

NO: R201 COUNCIL DATE: November 2, 2009

REGULAR COUNCIL

TO: Mayor & Council **DATE: October 29, 2009**

FROM: General Manager, Engineering **FILE: 2320-20 (Garbage & Recycling)**

SUBJECT: Curbside Residential Organics Collection Service – Proposed Public Consultation and Pilot Collection Program

RECOMMENDATION

The Engineering Department recommends that Council direct staff to initiate a public consultation process with respect to curbside organics collection options with a view to implementing a pilot program in the latter part of 2010.

INTENT

The purpose of this report is to outline options that are available to reduce solid waste in Surrey by way of an expansion of the City's residential curbside waste diversion program involving a residential organics collection service.

DISCUSSION

To achieve the 70 per cent waste diversion goal set out in the Regional Solid Waste Management Plan (SWMP) and to reduce green house gas emissions, Metro Vancouver (MV), in consultation with its member municipalities, has decided that a Region-wide food waste (organics) diversion program should be established. Each of the Region's municipalities is in the process of developing a curbside organics diversion program.

Metro Vancouver recently awarded a contract to Fraser Richmond Soil and Fibre (FRSF), which will receive organics at its organics processing (composting) facility in Richmond. Member municipalities will be encouraged to transport curbside organics to this facility. The residential organics disposal rate at this facility has been established at \$40/tonne.

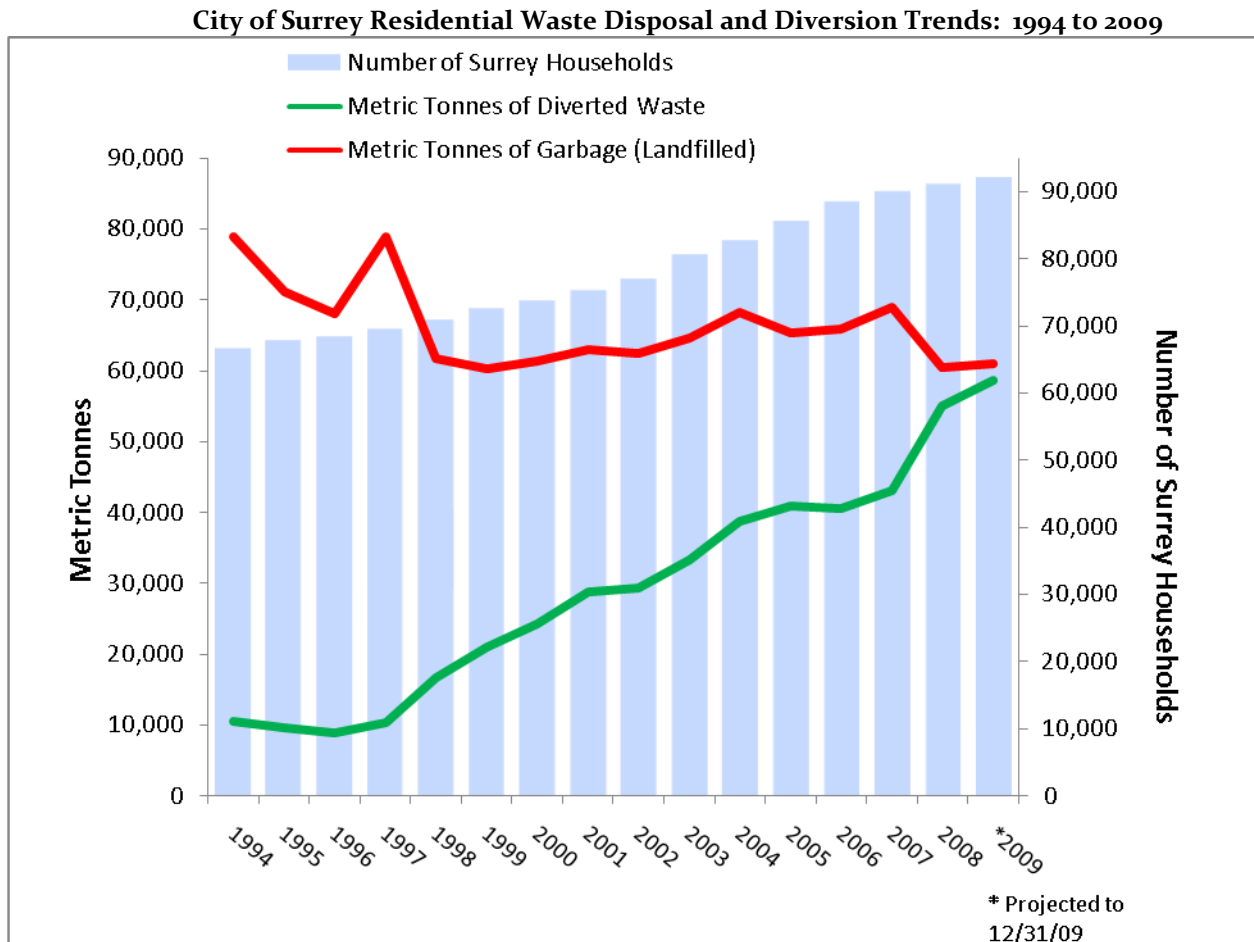
Several municipalities within the Region, including Surrey, were already disposing of their residential curbside yard waste at the FRSF facility. FRSF composts yard waste into nutrient-rich soil and sells this product to the public via various retail outlets throughout the Region, including four outlets in Surrey.

