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The Regional Municipality of Durham
Report

To:	Committee of the Whole
From:	Commissioner of Finance and Commissioner of Works
Report:	#2018-COW-11
Date:	January 10, 2018

Subject:

2018 Solid Waste Management Servicing and Financing Study

Recommendations:

That the Committee of the Whole recommends to Regional Council:

A) THAT, subject to 2018 Budget approval, Regional staff be authorized to conduct a mixed waste processing pilot in 2018 in preparation for the implementation of the new provincial organics management framework (Environmental Bill of Rights (EBR) Registry Posting number #013-1814), under the *Waste Free Ontario Act, 2016* and the provincial "Strategy for a Waste-Free Ontario: Building the Circular Economy":

   i) To divert up to 10,000 metric tonnes of mixed waste from single family and multi-residential households from the Durham York Energy Centre (DYEC) which is anticipated to exceed its Environmental Compliance Approval (ECA) regulated capacity in 2018 and result in waste bypass requirements; and,

   ii) To enter a sole source contract for the processing of diverted mixed waste from the pilot with Canada Fibers Ltd. in order to process mixed waste at Canada Fibers' mixed waste pre-sort facility at an increased processing/disposal and haulage cost of up to $0.5 million, to be included in the 2018 Solid Waste Management Operations Budget.

B) THAT Regional Council endorse the submission of the following comments on Environmental Bill of Rights (EBR) Registry Posting #013-1814, the Ministry of the Environment and Climate Change "Proposed Food and Organic Waste Framework," (November 2017), as previously forwarded to the Ministry by Regional staff in order to meet the January 15, 2018 EBR deadline, including:

   i) Support for the province's principles for the proposed new food and organic waste framework, including the reduction and recovery of resources from food and organic wastes; the promotion of beneficial uses of food and organic wastes; and, provincial support for resource recovery infrastructure through collaboration and fostering of timely regulatory approvals;

ii) Senior government funding support should be provided where municipal property tax payers could be negatively affected by organics regulations/measures, including a potential disposal ban and related investment requirements, stranded existing assets and other municipal capital requirements.

iii) Request that provincial support also include funding for municipal infrastructure and promotion and education programs necessary for the development and implementation of organics processing infrastructure and programs needed for transition to the new framework;

iv) Any costs to address organics management in the ICI sector must be borne entirely by the ICI sector;

v) Understanding that the Province intends to implement an organics disposal ban as early as 2022, it is imperative that the implementation of the organics ban be timed such that it encourages increased organics processing in Ontario; and

vi) Continue to engage in extensive consultations with municipal stakeholders as the new framework is implemented.

Report:

1. Purpose

1.1 This report outlines the challenges and opportunities in Solid Waste Management programs for the 2018 to 2027 business planning period and sets the stage for review and approval of the detailed 2018 Solid Waste Management Business Plan and Budget.

2. Background

2.1 While the waste management program continually adapts to uncertainties related to waste material composition, markets and tonnage and collection stop counts (growth), this report highlights current more significant uncertainties related to rapidly changing solid waste management regulatory frameworks and pending shifts in municipal solid waste management responsibilities and mandate related to:

A) *The Waste-Free Ontario Act, 2016*, which includes as Schedules A and B, *The Resource Recovery and Circular Economy Act, 2016* and *The Waste Diversion Transition Act, 2016*;

B) The Province's December 16, 2016 "Strategy for a Waste-Free Ontario: Building the Circular Economy;"

C) The Province's November 16, 2017, "Proposed Food and Organic Waste Framework, open for public comment under EBR #013-1814 until January 15, 2018;" and,

D) *The Climate Change Mitigation and Low Carbon Economy Act, 2016*, Ontario Regulation 144/16 and "Ontario's Five-year Climate Change Action Plan 2016 – 2020."

2.2 Separate reporting anticipated by the spring of 2018 will be provided on major initiatives which continue based on prior approvals. These include:

A) The Request for Information (RFI) procurement process (RFI #1158-2017) to gather market place information on viable options for implementation of a long-term organics management plan, which is scheduled to close on January 18, 2018;

B) The Blackstock landfill site mining pilot project to address environmental issues, recover recyclables and energy, and remediate the landfill site to a green state is anticipated to be completed and reassessed in 2018; and,

C) The closure and capping of the Oshawa landfill site and post-remediation rehabilitation plan which could include options for beneficial uses for the site.

2.3 In 2017, successful applications for $0.6 million of federal grant funding under the Federation of Canadian Municipalities (FCM) Green Municipal Fund (GMF) were obtained for both:

A) The Organics Management Plan Study: Anaerobic Digestion (AD) Feasibility Study, with GMF funding totaling $175,000 received in late 2017 to offset the cost of the $0.4 million study (Parts 1 and 2); and,
B) The Blackstock Landfill Mining Pilot with $350,000 to be received at study completion (anticipated mid-2018) to offset the approved $1.1 million capital cost of the pilot.

