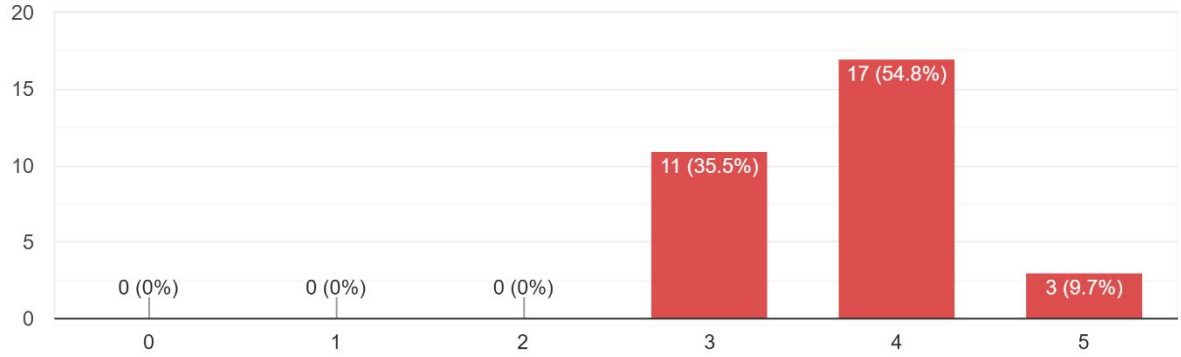
Did participating in the cart-tagging program increase your knowledge of what items can be recycled at your curb?

31 responses



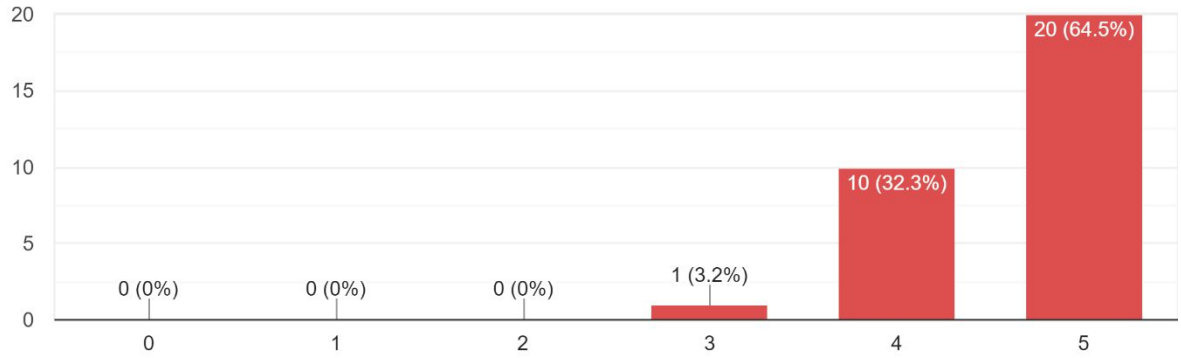
Before the cart tagging program began, rate your recycling knowledge

31 responses



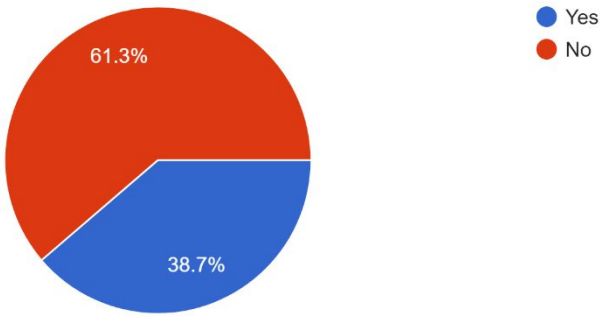
After the cart tagging program was completed, rate your recycling knowledge.