City of Surrey Curbside Waste Diversion Trends

For the past 15 years, the City has experienced a steady annual increase in diverted residential curbside waste tonnage per capita and a corresponding decline in regular waste tonnage per capita. These trends are also evident throughout the Region.

The following graph illustrates Surrey's residential waste volumes and trends since 1994.

Table One:



In 2007, Surrey diverted approximately 38 per cent of the 107,800 tonnes of residential curbside waste that was generated within the City. The diversion rate increased to 48 per cent in 2008 and is projected to increase to 49 per cent in 2009, which is slightly above the Regional average residential waste diversion rate. The increase in Surrey's diversion rate is mainly attributed to:

- the City's single stream recycling program;
- the 2008 Metro Vancouver ban on the receipt of household recyclables and yard waste at the Regional transfer stations; and
- various Provincial Extended Producer Recycling Stewardship programs.

City of Surrey Food Waste Diversion

For a four-week period, commencing in late July 2009, staff undertook a curbside waste composition analysis to determine the tonnage of organic waste material that could potentially be further diverted from the waste stream. The analysis included the collection of a random sample of curbside garbage from over 150 households across the City. Each sample was weighed and then its contents were separated into an organic waste (food waste) component and a non-divertible waste component. Each component was then weighed and compared to the total original weight of the sample. Through this study it was established that the average household in Surrey generates 16.3 kg of curbside garbage per week and that 67% is organic and the remainder is non-divertible as reflected in the following table:

**Table Two:
Garbage Composition for the Average Surrey Household per Week**

Average weekly weight of divertible organic material (kitchen waste) separated from the garbage:	10.9 kg	67%
Average weekly weight of non-divertible material separated from the garbage:	5.4 kg	33%
Total:	16.3 kg	100%

Based on the projected total residential waste tonnage of 61,000 tonnes for 2009 and based on the waste composition findings as documented in Table Two, it is estimated that the City will generate approximately 41,000 tonnes of divertible organic material per year and approximately 20,000 tonnes of residual (non-divertible) waste.

**Table Three:
Composition of Surrey's Annual Residential Garbage Stream**

2009 estimated divertible organic material (kitchen waste) derived from Surrey's residential waste stream:	41,000 tonnes	67%
2009 estimated non-divertible material derived from Surrey's residential waste stream:	20,000 tonnes	33%
Total:	61,000 tonnes	100%

Even if organics waste collection were put in place immediately, it would take a number of years to maximize the level of organics diversion. It is estimated that the City could realize a 60% organics diversion rate from a curbside organics collection program in the initial diversion year. This would divert approximately 24,400 tonnes of kitchen waste from the current garbage stream.

