



Solid Waste and Recycling

2017 ANNUAL REPORT





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CITY OF BURNABY

Our Core Values

We embrace community, integrity, respect, innovation and passion as our core values and principles that guide our actions and decisions.

Our Vision

A world-class city committed to creating and sustaining the best quality of life for our entire community.

Goals

The City of Burnaby’s Corporate Strategic Plan outlines six goals which describe the key focus areas of our work, and which help us prioritize our efforts and resources.





1.0 INTRODUCTION AND HIGHLIGHTS

The broad field of solid waste management is a complex discipline that includes, but is not limited to: environmental protection, public education, waste reduction, recycling, composting, material collection, data gathering and analysis, government regulation and public relations. For municipal governments it requires continually learning new strategies, complying with government regulations, as well as adapting and advancing techniques of waste diversion, collection and disposal. Waste management solutions and strategies are continually reviewed and enhanced and this report outlines how the City of Burnaby has worked to improve performance.

This annual report provides an overview of the City's waste management system including an outline of the programs and service elements in the upcoming year to achieve future waste diversion goals in Burnaby. Single family, multi-family and commercial/institutional waste diversion (recycling/green waste collection) and disposal (garbage) volumes are shown from program inception year to 2017 to illustrate waste trends.

Highlights from the 2017 work plan include:

- » Implementation of Every Other Week Garbage Collection.
- » Undertaking pilot project for AVL/Telematics.
- » Initiation of Pilot Project for Bear-Resistant Green Bin Receptacles for selected multi-family complexes.
- » Pre-planning to enhance public street scape receptacles.
- » Implementation of enhanced Snow Management Program to allow for continued service delivery during storm events.
- » Continuation of education and outreach on contamination of residential recycling materials.
- » Completion of waste audit for garbage, green bin and recycling for single and two-family curbside collection and multi-family complexes.
- » Participation in the National Solid Waste Benchmarking Initiative.
- » Enhancement of bulky item, appliance and mattress collection program.
- » Implementation of disaster debris management guidelines.

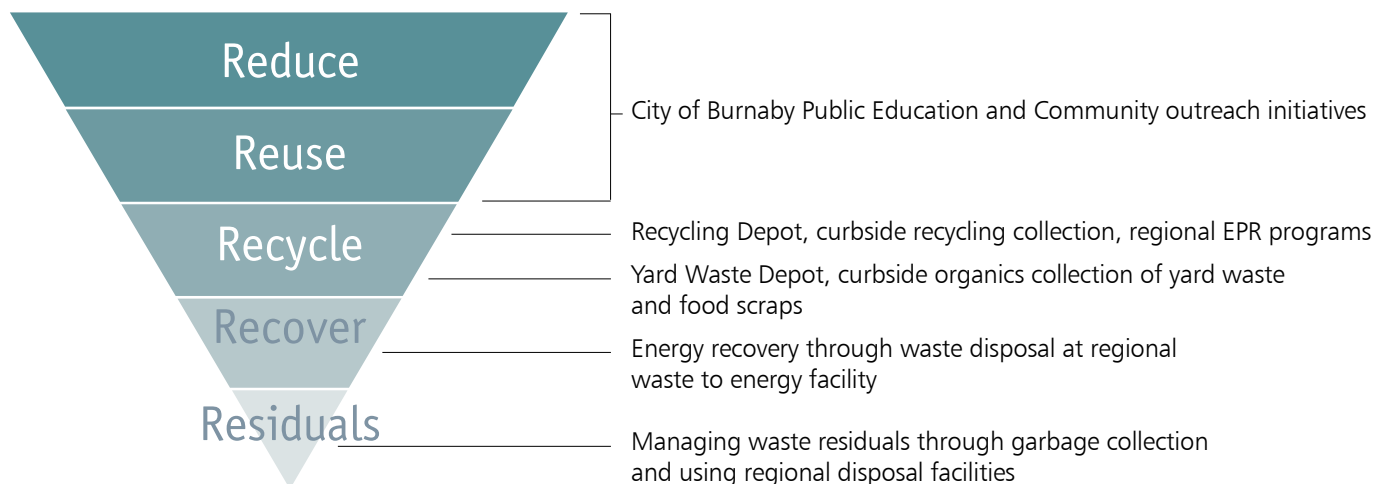
2.0 POLICY

Our City is one of 21 member municipalities that coordinate with Metro Vancouver on solid waste initiatives which shape the regional waste management system. Metro Vancouver, with the participation of its member municipalities, developed the regional Integrated Solid Waste and Resource Management Plan (ISWRMP) which was approved by the provincial Ministry of Environment in 2011. The City supports the regional Plan and the municipal actions in the Plan have been adopted by Council. The overall regional strategy moves towards a more aggressive waste diversion target of 80% by 2020. The ISWRMP details a plan to achieve this diversion and is summarised in the goals below:

- Goal 1** Minimize waste generation
- Goal 2** Maximize reuse, recycling and material recovery
- Goal 3** Recover energy from the waste stream after material recycling
- Goal 4** Disposal of remaining waste in a landfill after material recycling and energy recovery

Waste **reduction** and material **reuse** are the first steps of the waste diversion hierarchy. Burnaby businesses and residents are encouraged to consider waste minimization in their purchases and identify opportunities for repurposing of items. **Recycling** is the third step in the five step waste diversion process. It removes materials from the waste stream (which are considered resource commodities) and lowers the volume of waste that is left to manage and dispose. **Reduce, reuse and recycle** elements rely on behaviour change and personal choices in order to be successful.

Even if participation in the first 3R's is high, there are still items that will be left over—**recovering** energy and **residuals** management complete the waste disposal picture. Material that is not diverted by green waste collection, recycling or Extended Producer Responsibility (EPR) take-back programs is managed as **residual** waste (garbage). Garbage collected from the residential/commercial sectors in Burnaby is taken to the Metro Vancouver waste-to-energy incinerator located in South Burnaby or to the regional North Shore or Coquitlam Transfer Stations for proper disposal. The diagram below illustrates the programs the City is utilizing to address the 5R's with emphasis on **reducing** waste in the goal of managing less **residual** waste in the future.



Integration with Federal and Provincial Initiatives

In October 2009, the Canadian Council of Ministers of Environment (CCME) released a Canada-wide Action Plan for EPR. The Plan aims to increase diversion and recycling of municipal solid waste by better coordinating provincial EPR programs and by extending the application of the principle of EPR as a part of Canadian waste policy. The strategy calls for a number of commitments from provinces and territories, including lists of products to be considered for implementation.

British Columbia's industry-led Product Stewardship programs require producers of designated products to take responsibility for the life cycle management of their products, including collection and recycling. The key features of EPR policy include shifting of responsibility (physically and economically) upstream to the producer and away from municipalities, and to provide incentives to producers to take environmental considerations into the design of the product.

