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UPDATE ON MANDATORY COMPOSTABLE BAGS IN THE GREEN BIN PROGRAM

The Environmental Services Committee recommends the adoption of the recommendations contained in the following report dated April 26, 2013, from the Commissioner of Environmental Services.

1. RECOMMENDATIONS

It is recommended that:

1. Staff continue to promote mandatory compostable bags in the Green Bin and defer enforcement for reasons outlined in this report.
2. The Regional Clerk circulate this report to the Clerks of the local municipalities.

2. PURPOSE

This report updates Council on the use of compostable bags in York Region including strategies employed to date to promote the use of compostable bags and opportunities to continue to increase future compostable bag use.

3. BACKGROUND

York Region's convenient Green Bin program designed to increase diversion through high participation

In 2005, the Green Bin program was launched in York Region to provide residents with a convenient option to divert organic materials, which represents 25 per cent of York Region's overall waste stream. Plastic bags were initially accepted in the Green Bin to encourage residents to participate in the program and address the "yuck" factor associated with food waste. Residents across the Region responded enthusiastically to the Green Bin program through high levels of participation, currently at 82 per cent.

With the Green Bin's success and well established participation levels, Council took the next step to enhance the Green Bin program by implementing compostable bags. Mandatory use of compostable bags was approved by Council on December 16, 2009, to be implemented effective May 1, 2011. The implementation strategy for mandatory use of compostable bags was approved by Council on March 24, 2011 including a comprehensive promotional campaign.

Compostable bags are a more environmentally friendly option than plastic

Prior to implementing mandatory use of compostable bags in spring 2011, York Region promoted their use by residents as a voluntary initiative. York Region moved to mandatory use in an effort to increase the use of compostable bags. Compostable bags represent a better environmental option for the Green Bin program because they are made with natural materials such as corn starch and biodegradable polymers versus plastic bags derived from non-renewable fossil fuels. Compostable bags are designed to degrade and represent an environmentally friendly alternative to bags made from fossil fuels. Although there is a higher cost to residents purchasing these bags as compared to plastic bags, they remain a better environmental option than plastic as plastics in the Green Bin are removed as residue during any composting process. Since compostable bags are designed to degrade, an anticipated benefit of Region-wide use of compostable bags was a decrease in process residue rates. York Region launched a large promotion and education campaign in 2011 to coincide with the switch to mandatory use focusing on the environmental benefits of compostable bags. An example of promotional material is shown in Figure 1 which appeared in print ads and on some curbside collection trucks.

Figure 1
York Region Compostable Bag Promotional Material



4. ANALYSIS AND OPTIONS

Compostable bag use has increased as a result of mandatory program

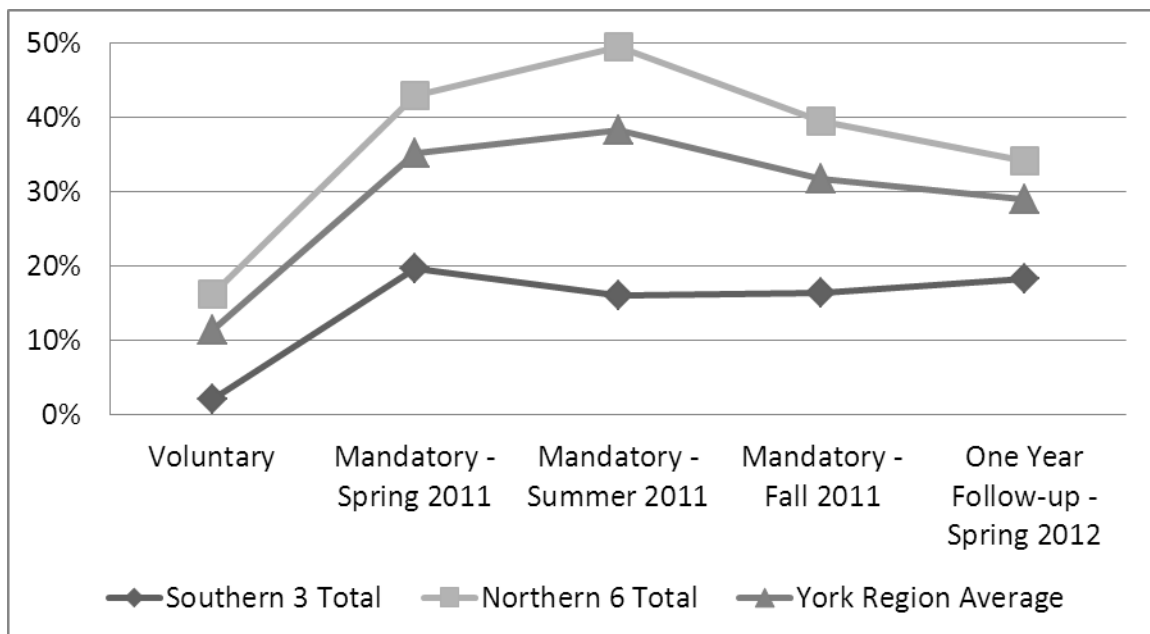
Increasing compostable bag use was the key objective of moving to a mandatory program. To monitor the impact of the program change, a series of audits were completed. One audit was performed during the voluntary phase and four audits were completed after the switch to mandatory use of compostable bags, including a one year follow up audit. The number of compostable and plastic bags was counted as part of each audit. Results demonstrate that implementing mandatory use of compostable bags significantly increased compostable bag use rates through resident education, without curbside enforcement. Although implementing mandatory compostable bags increased use rates, the success of this change was limited. Compostable bag use during the