The following table documents the positive overall impact that organics diversion would have on Surrey's residential curbside waste stream:

**Table Four:
Potential City of Surrey Curbside Organics Diversion**

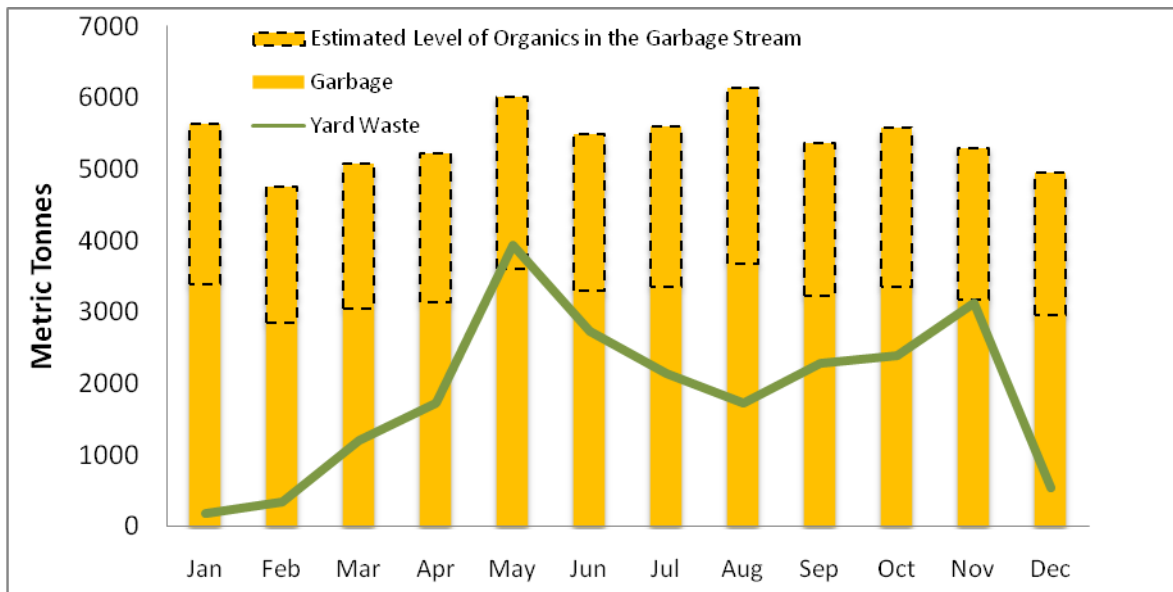
	Non-Diverted (Landfilled) Waste	Total Diverted Waste			Total Waste (Non-Diverted & Diverted)	Total Diverted Waste (%)
	Curbside Garbage	Recyclables	Curbside Yard Waste	Curbside Kitchen Waste		
Projected Tonnages with Organic Collection Program	36,600	34,200	24,500	24,400	119,700	69%
Status Quo (with no Organics Collection Program)	61,000	34,200	24,500	0	119,700	49%

Curbside Collection Service Requirements

Kitchen organic waste is generated at a relatively uniform rate throughout the year while organic yard waste fluctuates dramatically by season and is dependent on lot size, the amount of landscaping that is located on the lot, and the frequency of landscaping work done by the home owner.

Weekly regular garbage output is more uniform throughout the year. Kitchen waste content within the regular curbside garbage stream is one key factor that drives the frequency and consistency of residential curbside participation. Kitchen waste tends to decompose and create foul odours, which motivates homeowners to put out their garbage regularly. Table Five illustrates the relative uniformity of the regular garbage waste stream over the months of the year and the more dramatic fluctuations in the yard waste stream.