Current EPR materials include

- » Electronics and electrical products (e.g. televisions, computers, small household appliances, and outdoor power equipment)
- » Thermostats, smoke and carbon monoxide alarms
- » Paint, flammable liquids, gasoline and pesticides
- » Beverage containers
- » Lighting, lightbulbs and tubes
- » Antifreeze, used motor oil, filters and containers
- » Medications
- » Vehicle tires
- » Large appliances

Future EPR materials may include

- » Construction and renovation materials
- » Furniture, textiles and carpet

Our City works collaboratively with Metro Vancouver in advocating the Province to include additional products identified in the CCME Canada Wide Action Plan for EPR to the Provincial Product Stewardship Program. In addition, the City is a member of the National Zero Waste Council advocating, in part, producers to take environmental consideration into product and packaging design.

To find drop off locations for materials accepted through EPR programs, please visit burnaby.ca/garbageandrecycling

Banned and Prohibited Materials

Certain items are banned or prohibited from the garbage in Burnaby and Metro Vancouver as they are either recyclable or hazardous. All banned materials can be recycled or disposed of properly through municipal recycling programs, disposal companies or a Provincial EPR programs.

The standards for what is to be diverted and what is accepted in Burnaby's waste stream are governed by the City's Solid Waste and Recycling Bylaw. These requirements are available to all residents and businesses through the annual curbside collection calendar, multi-family recycling guides, the City's website, the City's social media, and the City's Collection App.

Recycle BC

The BC Recycling Regulation was amended in 2011 to require the producers of packaging and printed paper (PPP) to assume responsibility of residential PPP and transition the end-of-life management of PPP from the taxpayers to the industry and their consumers. Recycle BC (formerly Multi-Material BC (MMBC)), an industry led and funded non-profit organization, assumed the responsibility of managing residential PPP recycling on behalf of its members as of May 2014.

In 2013, the City signed onto an agreement with Recycle BC to provide recycling collection and program support to residents, and implemented the new expanded provincial recycling program as of May 19, 2014.



3.0 PROGRAMS AND SERVICES

The Solid Waste and Recycling Division of the Engineering Department is responsible for planning, implementing and operating Burnaby's solid waste collection, green waste collection, recycling collection, composting programs, litter pickup, large item and appliance program, abandoned material removal, waste diversion programs and related community outreach services. The solid waste management and recycling program integrates the principles of waste reduction, environmental preservation, participation and worker safety in order to serve the community.

In 2017, the City continued to provide a multi-sector based service to single/two family households, multi-family units and commercial/institutional/civic facilities.

Our solid waste collection program was initiated several decades ago and the in-house collection service has been an integral part of the program. The solid waste and recycling programs that we bring you are made possible by a team of approximately 91 regular and auxiliary staff members as well as a fleet of vehicles. The integrated approach has allowed the City to deliver a multi-level program, meeting the changing needs of the community.



3.1 CURBSIDE COLLECTION PROGRAM

Single and Two-Family (Duplex) Materials Collection

Each week, collection service is provided to approximately 35,000 single and two-family households in Burnaby. Automated trucks, a rear-end loading truck, and container delivery make up the core of the garbage and green waste collection fleet. Every household is provided with a garbage bin and a green bin of a size on the needs of their family. The collected garbage is delivered to Metro Vancouver facilities for disposal. The green waste which includes kitchen food scraps, yard waste and annual Christmas tree collection program is processed and turned into compost at the City contracted facility.

The curbside service also provides recycling collection to each household: a blue box for mixed containers, a grey box for separate collection of glass jars and containers and a yellow bag for mixed paper, cardboard and newspapers. The recycling continues to be loaded manually into a fleet of recycling trucks. All collected recyclable materials are forwarded to Recycle BC facilities for processing.

As of April 2017, the City shifted to the collection of garbage every other week. The change means that garbage will be collected every two weeks, while collection of blue box, grey box and yellow bag (recyclables) and green bins (food scraps + yard material) will remain weekly. Moving to Every Other Week Garbage Collection supports:

- » Increasing diversion of materials from the waste stream
- » Provision of a consistent collection day for residents by moving from a five day per week collection system to a four day per week 'floating' collection week; and
- » Enhancements to other services, such as large item collection, public space recycling, litter and abandoned waste.



Multi-Family, Industrial, Commercial and Institutional Materials Collection

The multi-family and industrial/commercial/institutional (ICI) garbage collection service is a fully automated service that collects garbage, recycling and green waste from over 35,000 multi-family residential units, and over 450 industrial, commercial and institutional properties. The collection service utilizes jitney trucks, and front loading container trucks all of which are equipped with an automated lifting device to collect garbage and separated cardboard containers. The City expanded the fleet in 2017 to support the increase growth in collection services within this sector. The multi-family green waste and recycling collection program utilizes two collection trucks that are equipped with semi-automated technology where a hydraulic lifting device at the rear of the green waste truck and on the side of the recycling trucks is used to lift and empty the receptacles.

In 2017, 98% of the multi-family complexes who receive City garbage collection service subscribe to City recycling service, with the remaining complexes being serviced by private recycling service. The multi-family recycling program utilizes totes provided by the City to each building complex for mixed containers, mixed paper and glass containers collection. The totes are rolled out to the curbside area by building staff for weekly collection by City crews.

The Solid Waste and Recycling Bylaw was amended in 2011, requiring multi-family complexes to establish recycling and green waste provisions within their facilities. The change gave City staff a tool to help ensure all Burnaby residents had access to recycling services even if they didn't subscribe to the City's collection services. Similar to the curbside collection program, garbage, recyclables and green waste are delivered to Metro Vancouver, Recycle BC and contracted composting facilities respectively.

In 2011, the City expanded the Multi-family Green Bin Program to include food scraps. This program has grown from servicing 15 buildings in 2011 to over 500 buildings in 2017, providing over 30,000 multi-family units access to the program.

As of May 2017, the City shifted collection of garbage, recycling, cardboard and green waste to a four day per week collection system for our multi-family and ICI customers. This change increases the City's capacity to provide service for a growing sector, and focus on increasing organic collection services to our commercial customers.



3.2 GENERAL SERVICES PROGRAM

Bulky Item, Appliance and Mattress Collection

In addition to the weekly garbage, recycling and green waste collection services, special pickups can be requested by residents for bulky items such as mattresses, chesterfields, etc., a service that is valued by many residents. In 2017, the general services program received 8,661 service requests for bulky items (6.1% increase from 2016) and 4,435 service requests for appliance collection (1.45% increase from 2016).

As a result of a regional disposal ban on mattresses in 2011, the City collects and diverts unsoiled mattresses to a recycling facility contracted by the City. A total of 5,904 mattresses and box springs were recycled, and diverted from disposal, in 2017 (2.12% increase from 2016). With the shift to Every Other Week Garbage Collection in April 2017, the City has been able to enhance the City's Bulky Item, Appliance and Mattress Collection service and improve collection response times with a diversion in staff resourcing and additions to the collection fleet.