2.4 A detailed update on existing solid waste management programs, including solid waste diversion re-use and special events, collection programs, education, outreach and enforcement is provided in the Attachments, including:

A) An update on existing Solid Waste Management programs including waste collection holiday schedules (Attachment #1);
B) Solid Waste Management Performance Measurement results (Attachment #2); and
C) List of Acronyms (Attachment #3).

3. Changing Regulatory Frameworks

3.1 Over the five-year operational forecast (2018 to 2022), the Region's integrated waste management system will see significant changes primarily resulting from shifting Ontario regulatory and funding frameworks for both recycling and organics management programs, which will impact waste management facilities and operations. In addition, provincial environmental policies and the province's cap and trade program, which took effect January 1, 2017 and continues to evolve, creates both opportunities related to organics diversion and recovery as well as risks related to Durham York Energy Centre (DYEC) emissions as a mandatory participant.

3.2 While many details will be determined through negotiations between industry stewards and municipalities and the evolution of pending policy, protocols and regulations, anticipated changes for solid waste management include decreases in municipal waste tonnages as Extended Producer Responsibility (EPR) regimes take effect and as province-wide diversion targets are achieved. This could be offset by household growth and/or any future decisions to expand Regional waste services.

3.3 Significant to the Region's long-term organics management planning and study, the province did announce, as part of its proposed food and organics waste framework and policy, its intention to start phasing in a food and organic waste disposal ban by 2022, based on extensive consultations with stakeholders which are to occur throughout 2018 and 2019. The Province recognized potential impacts to stakeholders as well as the current shortage of processing capacity in Ontario. In the short-term, it proposes streamlining approval processes as well as regulatory constraints on the beneficial use of organics processing by-products.

3.4 A public consultation process will be required in the early part of the solid waste management operational forecast in order to update the Region's "Long-term Waste Management Strategy Plan: 2000 to 2020" for the time period 2019 to 2039 and reflect new provincial regulatory frameworks, long-term integrated waste system optimization and sustainability and goals to maximize solid waste diversion potential. Timing however, will depend on the release of finalized provincial frameworks as well as conclusions from the Region's long-term organics management study and RFI process and reporting.

3.5 In addition, as required by the province's "Proposed Food and Organics Waste Framework," Regional staff will conduct a detailed review of Regional Bylaw 46-2011: "A Bylaw to regulate the Provision of the Waste Management Services Under the Jurisdiction of the Regional Municipality of Durham, consolidated January 2014" to ensure timely amendments and continued regulatory compliance, anticipated to include mandatory resident participation in waste diversion programs.

4. The Waste Free Ontario Act, 2016 and Provincial "Strategy for a Waste-Free Ontario: Building the Circular Economy"

4.1 *The Waste Free Ontario Act, 2016* (WFOA) and "Strategy for a Waste-Free Ontario: Building the Circular Economy" will transform Ontario's waste sector by creating a full producer responsibility regime.

4.2 Schedule 1 of *the WFOA, The Resource Recovery and Circular Economy Act, 2016* (RRCEA) shifts the waste management framework away from the municipal mandate, making industry stewards wholly responsible for the management of designated wastes (i.e. Blue Box, used tires, hazardous waste and electronic and electrical wastes). This will also shift the costs to deliver these programs from taxpayers to consumers. Regulations under the RRCEA will establish the service levels for the EPR programs and the scope of materials for which the industry stewards will have responsibility.

4.3 On August 14, 2017 the Ontario Minister of the Environment and Climate Change issued a letter directing Stewardship Ontario (SO), the industry organization representing Blue Box industry stewards, and the Resource Productivity and Recovery Authority (RPRA) to prepare an amended Blue Box Program Plan (a-BBPP) by February 15, 2018. The amended Plan will transition the Blue Box program from its current shared cost model to full producer responsibility pursuant to section 13 of *The Waste Diversion Transition Act, 2016* (WDTA), contained as Schedule 2 of the WFOA.

4.4 SO is anticipated to share the proposed a-BBPP with municipalities on December 22, 2017 for comment and will finalize the a-BBPP based on stakeholder feedback before submitting it to RPRA on January 15, 2018. RPRA will subsequently submit it, including any changes, to the Minister (for the MOECC) by February 15, 2018. Subject to Minister approval, the a-BBPP may be posted to the EBR for public comment prior to the provincial election anticipated on June 7, 2018.

4.5 Under the a-BBPP, municipalities will have the option to remain as service providers for industry stewards that are responsible for the collection and processing of designated materials either directly, or by subcontracting to private sector companies with municipal compensation coming directly from the industry stewards. Municipalities can also opt out of providing the service altogether and industry stewards will coordinate 3rd-party service providers for blue box collection in single family homes.