31 responses



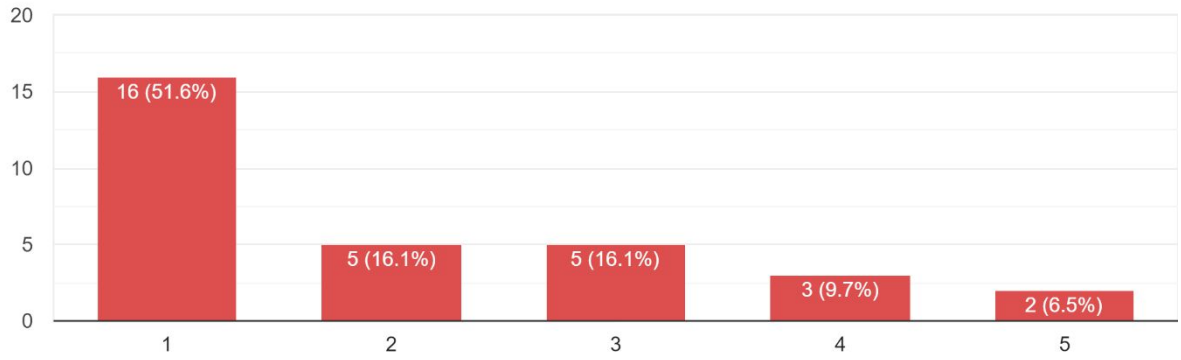
Did you use the QR Code printed on the cart tags to get additional information on SWANCC's website?

31 responses



Please rate the clarity of recycling information provided to you (via recycling guidelines in mail, or QR code linking to SWANCC's website)

31 responses



We'd love to hear your feedback! If you have any comments, concerns, or suggestions please list them here

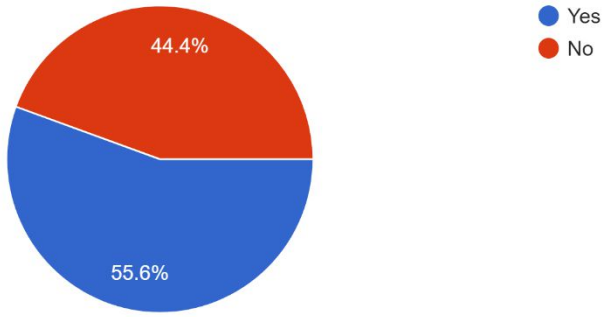
- "N/A"
- "I'm not sure if we got a pass or fail. One side says Lookin good the other side says leave materials loose."
- "While it does feel weird to have someone go through your trash, it was useful. I wasn't aware of that plant containers could not be recycled, even though they had the number 4 on it. Good information. Thank you."
- "There are so many items we think are recyclable that are not. Would be nice to see that on the website, ie: medicine bottles, should we remove the film from ie bakery boxes, tops of tuna fish cans. There is always something that we question, but now if I am in doubt, I throw it out!"

- "Very educational and done with an attitude that we all can do better; no guilt."
- "Nice low key way to get people thinking more about recycling."
- "I had no idea you could not recycle recipes. So thanks for letting me know."
- "It is frustrating how little gets recycled."
- "I might be an anomaly, I manage a sustainability manager at my work, where she teaches me a lot of general recycling principles for home and commercial use."
- "I am so glad that information is being sent out to homeowners. It upsets me when I go by houses on trash day and I see plastic bags hanging out of recycle bins. Previously I had put the guidelines on Nextdoor. Hopefully with your information being provided more people will start following the guidelines. Thank you so much."