Streetscape Recycling and Waste Collection

Littering is a common issue in dense, urban areas such as Burnaby. Litter on city streets and properties detract from Burnaby's natural environment and streetscape. The City has over 300 waste receptacles installed on major arterial roads, at bus stops and in heavy pedestrian traffic areas throughout Burnaby to provide public space waste management service. In furthering the waste reduction philosophy and to encourage recycling in public places, the City entered into an agreement with EcoMedia Direct Inc.

(EcoMedia) in 2010 (now Creative Outdoor Advertising), who supplied 200 of the City's receptacles that offer three disposal compartments - one for waste, one for mixed paper recycling and one for mixed container recycling. The project came at no additional cost to the City with Creative Outdoor supplying and maintaining the bins. In return, Creative Outdoor Advertising has rights to the advertising space on the front and back sides of the rectangular bins with a percentage of revenue payable to the City. A percentage of space on the units is allocated for City advertising at no cost.

In 2017, the City undertook a complete review of public space waste receptacles and has developed an action plan to increase the number of three-stream receptacles and other litter receptacles throughout the City in the upcoming year.

Abandoned Material Service

In 2017, as part of the shift to Every Other Week Garbage Collection, the City added three split-body collection trucks to the litter collection fleet to enhance current and future public space recycling and waste collection services. The litter collection fleet empties the receptacles on a regular basis and picks up litter on the streets and boulevards. Occasionally larger abandoned items such as old mattresses, chesterfields, appliances are found on the roadside. These abandoned materials are picked up by a rear-loader dispatched on an "as needed" or complaint basis. In 2017, the division received 2,213 (30.8% increase from 2016) service requests for abandoned items, general litter and illegal dumping of drywall and City crews responded to an additional 15 special clean-up events (a 6.25% decrease from 2016). Burnaby residents can report abandoned materials by calling Burnaby Solid Waste and Recycling Division.





3.3 PUBLIC DROP OFF FACILITIES

Burnaby Eco-Centre

The City's Eco-Centre is the foundation of the City's waste diversion program as a true one-stop drop off spot for residents in Burnaby, and as a central transfer facility for recyclables and green waste collected through the City's collection programs. In 2013, the City entered into an agreement with Recycle BC to be a collection depot for residential packaging and printed paper, which was implemented May 2014.

Operated by City staff, the Eco-Centre has been used to showcase new recycling initiatives, such as the collection of household batteries and electronics prior to the introduction of provincial Extended Producer Responsibility (EPR) programs, and initiated pilot programs for the collection of used cooking oil and Styrofoam, both of which are now permanently accepted. In addition to blue box materials and green waste, the City has partnered with several industry stewards to allow for the collection of many materials, including household hazardous materials that are banned from disposal.

Information on drop-off locations for EPR items not accepted at Burnaby's Eco-Centre is available through the City's online 'What Goes Where?' searchable database burnaby.ca/garbageandrecycling.

The following materials are currently accepted at no charge:

- » Newspaper, magazines, mixed paper (including phone books) (EPR and Commercial non-Recycle BC)
- » Cardboard (EPR and Commercial non-Recycle BC)
- » Large appliances (EPR)
- » Scrap metal
- » Glass jars and bottles (EPR)
- » Tin and aluminium cans (EPR)
- » Plastic film (EPR)
- » Plastic hard (non-Recycle BC)
- » Household and automotive batteries (EPR)
- » Household paints, solvents, gasoline and pesticides (EPR)
- » Used motor oil, oil containers and filters and antifreeze (EPR)
- » Propane tanks
- » Good used clothing and books (for donation)
- » Styrofoam (white and coloured) (EPR)
- » Used cooking oil

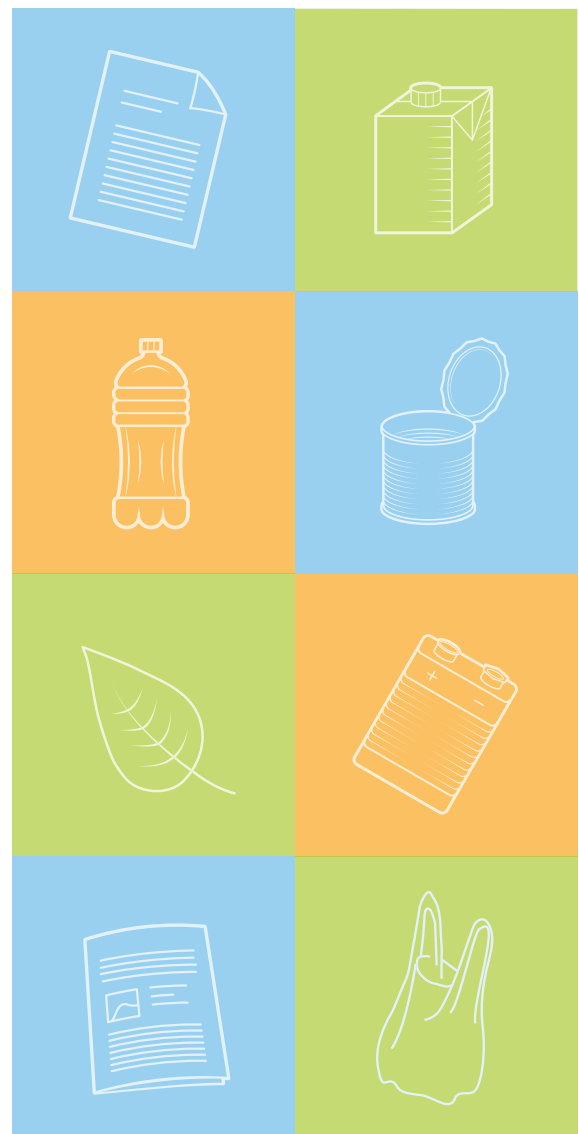
Green waste (yard trimmings) can be dropped-off at the facility for \$95/tonne. Burnaby residents with a small green waste load (100 kg or less) are allowed one visit per day at no cost. In addition to dropping off recyclables and green waste material, residents can purchase backyard composters and rain barrels through the Eco-Centre. In 2017, 99 composters and 34 rain barrels were sold to Burnaby residents through the Eco-Centre.



Take Back for Recycling Depots

The Province's industry-led EPR programs complement the waste disposal options provided by the City. The following materials all have accompanying EPR programs, some of which are accepted at Burnaby's centralized Eco-Centre:

- » Beverage containers
- » Prescription and non-prescription medications
- » Motor oil, filters and containers
- » Antifreeze
- » Paint and empty paint containers
- » Automotive tires and batteries
- » Flammable liquids, pesticides and gasoline
- » Electronics and electrical small appliances
- » Electronic toys and musical instruments
- » Power tools, outdoor power equipment and exercise machines
- » Household rechargeable and single-use batteries
- » Cell phones
- » Compact fluorescent lights, light tubes, lighting, thermostats, smoke detectors/carbon monoxide alarms
- » Large appliances





3.4 CORPORATE DIVERSION PROGRAMS

Civic Facilities – Public Space Recycling

Waste diversion in public areas of recreation facilities was previously limited to the collection of beverage containers and mixed paper. In 2013, the City's Parks, Recreation and Cultural Services Department partnered with the Engineering Department to develop an action plan to enhance public space recycling within recreation facilities and sports fields. Waste audits were conducted at Bonsor Recreation Complex, Edmonds Community Centre, Kensington Complex, Bill Copeland Sports Centre and CG Brown Memorial Pool to determine facility specific requirements for recycling receptacles and placement.