voluntary phase was 11 per cent, which increased to 28 per cent one year after mandatory compostable bag implementation, as outlined in Figure 2.

Use of compostable bags higher in northern portion of Region

After one year of implementation, average compostable bag use is higher in northern six municipalities at 34 per cent compared to southern three municipalities at 18 per cent, as outlined in Figure 2. This may be due in part to the increased promotion of compostable bags by the northern six municipalities which included signage on curbside collection trucks. To continue to incrementally increase the use of compostable bags, additional promotion and education efforts will be required by both the Region and local municipalities. Region staff will work with local municipalities to determine where opportunities exist to promote the environmental benefits of compostable bags to drive increased use.

Figure 2
York Region Compostable Bag Use Rates

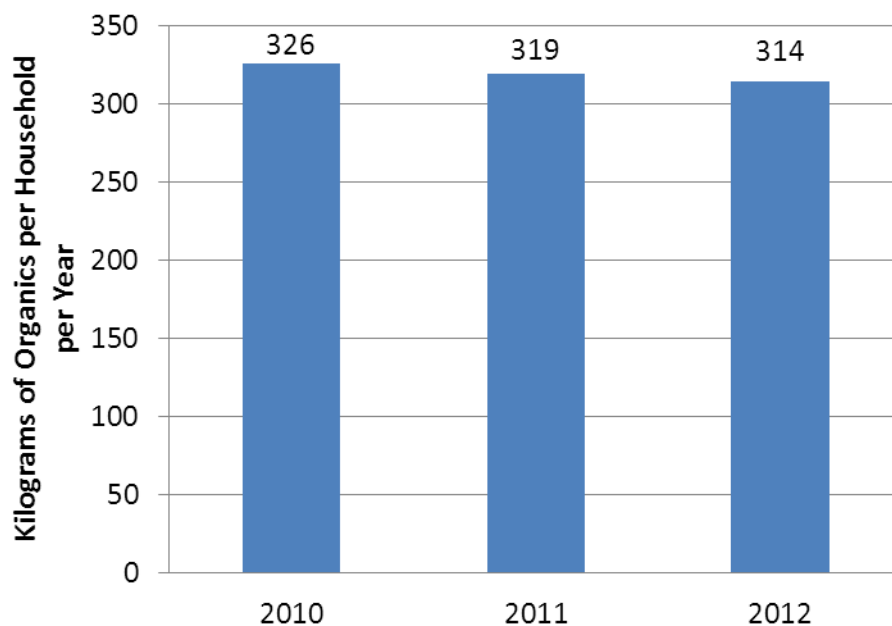


Quantity of Green Bin materials has remained consistent since transition to mandatory use of compostable bags

The quantity of Green Bin materials collected per household continues to be monitored and has remained relatively consistent since the transition to mandatory use of compostable bags. In the voluntary phase, 326 kilograms per household per year were collected in the Green Bin program, after compostable bags became mandatory an average of 314 kilograms per household of year were collected, as outlined in Figure 3.

Future per household generation of Green Bin materials are expected to level off and remain static following implementation of reduction initiatives included in the Integrated Waste Management Master Plan currently under development. The Master Plan process is currently developing a Value of Food Strategy to increase public awareness of food waste in an effort to reduce the amount of food waste being generated, the majority of which is disposed in the Green Bin.

Figure 3
York Region Kilograms per Household per Year of Green Bin Materials



Curbside participation rates have remained consistent with implementation of mandatory compostable bags

Green Bin program curbside participation rates were estimated to be 85 to 90 per cent prior to implementing mandatory use of compostable bags. After the program change to mandatory, Region staff measured participation and found a participation rate of 85 per cent. Green Bin program participation was also measured through a 2012 Environics phone survey to over 1,000 York Region residents and 82 per cent of respondents indicated that the Green Bin is their primary tool to dispose food waste.