Evanston Resident Survey Results

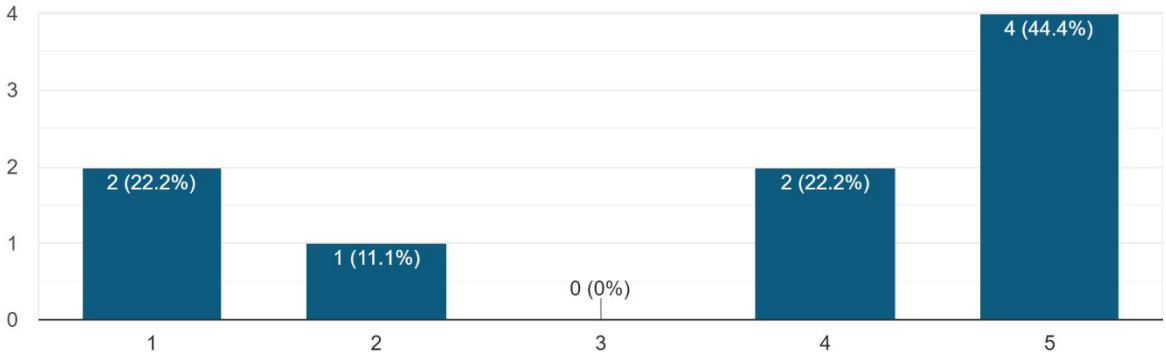
Did you receive a letter and recycling guidelines in the mail prior to the start of the cart tagging program?

9 responses



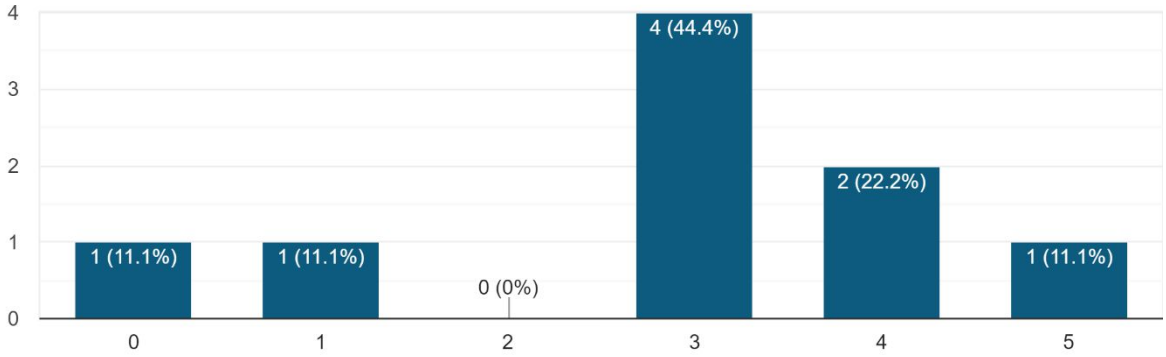
Did participating in the cart-tagging program increase your knowledge of what items can be recycled at your curb?

9 responses



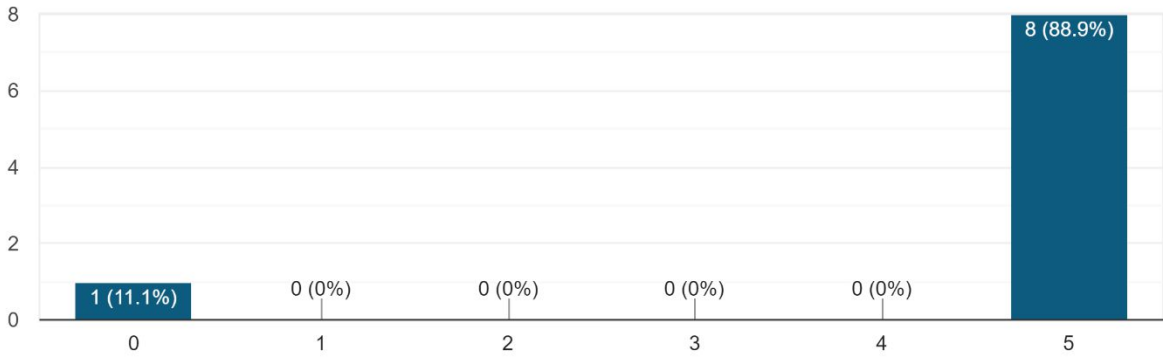
Before the cart tagging program began, rate your recycling knowledge