Initially, four-stream recycling stations that include separation of mixed containers, mixed paper, food scraps and food-soiled paper products and garbage were installed in public areas of Bonsor Recreation Complex, Bonsor 55+ and Edmonds Community Centre in conjunction with the introduction of the "I Recycle @ Work" staff recycling program for both facilities that included the establishment of Complex Champions to foster both the internal and external recycling systems.

In 2014, the program was expanded to include Eileen Dailly Leisure Pool & Fitness Centre, Cameron Recreation Complex, Willingdon Centre, Bill Copeland Sports Centre, CG Brown Pool, Kensington Complex and Confederation Community Centre. Program expansion included establishment of Complex Champions to steward the program, staff information sessions, and outreach to the facility users via facility newsletters, InfoBurnaby and by staff.

In 2016, staff continued discussions with Burnaby Parks and Cultural Services and Burnaby Public Library Branches for implementation of the public space recycling program in the remaining civic facilities. Implementation of this program will commence in 2018.



City of Burnaby Employee "I Recycle at Work" Program

The City's "I Recycle @ Work" Program was launched in 2011 at City Hall Main and West buildings and Burnaby Fire Halls. The program expanded in 2014 to include Eileen Dailly Leisure Pool & Fitness Centre, Cameron Recreation Complex, Willingdon Centre, Bill Copeland Sports Centre, CG Brown Pool, Kensington Complex and Confederation Community Centre. Increased waste diversion has been achieved not only through education and outreach by Department/Complex Champions, but also by having a unified and more streamlined system that is identifiable to staff throughout civic facilities. The recycling stations include:

- » A three unit stacker for mixed paper (office paper, cardboard), mixed containers (glass, metal and plastic containers) and newspaper.
- » A lined container for the collection of food scraps.
- » A separate container for the collection of refundable beverage containers.
- » Containers in each washroom for the collection of "clean" paper towel (paper towel used only for drying hands), to be recycled with mixed paper.

Outreach to new City staff about the "I Recycle @ Work" program is coordinated through the new employees seminars hosted throughout the year by the City's Human Resources Department.

At these seminars new employees are presented with information about the City's "I Recycle @ Work" Program, and the materials accepted, and are presented with the opportunity to become a Department Champion for their work area. Department Champions are tasked to review the recycling program and station location(s) with each new employee in their department, foster the program within their department, and distribute information updates to all staff when changes or issues occur.

Internal audits of the participating departments are conducted yearly to determine and provide feedback on program performance as well as ensure that any contamination problems are addressed and the outreach information is tailored accordingly.

City of Burnaby "Green Team"

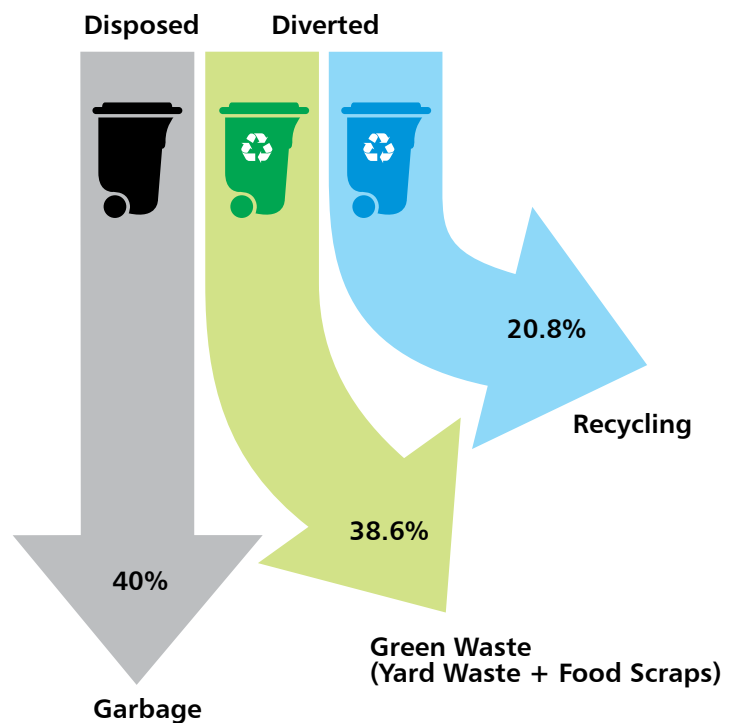
The City's internal Green Team meets monthly, and is made up of staff from various departments and offices across the City with the goal of updating and enhancing Guidelines and City practices for Sustainable Purchasing. This team enables a greater level of engagement and collaboration from staff on making informed sustainable purchasing decisions. The Green Team has also been involved in outreach promoting paper reduction, holiday waste reduction, and other waste diversion initiatives such as the in-house collection program for florescent tubes, CFLs and specialty bulbs.



4.0 PERFORMANCE

City services collected approximately 68,915 tonnes of garbage and recyclables that was generated by Burnaby residents and businesses in 2017. Figure 1 illustrates the disposal versus diversion rates. In addition to aspiring to new levels of waste reduction and diversion, the City is committed to providing residents with an efficient and sustainable waste management service. In 2017 the City saw a decrease in disposal (garbage), and an increase in diversion (recyclables and organics), with an overall diversion rate of 59.4 per cent.

Figure 1 – 2017 Breakdown of Disposal/Diversion Achieved of the City System
(Single-Family, Multi-Family and Industrial/Commercial/Institutional)