Changing an established program, such as York Region's Green Bin, presents long term challenges

York Region residents have been participating in the Green Bin program for eight years and using plastic bags has become an engrained habit for many. Changing engrained

behavior is challenging and requires promoting environmental benefits of compostable bags to provide residents with a reason to switch. Other Green Bin programs in Ontario that use compostable bags, such as those in Durham and Halton Regions, were launched with plastic bags as unacceptable items. Durham and Halton also do not accept items with a high quantity of plastic such as diapers, pet waste and sanitary products.

As shown in Table 1, both Durham and Halton have high compostable bag use rates with low residue rates, which is due in part to low quantities of plastic in their streams. Both Durham and Halton Regions initiated their green bin programs excluding regular plastic bags, which has resulted in high use of paper and compostable bags. York Region has a higher residue rate due to the acceptance of items like diapers and pet waste.

York Region's diversion rate has been lower in recent years due to processing challenges with source separated organics. In 2011, the average York Region household generated 319 kilograms of green bin materials per household and despite processing challenges and comparatively high residue rates, the Region's Waste Diversion Ontario diversion rate is comparable to Durham and Halton. It is anticipated that the addition of Lafleche Environmental as a processor will allow for a significantly higher portion of Green Bin materials to be processed and result in an increase in York Region's diversion rate in 2013.

Table 1
2011 Compostable Bag Use in GTA Municipalities

Municipality	Green Bin Participation Rate	Compostable Bag Use Rate*	Residue Rate	WDO Diversion Rate
Durham Region	70%	>90%	<2%	53%
Halton Region	70%	98%	6.5%	55%
York Region	82%	28%	15%	54%

*Compostable bag use includes all compostable and paper liners

Change in established programs needs to be gradual to avoid alienating program participants and ensure continued success. Statistics such as "plastic bags take 1,000 years to degrade" reinforces to residents that plastic bags should not be in the Green Bin. To date, transitioning to mandatory use of compostable bags has achieved some success for the Region. It significantly increased compostable bag use while maintaining high Green Bin participation rates. Future changes to the Green Bin program need to be carefully considered to maintain this successful balance. While curbside enforcement may be seen as a logical next step to increase program compliance, it has the potential to alienate Green Bin users and requires additional resources at the local level which may increase collection contract costs. As a result, enforcement is not recommended at this time.

Region partnered with Loblaw to offer a choice between compostable and plastic carry-out bags

Compostable bags are available for sale on store shelves in the vast majority of grocery and home improvement stores. Although compostable bags are widely available, many residents continue to use carry-out plastic bags to line Green Bins because they are already purchasing these to transport their groceries. In an effort to address this issue, Loblaw and York Region partnered to deliver an innovative pilot program offering carry-out compostable bags in five stores across the Region as an alternative to plastic carry-out bags. This pilot launched on September 15, 2012 and operated for approximately 15 weeks.

Compostable carry-out bags represented good value for consumers because they provided a dual purpose of a carry-out bag and a compostable Green Bin liner bag. Despite these advantages, data provided by Loblaw indicated that uptake rates of compostable carry-out bags were lower than anticipated with approximately 2.5 per cent of shoppers who purchased a carry-out bag choosing the compostable option. In general, uptake rates corresponded to geographic curbside use rates for compostable bags as observed in Green Bin audits. Although uptake was lower than anticipated, there were a dedicated group of customers who recognized the value of carry-out compostable bags and continued to purchase them during the pilot.

Loblaw and Region showed innovation and environmental stewardship through dual-use compostable bag pilot

This pilot provided benefits to both Loblaw and the Region including leveraging common goals of innovation and environmental sustainability. Dual use compostable bags also build on the convenience factor that has helped make the York Region Green Bin program successful. In addition, demonstrating that compostable bags are durable and represent a viable, environmentally sustainable alternative to plastic bags improves the overall consumer perception of compostable bags.

Pilot results demonstrated that for a pilot to be successful in retail, several factors need to be considered such as cost, consumer demand and the supply of competing products. Despite relatively low levels of uptake, lessons learned in structuring retail sector initiatives will be incorporated into the Advocacy Strategy being developed as a part of the Integrated Waste Management Master Plan.

Orgaworld and Lafleche facilities designed to remove plastic residue

York Region Green Bin materials are currently composted by two processors, Orgaworld located in London, Ontario and Lafleche Environmental located in Moose Creek, Ontario. Orgaworld has been processing York Region Green Bin materials since 2007. Lafleche was added as a processor in early 2013.