9 responses



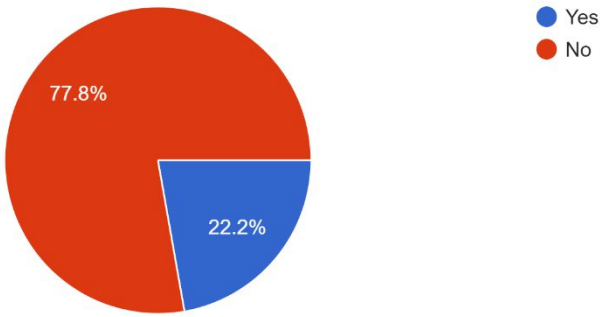
After the cart tagging program was completed, rate your recycling knowledge.

9 responses



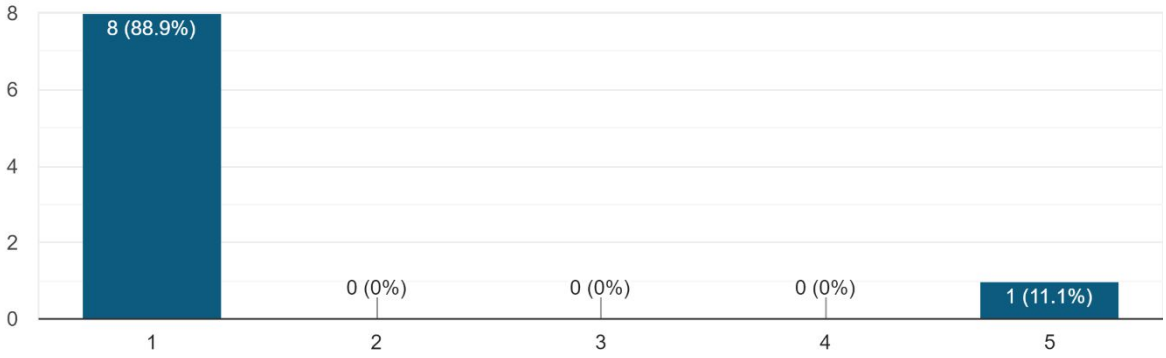
Did you use the QR Code printed on the cart tags to get additional information on SWANCC's website?

9 responses



Please rate the clarity of recycling information provided to you (via recycling guidelines in mail, or QR code linking to SWANCC's website)

9 responses



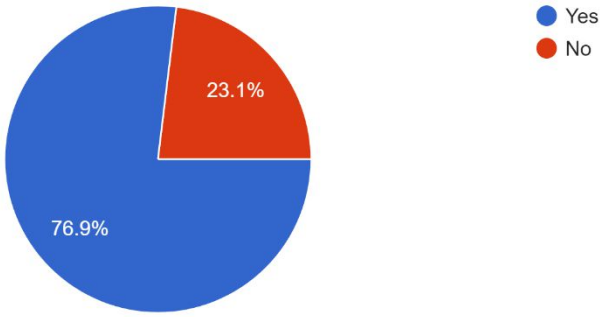
We'd love to hear your feedback! If you have any comments, concerns, or suggestions please list them here

- "I am proud to have received the THANK YOU card."
- "Thank you for everything you do."
- "I like this follow up. Been recycling for YEARS without any input from the city."
- "I know now to put clean items in cart. I wash out used jars, etc."
- "Thank you"