4.1 SINGLE FAMILY DIVERSION

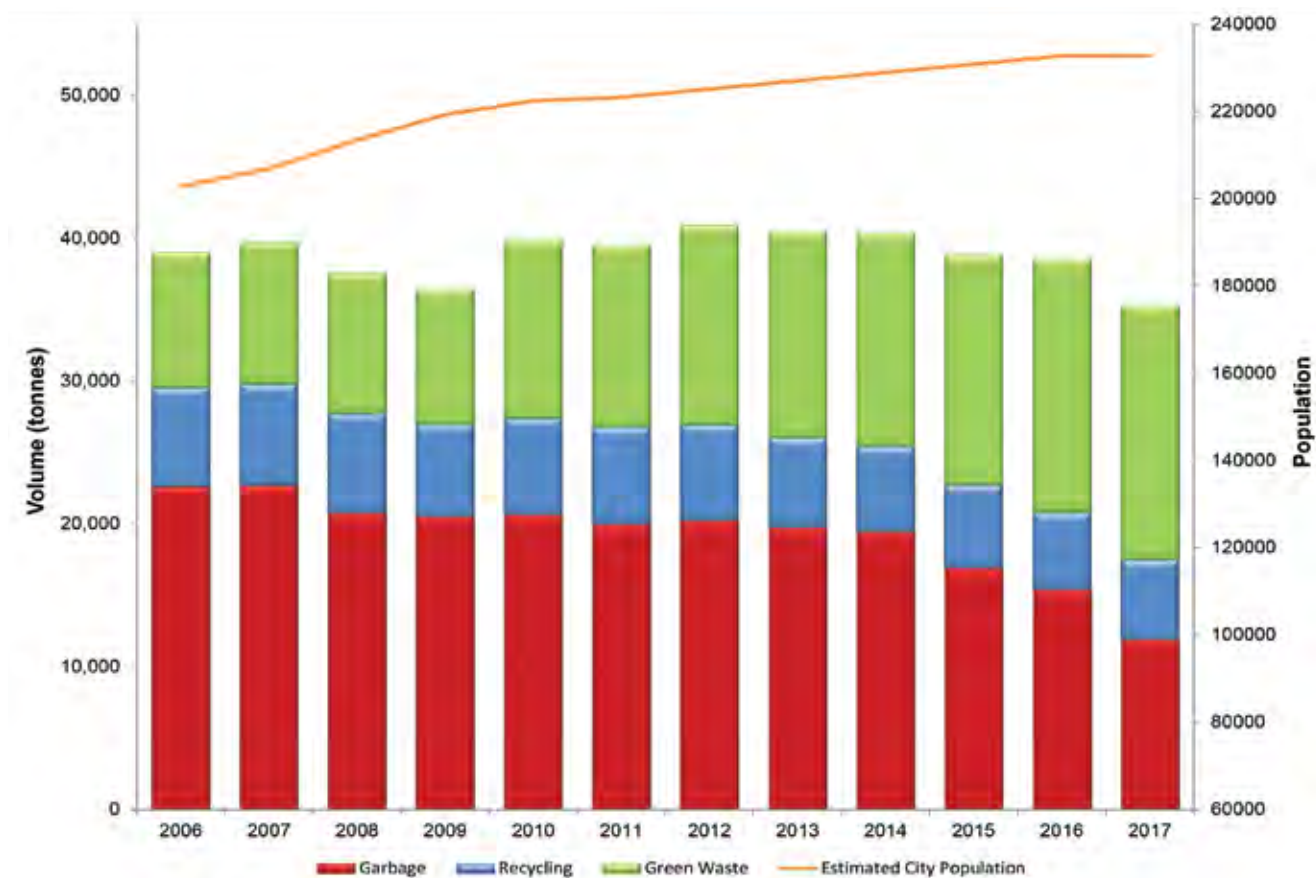
Prior to the introduction of recycling and green waste diversion programs, the annual volume of single family garbage collected was approximately 40,000 tonnes. In 2017, the volume of garbage was 11,883.83 tonnes (a 22.84% decrease from 2016) and a reduction of approximately seventy percent of the 1989 level. Figure 2 reflects the total amount of garbage, recycling and green waste collected for single family properties. Diversion of recyclable materials increased in 2017 with 5,627 tonnes of materials collected (4.38 % increase over 2016), while the City saw a slight increase in the collection of organic waste with 17,766 tonnes collected (a 0.17% increase over 2016).

In 2017 the City shifted to Every Other Week Garbage Collection. This change meant that garbage is collected every two weeks, while recyclables and organic waste would remain as weekly collection. Shifting to every other week garbage collection has demonstrated a decrease in garbage going for disposal; however, this decrease did not provide a proportional increase in diversion through the curbside recycling and organic waste programs. As part of the transition period, the City has taken steps to address these issues with the provision of free upsizing of garbage receptacles without any additional charges until January 2019, increased monitoring and enforcement for contamination during curbside collection, as well as enhancing our illegal dumping program and the development of public outreach and educational communication messaging.

Figure 2 – Single Family Curbside Garbage, Recycling and Green Waste Weights, 2006-2017