York Region's Green Bin program currently contains other sources of plastic film through inclusion of diapers and sanitary products, both of which contain plastic components. Further, 70 per cent of liner bags currently used by York residents are plastic. Orgaworld and Lafleche both employ processes which focus on effective management of plastic in the organics stream, including bags, diapers and sanitary products. The current priority for York Region's contracted processing facilities is to remove plastics from the Green Bin stream to create a valuable compost end product. Ensuring a high rate of compostable bag degradation is challenging for systems designed to remove plastics. At Lafleche, much of the screening for plastic occurs at the front end of the process. As the use of compostable bags increase, Region staff will work with processors to optimize processes to increase compostable bag degradation rates.

Processing York Region source separated organic materials is challenging. The Ministry of the Environment requires processing facilities accepting York Region source separated organic materials to have substantive odour control and screening systems to remove plastics. York has budgeted \$179 per tonne to manage its source separated organics in 2013. Presently, there is no additional merchant processing capacity available for York Region source separated organics stream in Ontario, Quebec, or Northeastern US. Staff will continue to monitor market developments for potential opportunities to secure additional processing capacity.

Compostable bag degradation contingent on sufficient process retention time and moisture rates

York Region, Orgaworld and Novamont, a manufacturer of certified compostable resin, collaborated in September 2012 to quantify degradation rates for compostable bags in conjunction with the Loblaw pilot program. Operational trials were performed at Orgaworld by processing materials through the high intensity portion of their composting process for four weeks. Initial results showed a 35 per cent degradation of the Novamont bag in a four week period. Orgaworld's process retention time is normally two weeks. Based on test results, Novamont staff indicated that bag degradation rates would likely improve with a longer continuous retention time at a higher moisture rate.

Based on degradation test results and suggestions from Novamont, Orgaworld has agreed to trial a modified process with an extended processing time at a higher moisture rate. Bag degradation tests will be performed during this trial and are anticipated to be completed in the summer of 2013. Region staff will monitor results of the modified process. To date, residue rates at Orgaworld have not decreased as a result of implementing mandatory compostable bags due to low use and degradation rates. Changes in Orgaworld's processing operations have the potential to decrease residue rates but may also result in increased cost due to longer retention time, impacting the Region's overall program costs. Orgaworld is committed to working with the Region to optimize their processes to balance compostable bag degradation, residue rates and cost to meet the Region's objectives.

York Region staff will work with Lafleche to test compostable bag degradation at their facility

Lafleche operates a different process than Orgaworld with a longer retention time and mechanical turning of materials throughout the active composting phase. As a result, testing bag degradation at Lafleche will require a different testing process. To ensure adequate processing capacity is available, bag testing cannot begin until the facility expansion at Lafleche is completed in early summer of this year. Contingent on facility expansion timing, bag testing is anticipated to be completed in the fall at Lafleche. Based on results, staff will work with Lafleche to determine if any changes can be made to the process to further increase compostable bag degradation.

Continued promotion and education efforts required to sustain and increase compostable bag use

Promotion and education is required to continue to drive use of compostable bags. In 2011, a large campaign was implemented to promote the mandatory use of compostable bags. Moving to a mandatory use program increased the number of residents using compostable bags by 17 per cent. Promotion and education efforts are necessary to sustain these use rates. Further growth in compostable bag use will be challenging and increases will likely be incremental in the future.

The 2013 and 2014 promotion and education campaign will focus on environmental benefits of compostable bags to encourage use by residents. Promotion and education tactics include: print ads, online banner advertising, local municipal waste calendars, Region and local municipal websites, Twitter, and Facebook. Using an array of promotional tools will engage residents across a range of demographics. York Region staff will also work with local municipal partners interested in promoting compostable bags.

Currently, compostable bags are partially degrading in Orgaworld's process and degradation rates will be tested at Lafleche later this year. Additional strategies to increase compostable bag use will be considered in the future in conjunction with strategies to increase the degradation of compostable bags during processing.

Next steps for the compostable bag program include bag degradation testing and promotional campaign

Region staff will continue to work with contracted processors to investigate process optimization methods to maximize degradation of compostable bags in the Green Bin program. A modified process is being tested with Orgaworld to determine options to increase bag degradation rates and testing is anticipated to be complete in early summer. Region staff will be performing tests at Lafleche to determine the overall compostable bag degradation rate at this facility. Testing will also examine the amount of materials removed by screening at the front end of the process. Testing at Lafleche is anticipated to

be completed in the fall of this year. Any changes to processing methods have the potential to increase costs to the Region. Although curbside enforcement was proposed in December 2009 – The Use of Compostable Bags in the Region’s Source Separated Organics Program (Report No. 4 of the Environmental Services Committee), curbside enforcement of compostable bag use is not recommended for consideration until degradation of bags can be demonstrated at processing facilities.