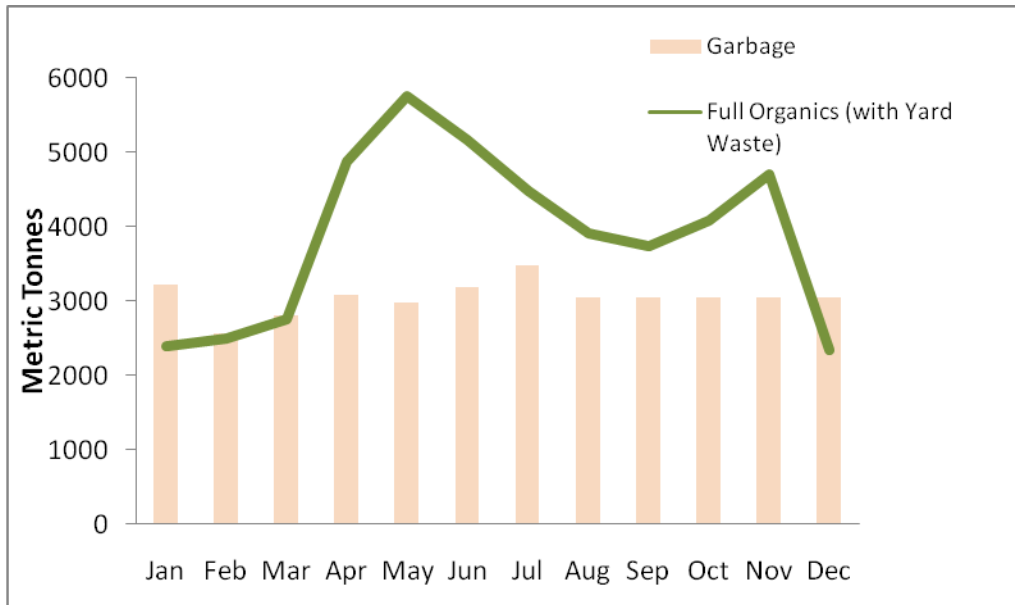
**Table Five:
Average Monthly Quantities of Curbside Yard Waste and Regular Garbage***



*based on 2005 to 2008 data (averaged)

Table Six illustrates the City’s average month-by-month tonnage of yard and kitchen organics combined and regular garbage.

**Table Six:
Estimated Monthly Fluctuations to Waste Volumes with
Curbside Organics Diversion Program (based on 2009 projected tonnages)**



Given the results of the recent organic waste composition study for Surrey, a move to a full separate curbside organics collection program presents a significant opportunity in relation to the City’s sustainability objectives and will significantly assist in reaching the waste diversion objectives of the Region’s Solid Waste Management Plan.

Proposed Public Consultation Process

There is a growing interest by the public for sustainable solutions relating to municipal solid waste management. While moving towards a full curbside organics diversion program will fulfill the City’s and region’s diversion goals, the design of such a program must be carefully considered. Certain organics waste collection options are more economical than others but will yield lower diversion rates, while others are conducive to ensuring high diversion rates but at higher service costs. The key factors including ease of collection, service cost per unit and diversion effectiveness must be balanced with public expectations.

For example, an option that could be immediately implemented with the least service impact would be to require residents to simply place weekly organics in a separate receptacle (i.e., garbage can) that contains an “organics” label, or in a Kraft bag (similar model to the City’s existing yard waste program). The difficulty with this type of service model is that organic waste is highly odorous and the use of a standard receptacle or kraft bag will very likely attract animals and pests. In addition, this type of service model typically yields low diversion rates from households that do not wish to dedicate additional waste receptacles or purchase additional kraft bags for this purpose.

Some major municipal jurisdictions are using a “semi-automated cart system” where households are provided with animal/odour resistant waste carts within which to discard their household

organics/yard waste, garbage and recyclables materials. Organic/yard waste is collected weekly while other garbage and recyclables are collected bi-weekly. While this model is conducive to driving higher levels of organic waste diversion and is generally appreciated by residents due to its simplicity and effectiveness, the cost for this service is higher than the traditional manual collection process due to the automation and the specialized waste carts. This model is explained in greater detail in Appendix I.

Given the size of the Surrey's waste collection customer base and the potential for significant change to the existing weekly services, staff intends to undertake a study of several viable options related to the collection of organic waste. These options will be presented to the public via a series of open public consultation sessions and surveys. The information that is presented will reflect the waste diversion potential for each option, the technology that each option will entail and the customer service costs.

The public consultation/survey process will be undertaken during the first half of 2010, with the goal of the consultation being to determine relative acceptability to the public of the different collection options. A side benefit of the process will be increased public awareness of efforts related to waste diversion by the City. The consultation process will assist staff in determining a "preferred approach" to organics collection. The results of the consultation process will be reported to Council.