**As of June 2010, Green Waste = Yard Waste + Food Scraps*

**As of April 2017, Garbage Collection moved to bi-weekly; Green Waste and Recycling remained weekly.*



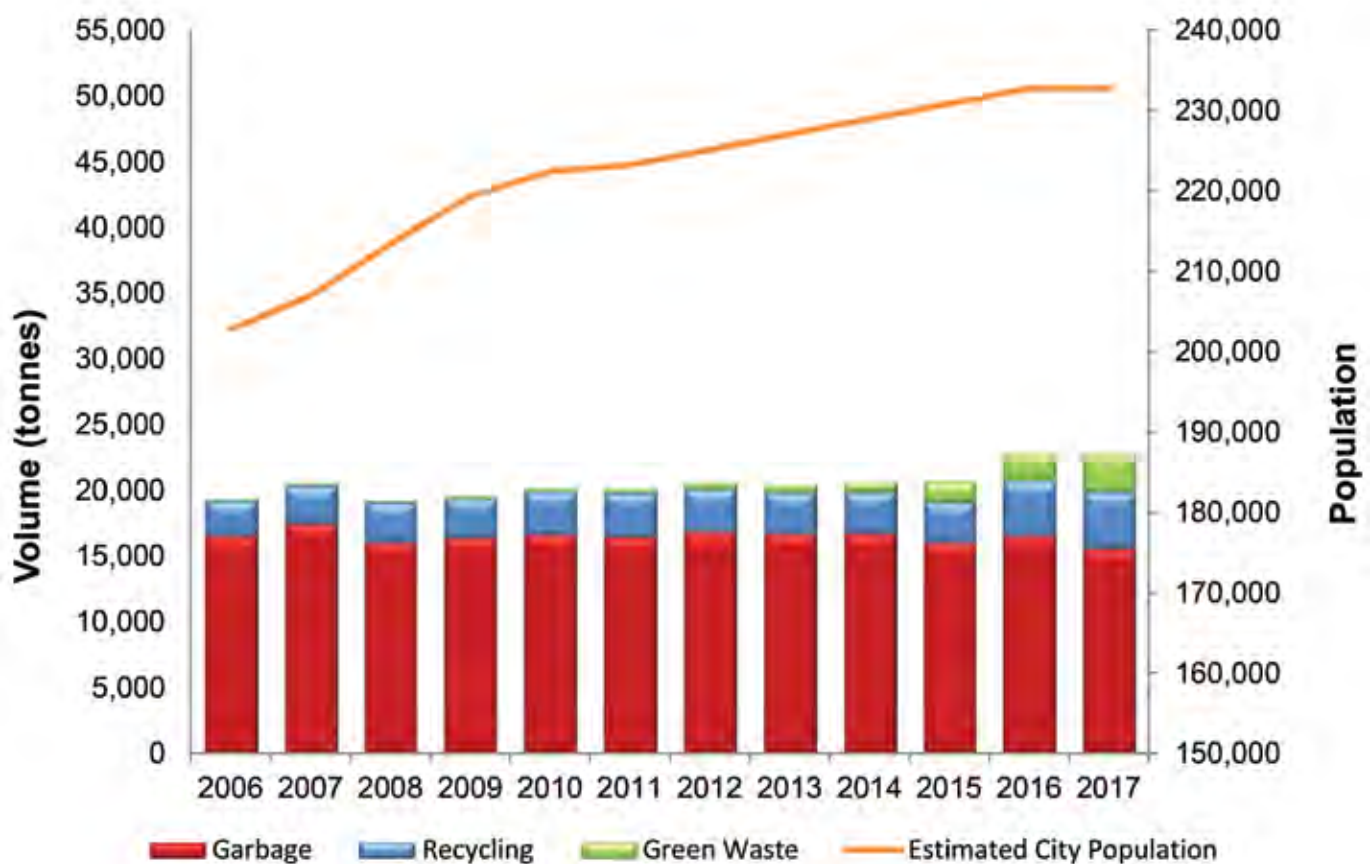
4.2 MULTI-FAMILY AND ICI (INDUSTRIAL/COMMERCIAL/INSTITUTIONAL) DIVERSION

As of May 19, 2014, collection of recyclables for Multi-family and ICI were separated as part of the transition to the new Recycle BC residential recycling program. Figure 3 reflects the total amount of garbage, recycling and green waste collected for both Multi-family and ICI sectors.

In 2017, the volume of garbage collected was 16,034 tonnes (a decrease of 3.36% from 2016). Diversion of recyclables and green waste from multi-family and ICI sectors increased in 2017, with 4,389 tonnes of recyclables collected (a 6.07% increase over 2016) and 2,638 tonnes of green waste collected (a 20.35% increase over 2016). A decrease in garbage volumes and increase of recycling and green waste can be attributed to an increase in public education and outreach to the City's customers on materials they can divert through the City's recycling and green bin programs, as well as the City's Eco-Centre.

Figure 3 – Multi-Family, Industrial, Commercial and Institutional Garbage and Recycling Weights, 2006-2017

**As of June 2010, Green Waste = Yard Waste + Food Scraps*

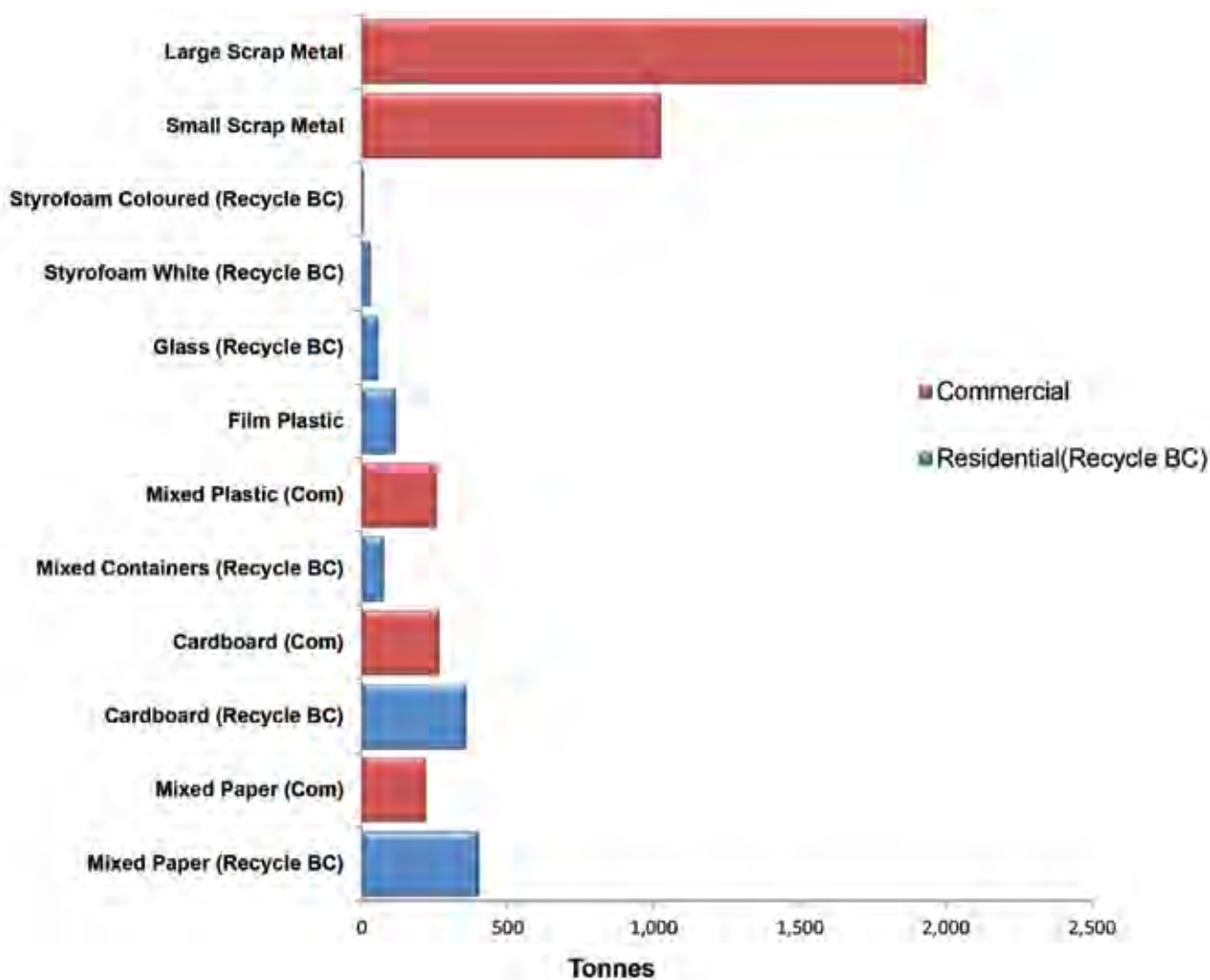


4.3 MUNICIPAL DEPOT DIVERSION

In 2017, over 20 different types of recyclable materials were processed through the City's Eco-Centre. As of May 19, 2014, the City's Eco-Centre implemented Recycle BC's expanded residential recycling program. Figure 4 shows a detailed breakdown of printed paper and packaging collected through the residential Recycle BC Program, and the materials collected through the City's commercial and scrap metal recycling program. In 2017, the Eco-Centre diverted 4,737.5 tonnes of recyclables (Recycle BC, Commercial and scrap metal), a 91% increase over 2016.