To maintain compostable bag use rates in the short-term, a promotional campaign will be launched in fall 2013. The campaign will focus on the environmental benefits of compostable bags and will target a range of demographics. Promotion of compostable bag use is anticipated to continue into 2014.

Additional time is required for industry to meet challenges associated with compostable bags

Staff will continue to implement Council’s direction on mandatory compostable bags in the Green Bin program. Increasing use of compostable bags is environmentally sustainable and work is ongoing to assess and address consumer use and compost processing challenges associated with these bags. Time will be required to allow the industry to meet these challenges. To address processing issues, Region staff will continue to address technological options with processors in an attempt to fine-tune their processes to maximize compostable bag degradation rates. It is anticipated that cost issues will also be addressed with time as compostable bags are currently more costly than plastic which can affect usage. It is further anticipated that as the demand for compostable bags increases, economies of scale can be realized in production which will decrease per unit costs for these bags. Reducing the purchase costs is also expected to have a beneficial impact on compostable bag use rates.

Link to Key Council-approved Plans

The Green Bin program supports the following Regional goals:

2011 to 2015 Strategic Plan:

- Increased diversion of solid waste from landfill
- Apply continuous improvement activities to core business services and processes

York Region Official Plan:

- Achieving over 90 per cent diversion from landfill by 2016
- To work with local municipalities to streamline and coordinate waste collection and diversion opportunities to optimize program delivery

5. FINANCIAL IMPLICATIONS

Promotion and education in 2013 and 2014 designed to achieve incremental gains in compostable bag use

In an effort to continue to incrementally drive compostable bag use, York Region will launch a renewed promotion and education campaign in fall 2013. A budget of \$40,000 has been allotted for this campaign. Strategies to be employed include a mix of print and radio ads along with electronic media. Ongoing promotion is required to preserve gains in compostable bag use rates; this campaign is projected to incrementally drive current compostable bag use rates. Promotion and education on the use of compostable bags in the Region's Green Bin program will continue to be required in future years and recommended expenditures will be set through the budget process.

Modifications to Orgaworld processes have the potential to impact Green Bin program costs

Orgaworld is piloting a modification to their process in an attempt to increase degradation rates for compostable bags. Modifications will focus on increasing moisture rates and retention time. Changes in the Orgaworld process could result in increased processing costs. It is unknown if any processing changes will be required for compostable bags to degrade at Lafleche. Region staff will monitor testing at both facilities.

6. LOCAL MUNICIPAL IMPACT

All local municipalities, with the exception of the City of Markham, have changed their bylaws to state that use of compostable bags is mandatory in the Green Bin program. Continued support from local municipalities is necessary to ensure a consistent message to residents and continued program success.

Local municipalities continue to express concern regarding the cost and associated impacts of curbside enforcement. Local municipalities will also require adequate time to be allotted for budgets and collection contracts to be restructured to enforce mandatory compostable bags. Region staff recommend that curbside enforcement not be considered until more complete degradation of bags can be demonstrated at composting facilities.

7. CONCLUSION

Compostable bag use has increased to approximately 28 per cent as a result of the mandatory program. To sustain current participation levels and achieve an incremental increase in compostable bag use, additional promotion is required. Compostable bags

remain a better environmental option over plastic bags derived from non-renewable fossil fuels.

York Region Green Bin processors employ composting processes designed to effectively remove plastic film. In the case of Lafleche, this occurs at the front end of the process which makes it difficult to ensure compostable bag degradation. Through the inclusion of diapers and sanitary products, York Region's Green Bin program contains plastic film by design. Audit results demonstrate that 70 per cent of liner bags used by residents are plastic. Curbside enforcement of compostable bags is not recommended until degradation of bags can be demonstrated at composting facilities and local municipal partner concerns regarding cost and associated impacts are addressed. York Region will continue to work with processors to investigate process optimization methods to maximize the degradation of compostable bags when processing Green Bin materials.

Increasing use of compostable bags is the right decision for the environment; however, there are challenges associated with these bags. Additional time is required to allow the industry to continue to develop to meet these challenges.

For more information on this report, please contact Laura McDowell, Director of Environmental Promotion and Protection at 905-830-4444 Ext. 5077.

The Senior Management Group has reviewed this report.