Pilot Program for Kitchen Waste Organics

Subsequent to the public consultation process during the latter half of 2010, a pilot organics collection program will be established with a select number of households in the City, which allow staff to refine the "preferred" approach to organics waste collection so that it can be implemented more effectively across the City after the pilot. The pilot program will also allow for a more accurate determination of equipment requirements.

Contractor Engagement

The move towards a full curbside organics diversion program represents a major scope change to the current waste collection services contract with International Paper Industries, Ltd. (IPI). The City's contract with IPI runs to the end of 2012.

The proposed pilot program for organics diversion would conclude in 2011. Staff are intending to implement the full organics waste collection service as an element of the City's next waste collection contract, which will be awarded in 2012.

CONCLUSION

Based on the above discussion, it is recommended that Council direct staff to initiate a public consultation process with respect to curbside organics collection options with a view to implementing an organics collection pilot program in the latter part of 2010.

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- Appendix I: Weekly Organic Collection and Alternating Bi-weekly Collection of Garbage and Recyclables
- Appendix II: Semi-Automated Waste Collection Services Using Curbside Carts for Organics, Garbage and Single Stream Recyclables

Considerations with Regard to Organics, Garbage and Recyclables Collection

Frequency of Collection

Given the dramatic drop in the volume of regular non-divertible garbage that would be realized from a full organics curbside collection program, the City is well positioned to introduce a weekly organics collection service combined with a bi-weekly garbage and recyclables collection service. This would be a significant change to the City's current practices with respect to waste collection but would be justified based on the relative volumes of the different waste collection streams.

The following table illustrates a typical monthly collection schedule based on weekly organics collection and bi-weekly collection of regular garbage and recyclables.

Week	Organics Collection	Garbage Collection	Recyclables Collection
1	✓	✓	✓
2	✓		
3	✓	✓	✓
4	✓		

Sustainability Benefits

By introducing bi-weekly regular garbage collection and weekly organics collection, residents would be motivated to ensure that their kitchen organic waste was collected on a weekly basis so as to avoid the nuisance odours that this waste stream produces if it is left in a garbage container for longer periods of time (i.e., 2 weeks).

A number of cities across North America and Europe have successfully introduced such a weekly/bi-weekly collection process. The City of Toronto implemented a program of this nature in 2004. In British Columbia, the community of Ladysmith introduced this collection system. Within a year, each of these Canadian municipalities reported an 80% diversion of the kitchen organic waste stream.

If Surrey were to achieve the same results as Toronto, the City's annual waste diversion rate would be well beyond the Region goal of 70% by the year 2015.

Service Benefits

Weekly Organics Collection:

A curbside organics collection program involves the collection of kitchen waste materials mixed with yard waste materials. This combination of organics is actually preferred by compost process operators since the nitrogen-rich kitchen waste provides a good balance with the carbon-rich yard waste, which accelerates the composting process and acts to minimize odours.

Semi-Automated Waste Collection

Staff has reviewed options with respect to how organics waste should be collected. A semi-automated curbside waste collection process would require that the City provide each household with standard wheeled waste receptacles. The receptacles are rolled out to curbside by the resident for the weekly collection to occur. The collection crew places the full cart at the back or side of the collection truck where specially designed hydraulic lifts known as “flippers” lift the cart and empty its contents into the waste collection vehicle. Photographs and a description of a typical collection cart and emptying procedure are contained in Appendix II.

Semi-automated collection reduces worker injuries and worker fatigue. The design of the typical organics receptacles, which contain tight-fitting “flip lids”, minimizes the potential for intrusion of animals into the waste and for scattered litter.

The 364 litre cart is considered large enough to accommodate weekly volumes of kitchen and yard waste that would be generated by a typical household. However, at times some households may generate more weekly yard waste and/or kitchen waste than can be accommodated in the cart (i.e., in the fall when property owners are cleaning up leaves and branches). In these circumstances, residents would be required to place kitchen waste in the cart and place any overflow yard waste in separately marked yard waste cans or Kraft bags. Residents would also have the option of obtaining an additional organic waste cart for weekly collection subject to paying a higher service rate. For the vast majority of households, this would not be necessary.