Figure 4 – Tonnage of Recycling Materials Collected at the Eco-Centre for Recycle BC, Commercial and Scrap Metal in 2017



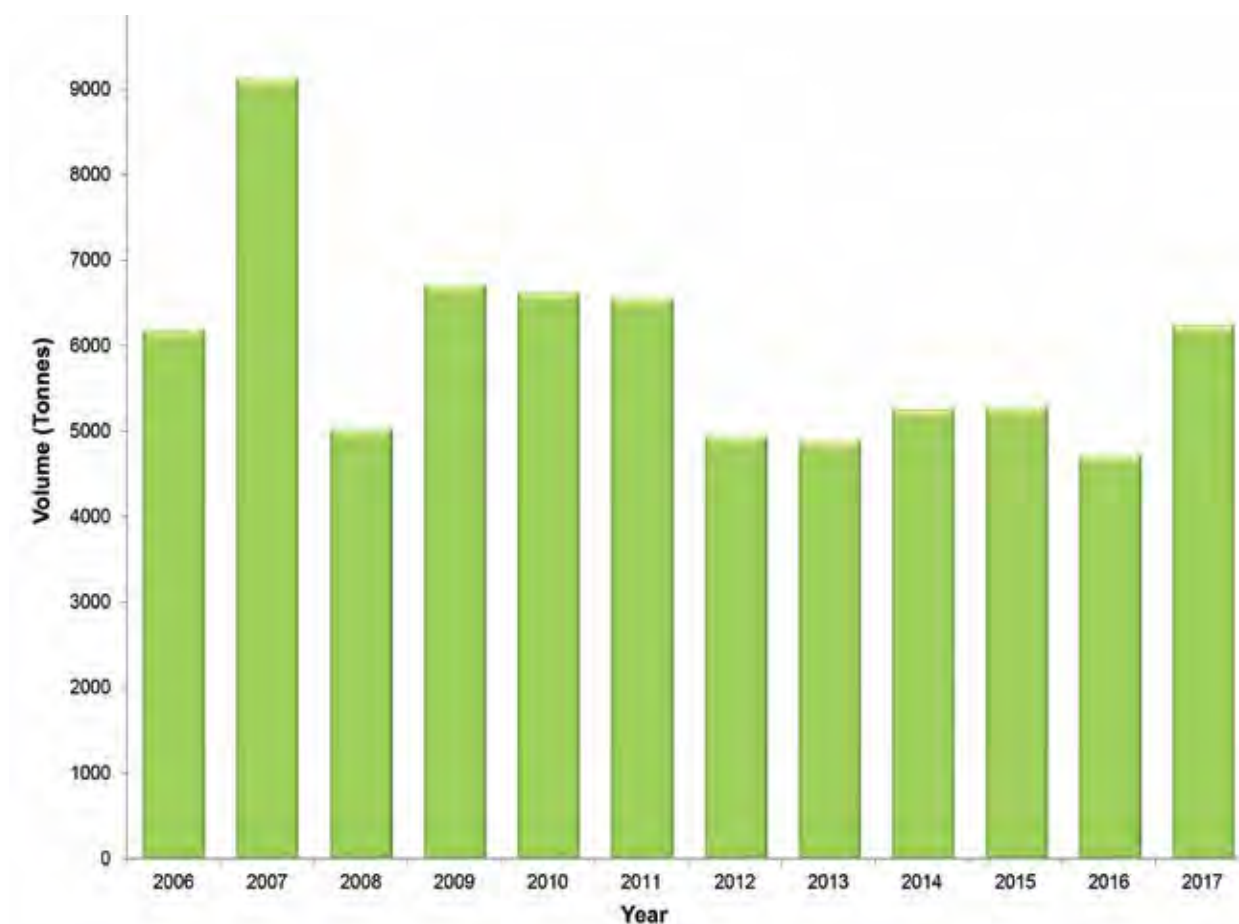
In addition to residential printed paper and packaging, the City's Eco-Centre accepts other material for recycling not collected through curbside programs. Table 1 illustrates the amount of EPR and other material accepted for recycling. In 2017, the City saw an increase in the amount of household hazardous waste, such as household/vehicle batteries, used motor oil, paint, solvents and antifreeze, diverted from the garbage through the Eco-Centre.

Table 1 – Amount of EPR and Other Materials Collected in 2017

EPR/Other Materials		
Propane Tanks	1,080	units
Used Oil	107,537	Litres
Car Batteries	1,192	units
Household Batteries	35	drums
Solvents	37	skids
Pesticide	14	skids
Paint/Aerosol	777	skids
Oil Filters/Containers	61	drums
Freon	2,096	units drained
Antifreeze	4,952	Litres

In 2017, the Eco-Centre received approximately 6,233 tonnes of green waste (a 32% increase over 2016) as illustrated in Figure 5.

Figure 5 – Tonnage of Green Waste Collected at the Eco-Centre, 2006-2017





5.0 PROJECTS AND AUDITS

Bear-resistant Green Bin Receptacles

Bear sightings and interactions have previously been reported by residents and the media in some areas of Burnaby. In 2015, staff worked with the Provincial Conservation Officers to better understand the issue relating to human-bear related interactions, prepared education and outreach related materials for residents which are made available on the City's website and undertook a survey to determine actions taken by some neighbouring communities in this region regarding this issue.

In July 2016, the City initiated a year-long bear resistant green bin receptacle pilot project to assist the City in identifying: effectiveness, ease of use and durability of bear resistant receptacles; challenges in servicing the containers; any administrative and bylaw amendments; and required scope and scale of education/outreach programs. The pilot project included five multi-family complexes, a total of 455 units, serviced by the City that are within known bear areas (Forest Grove, Cariboo and Simon Fraser Village). The City provided each complex with three styles of bear resistant green bins to trial.

In addition to the provision of bear resistant bins, the City provided residents an informational letter outlining the pilot project, instructions on how to utilize each style of bin, direction on securing garbage receptacles and *What About Bears* brochures that provide additional information on bear attractants and human-bear interactions.

Under the pilot project, residents were asked to test each of the three styles of bear resistant green bins to place their food scraps in for weekly collection. In 2018, the City will undertake a survey of participating residents, and City staff to determine the effectiveness of the bear resistant receptacles, ease of use, preferences for receptacle types and challenges associated with the servicing of these receptacles. Based on feedback from the survey, a detailed report on pilot project findings and recommendations will be presented to Sustainable City Advisory Committee and Council.

Curbside Garbage, Green Bin and Recycling Audits

The City undertook a single and two-family residential curbside waste composition study of 100 households and a multi-family residential waste composition that included six residential multi-family complexes serviced by the City for garbage, recycling and green waste. The study was conducted in July 2017 over a two week sample period for garbage, recycling and green waste. The objectives of the study were to determine:

- » Composition of household waste, recycling and green waste for both single and two-family households, and for residential multi-family complexes;
- » Diversion rate for single and two-family and multi-family residential properties; and
- » Contamination rates within each of the three material streams.