Mount Prospect Resident Survey Results

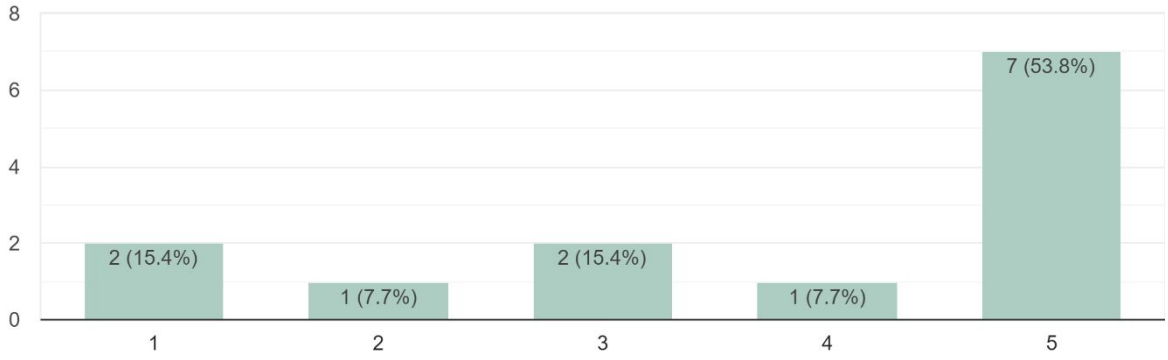
Did you receive a letter and recycling guidelines in the mail prior to the start of the cart tagging program?

13 responses



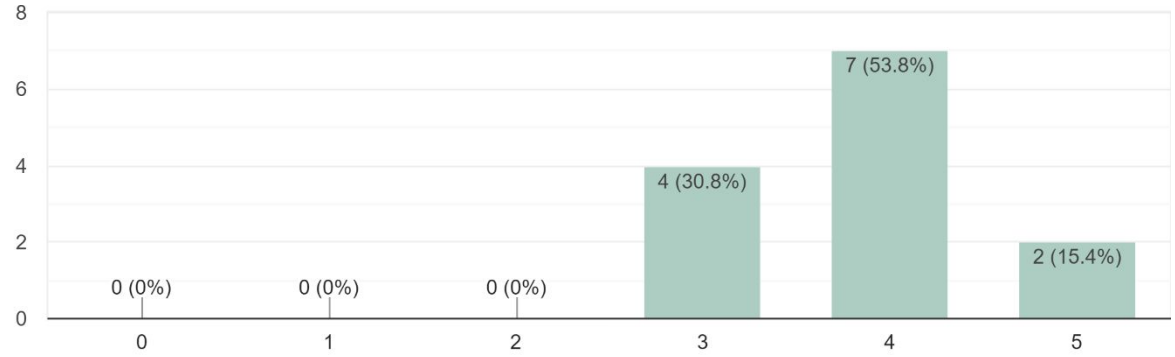
Did participating in the cart-tagging program increase your knowledge of what items can be recycled at your curb?

13 responses



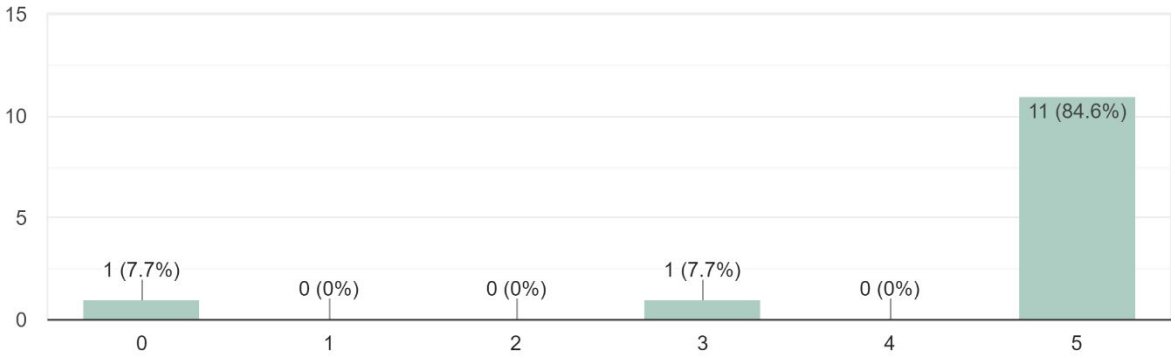
Before the cart tagging program began, rate your recycling knowledge