Other Information about the Organics Waste Stream:

The following organic waste materials can be placed at curbside and processed at the FRFS Richmond facility:

- **Food Items:** Vegetables & fruits, corn cobs, meats, fish, bones, breads, dairy items, oily and fatty foods, coffee grinds, egg shells, etc.;
- **Non-food related items:** Food-soiled paper products including napkins, newspapers and cardboard; and
- **Untreated wood products** provided that they are bundled alongside curbside yard waste materials.

It is important to note that the FRFS organics processing facility does not accept plastic bags since plastic bags do not decompose in the composting process. This means that residents participating in a municipal curbside organics diversion program anywhere within the Region must either use biodegradable bags to line their kitchen waste containers or newspapers or choose not to use any liners and dispose of their kitchen waste directly into the curbside cart.

Bi-weekly Garbage Collection:

Once organics are removed from the regular garbage stream, that garbage stream would include mainly non-odorous materials such as textiles (clothing), treated wood products, furniture, leather goods, footwear, rubber, styrofoam and unrecyclable cardboard. Currently, a typical Surrey household produces approximately one and a half cans of garbage (including kitchen organics) each week. Once the kitchen organics are removed from this waste stream, it is anticipated that weekly garbage output will drop to less than one can per week for the typical household. On this basis, using a semi-automated pick up, a 242 litre cart (64 gallon) cart would

provide sufficient volume for regular garbage from a typical household if collection occurred on a bi-weekly basis.

Bi-Weekly Recyclables Collection:

With a semi-automated pick-up model, bi-weekly collections and based on the volume of recyclables generated by a typical household, a 242 litre (64 gallons) cart would accommodate single-streamed household recyclables in the two-week period between collections.

Estimated Collection Costs

Semi-automated collection service is generally slower than manual collection due to the time required to engage and disengage the carts from the collection vehicle. Each semi-automated collection vehicle and related crew can handle 700 to 800 households daily while a vehicle and manual collection crew can handle up to 1,200 households daily. As such, more vehicles are required to implement semi-automated collection in comparison to manual collection for any given area. However, by converting from full weekly collection services to the weekly collection of organics and the bi-weekly collection of garbage and recyclables, the overall increase in costs is minimal.

Estimated Cart Costs

Waste receptacle carts range in price depending on size. A 264 litre (64 gallon) cart costs \$57 including delivery to the household. To supply each Surrey household with a cart for the organic waste stream would cost a total of \$5 million. If each household was provided with a cart for each of organics, garbage and recyclables (3 carts), it would cost a total of \$15 million.

Based on a simple straight-line amortization over a 10-year period, the carts would cost approximately \$0.5 million per year per waste stream which equates to approximately \$6/year/household/waste stream. This cost would be recovered through adjustments in the annual solid waste collections service levy.

Semi-Automated Waste Collection Services Using Curbside Carts for Organics, Garbage and Single Stream Recyclables



WASTE CARTS (approximately \$60/each)

- Universal design fits all U.S. fully automated gripper arms and semi-automated Bar-Loc collection systems
- Vented rim allows air flow through cart contents
- Lower ventilation louvers provide ventilation for leachate evaporation and aeration of waste
- HDPE plastic grill features stainless steel hinges for leachate drainage and will not rust
- Reduces odors, inhibits anaerobic decomposition, and reduces volume and weight of contents
- Sealed lock bar design eliminates leakage in semi-automated operations
- The hinged, plastic grill swings open when dumped for complete emptying of materials
- Large opening for easy loading from grass baggers
- One-piece continuous handle molded into cart for easy maneuvering
- Smooth rolling wheels for easy handling on lawn
- Multiple bottom wear chimes for extended cart life and abrasion protection

Description	Dimensions (l x w x h)	Load Rating
364 litre Cart (96 Gallon)	90 cm x 75 cm x 120 cm (3 ft x 2.5 ft x 4 ft)	102 kg (224 lbs)
242 litre Cart (64 Gallon Cart)	76 cm x 70 cm x 101 cm (2.5 ft x 1 ft x 3.5 ft)	68 kg (150 lbs)