Results from the composition study found that the 100 sample single and two-family properties had an average overall waste generation (garbage, recyclables and organics) of 800.64 kg/hh/yr. Of this, 489.24 kg/hh/yr is material diverted through the City's curbside recycling and green waste programs. This equates to a diversion rate of approximately 61.1% for the sample single and two-family properties. For the sample multi-family residential properties, the average overall waste (garbage, recyclables and organics) generated is 564.25kg/unit/yr. Of this, 180.56kg/unit/yr is being diverted through the City's multi-family recycling and green waste programs. This equates to a 32% diversion rate for the sample multi-family residential properties.

Contamination management is a crucial component of the City's curbside and multi-family collection programs. The 2017 audit looked at the contamination rate within the garbage, recycling (blue box, grey box and yellow bag) and the green waste materials. For single and two-family households, it was determined that household garbage had a contamination rate of 38.2%. Contamination was predominantly comprised of yard + food scraps (27.5%) and recyclable materials (10.7%).

For multi-family complexes, the audit found that there was an overall contamination rate of 39.27% in the garbage. Contamination was largely organic materials (24.55%) and recyclable materials (14.72%). For both single and two-family, and multi-family complexes, materials found as contaminants were largely materials that are accepted in the City's Green Bin and Recycling programs, or through a Provincial Take Back Program. In addition to determining the contamination rate for garbage, the 2017 audit looked at the contamination rate for the mixed containers (blue box/toter), mixed paper (yellow bag/toter) and organics material (green bin). The contamination rates for these streams can be found in Table 2.

Table 2 – Contamination rate of material streams in the 2017 Waste Composition Audit.

Material Stream	Single and Two-Family	Multi-Family
Garbage	38.2%	39.27%
Mixed Containers (Blue Box/Toter)	16.4%	12.54%
Mixed Paper (Yellow Bag/Toter)	1.36%	0.56%
Glass Jars & Bottles (Grey Box/Toter)	8.5%	15.45%
Organic Material (Green Bin)	2.65%	4%

With an overall diversion rate of 61.1% for the sample single and two-family properties, and a 32% diversion rate for the sample multi-family properties, and the contamination rates for each material stream, the 2017 audit provided the City with direction on areas to focus our outreach and education programs, and provision of service.





6.0 PUBLIC OUTREACH AND EDUCATION

Waste Collection App

Single and multi-family residents can avoid missing a collection day by downloading Burnaby's free Waste Collection App. With the app, residents can set up reminders and get instant access to their garbage, recycling and green bin information. The app gets updated when needed so the information is always current. The app also provides the user with:

- » Collection day reminders for residential curbside collection schedules including alerts for holiday schedule changes;
- » Collection details including accepted items and preparation requirements for the recycling, green bin or garbage programs;
- » Drop off depot information through the "What goes where?" searchable database;
- » "Report a Problem" feature to notify the City about missed collection, graffiti, litter and burnt out street lamps.

The app is currently available for apple and android operating systems only. In 2017, the number of residents actively using the collection app was 56,610 (a 227% increase from 2016), with the total of 1,139,725 resident interactions (a 89% increase over 2016). The increase in the number of users and resident interactions in 2017 compared to previous years can be attributed to the City's increased outreach and education on the collection app during the implementation of Every Other Week Garbage Collection changes.

In 2017, the City integrated the Collection App into the City's website for residents that do not have access to smart phones or tablets. Since the integration, the City saw that 34,259 visitors accessed the website plugin. In addition to the growth in users, the app allows the City to direct message users on collection schedule changes (statutory holidays, weather disruptions), special events (e.g. Christmas Tree Collection) and reminders about sprinkling restrictions. Table 3 outlines the types of resident interactions that were observed in 2017 for the collection app and the online website plugin.



Table 3 – Number of Resident Interactions from the City’s Collection App and Website Plugin

Reminders Sent (e.g. collection reminders)	603,914
Notifications (News) Sent (i.e program changes, events, special collection)	407,906
Problem Reports Received (e.g. missed collection, illegal dumping)	768
Content Page Views (e.g. sorting pages, drop off depot locations)	90,031
PDF Calendar Views (e.g. view personal collection calendar)	17,447
Exported Personal Calendars (e.g. printed personal collection calendar)	19,329

In addition to access to information, the app allows the City direct content access for updating acceptable materials, adding images, sorting requirements, and has the capability for linkage to social media. With the expansion of users, and the customization within the app and the website plugin, the City has the ability to directly connect with residents to provide up to date information on collection, issues and special events.

Community Events and Seasonal Outreach Campaigns

Each year City staff look for outreach opportunities within the community to spread the word about how to reduce, reuse and recycle. In 2017, City staff participated in eight community events with displays featuring information on waste reduction, recycling, food scraps collection and composting. Participants benefit from new ideas and other tips on how waste diversion can be made easy. They can connect with staff to answer their questions and provide clarification on new programs and services offered.

Some examples of events attended were: Great Salmon Send Off, Hats Off Day, Environment Week’s Envirofest, Eco-Centre Open House, Edmonds Community Fair, RhodoFest and Willingdon Centre Community Fair. In addition to community events, the City takes part in seasonal outreach campaigns. In 2017, the City participated in seasonal campaigns that included What to do about ‘Jack’, promoting the composting of pumpkins in the City’s Green Bin programs, Holiday Recycling Guide and Christmas Tree collection and Metro Vancouver’s Create Memories, Not Garbage Christmas Campaign.



7.0 LOOKING AHEAD TO 2018

The City has successfully met environmental challenges over the years by developing innovative solutions while maintaining its commitment to environmental protection. Looking ahead to 2018 brings forward enhancements to Burnaby's waste reduction programs that will further strengthen our waste reduction goals.

- » Completion of the pilot project for AVL/Telematics and determining next implementation steps to create efficiencies in collection, contamination management and enhanced fleet management
- » Undertake a Request for Proposal for the expansion and installation of three-stream public street litter receptacles
- » Implement improvements to the Bulky Item, Appliance and Mattress collection program and Abandoned Material service
- » Completion of the multi-family bear resistant green bin receptacle pilot project and submission of pilot project results to Committee and Council;
- » Complete the roll out of the City's Green Bin program to the remaining multi-family complexes and civic facilities;
- » Review the City's ICI customers for compliance of organics separation;
- » Continue with the annual waste audit for single and two-family and multi-family collection and utilize audit findings to target programs to reduce contamination rates and increase participation in the green bin program;
- » Amend the Solid Waste and Recycling Bylaw to reflect changes in service delivery, fees and miscellaneous housekeeping items;
- » Undertake planning for diversion of waste from Demolition and Land Clearing (DLC) activities from residential, commercial and institutional facilities;
- » Continue targeted outreach and education programs on material contamination and diversion and waste reduction;
- » Explore options for improving participation and contamination reduction in the multi-family Green Bin program;
- » Develop educational video clips on diversion, sorting and set out requirements to be used on the City's website and social media;
- » Completion of the disaster management guidelines.
- » Reviewing the hours of operation at the Eco-Centre to further enhance service opportunity to the residents.





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