13 responses



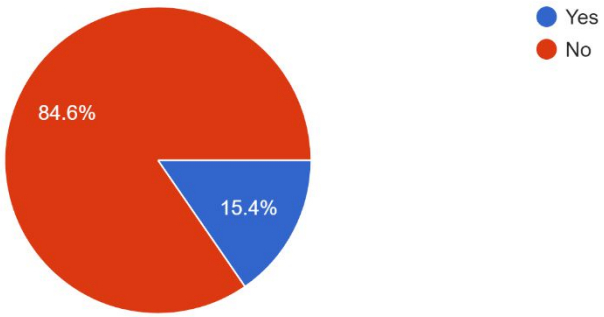
After the cart tagging program was completed, rate your recycling knowledge.

13 responses



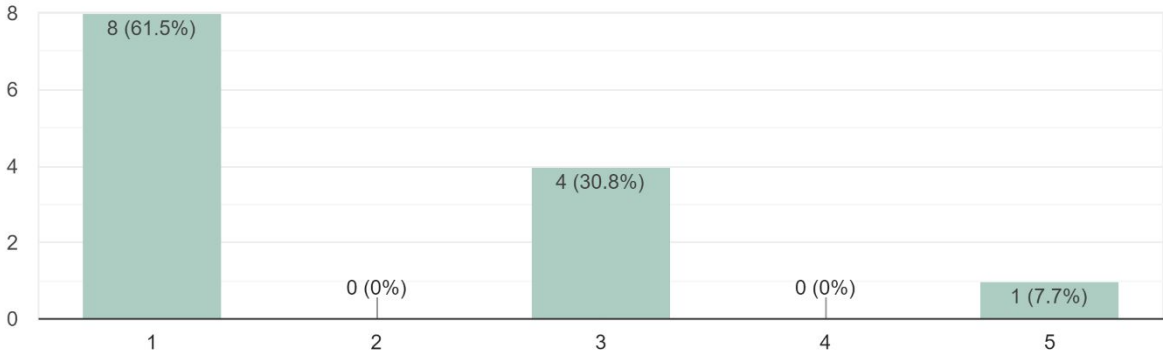
Did you use the QR Code printed on the cart tags to get additional information on SWANCC's website?

13 responses



Please rate the clarity of recycling information provided to you (via recycling guidelines in mail, or QR code linking to SWANCC's website)

13 responses



We'd love to hear your feedback! If you have any comments, concerns, or suggestions please list them here

- "The single-use cups not being recyclable is confusing, because we bought single-use cups that have the "correct" number on them (not the red Solo cups) so that they could be recycled."
- "Received no notification that this was occurring. Seems like I'm being graded on my knowledge of recycling. I also do not appreciate having someone go through my garbage. This is also how people's identities are stollen."
- "You cannot differentiate the times of good job or not so good. The tag does not explain it clearly."

- "The first three weeks we got a good report. This week we were cited for having foil in our cart. According to the info and pics provided, aluminum foil is acceptable. The foil we put in our cart was completely clean….there was no food residue on it. I'm confused."
- "Why are you digging through and videotaping my garbage/recycling. We intend to just stop recycling if you continue to do this."
- "I was recycling items that should not have been .. foil, plant containers"
- "I always like receiving info on recycling to make sure I'm doing it right. Many times, I see people have things in cart that should not be. Thanks for the great job"
- "Finally learned I can't recycle DD cups!"

APPENDIX J

Revised Cart Tags

"Oops!"

"Thank you!"


Recycling Right Matters...
Preventing Waste is BEST!
DONATION
Reduce & Reuse
Find a drop-off for items that require
a special collection at SWANCC.org:
Batteries
Home Construction Debris
Electronics
Household Chemicals
Fluorescent Light Bulbs
Medications/Sharps
Personal Documents
- Shredded
More information at SWANCC.org


Thank You!
Lookin' Good
PAPER
METAL
PLASTIC
GLASS
More information at SWANCC.org