4.6 Retaining Blue Box service delivery responsibilities means that municipalities will assume responsibility for achieving the prescribed program targets or specifications and will also be liable for any penalties for failing to meet them. Opting out will result in municipalities avoiding all liabilities and costs. Municipalities, once the new a-BBPP is approved by the Minister, will no longer control how services are delivered or which materials are collected.

4.7 Regional staff will continue to participate in the Blue Box transition consultations and will report back to Regional Council with recommendations as required. Regardless of the ultimate decision on how Durham will proceed, the Region must prepare itself for the transition and inevitable impacts on Durham's current integrated waste management system, its Regional Bylaw and future waste management plans. Regional staff of the Works and Finance Departments have already reviewed all collection, processing and related contracts and have commenced negotiations with private sector service providers to align existing contract expiry dates with anticipated program transition dates.

4.8 To assist with transition and, subject to Budget approval, Regional staff will undertake preparatory work and analyze all affected assets and programs from an operational and financial perspective. Regional staff will develop a scope of work for any additional consulting requirements as well as pursue opportunities for grant funding under the Continuous Improvement Fund (CIF).

4.9 The Blue Box program for Durham involves approximately 49,000 tonnes of materials collected through curbside (single family and multi-residential) programs and processed at the Garrard Road Materials Recovery Facility (MRF) plus approximately 600 tonnes of recyclables collected at the Oshawa, Scugog and Brock Waste Management Facilities (WMFs). The Region also distributes approximately 7,000 new Blue Box bins annually to residents from the Region's Waste Management Centre also on Garrard Road adjacent to the MRF in the Town of Whitby. In terms of disposal, approximately 2,400 tonnes of garbage residue disposal results from Blue Box processing at the MRF.

4.10 Smaller EPR programs which are currently 100 per cent funded by industry stewardships, include the following:

A) **Used Tires** – This program, funded by the Ontario Tire Stewardship (OTS), is due to transition by December 2018. Durham currently collects approximately 200 tonnes of used tires annually at the Oshawa, Scugog and Brock waste management facilities (WMFs).

B) **Waste Electrical and Electronic Equipment (WEEE) -** The WEEE program is funded by the Electronic Stewardship and is anticipated to be fully transitioned by 2020. In 2016, the Region collected 614 tonnes of WEEE. This comprises approximately 500 tonnes collected at the Oshawa, Scugog and Brock WMFs, 30 tonnes at waste special events, 70 tonnes from curbside collections and a further 14 tonnes from its multi-residential sector.

C) **Municipal Hazardous and Special Wastes (MHSW)** – The hazardous waste or MHSW program is funded by SO and is anticipated to be fully transitioned by 2020. In 2016, the Region received approximately 700 tonnes of MHSW from Regional WMFs including approximately 230 tonnes from the privately owned Pickering WMF, as well as 100 tonnes of batteries collected through curbside and WMF programs and a further 1.2 tonnes of batteries from the multi-residential sector.

5. The Province's "Proposed Food and Organic Waste Framework"

5.1 On November 16, 2017, the Province released its "Proposed Food and Organic Waste Framework", including actions to shift Ontario towards a circular economy: "…a system in which materials are never discarded, but reused or recycled into new products and reintegrated into the market." (Framework, page 3).

5.2 The Framework includes a proposed "Policy Statement" which gives direction to reduce food and organics waste throughout the production, distribution, consumption and recovery of food and organic waste (Framework, page 40).

5.3 The Framework suggests various approaches for municipalities which depend on location within Ontario, size and whether or not the municipality has an existing source separated organics (SSO) collection program. For municipalities already operating a curbside collection program for source separated food and organics, the province currently proposes a 70 per cent organics reduction and recovery target for single family dwellings by 2023.

5.4 The Framework aims to 1) reduce food and organic waste, 2) recover resources from food and organic waste, 3) support resource recovery infrastructure, and 4) promote beneficial uses of recovered resources. The Framework supports consideration of mixed waste pre-sort and processing, which is a key component of the Region's long-term organics management study and the current RFI. The province recognizes mixed waste pre-sort and processing as a way to increase organics diversion and resource recovery for municipalities that already have SSO collection programs (e.g. Durham's Green Bin) not as a replacement for source separation programs.

Environmental Bill of Rights (EBR) Registry Posting #013-1814, the Ministry of the Environment and Climate Change "Proposed Food and Organic Waste Framework," (November 2017), includes a deadline for comments of January 15, 2018. Accordingly, staff will be submitting the comments detailed in Recommendation B of this report in order to meet the Provincial deadline, along with an explanation that the comments are subject to approval by Regional Council on January 17, 2018. Subsequently, staff will advise the Ministry of Council's endorsement of, or any amendments to, those comments.

5.5 An Request for Information (RFI #1158-2017) has been issued to gather information from the marketplace and potential business partners on viable options for the Region's long-term organics management plan as reported to Council in 2017 (2017-COW-180). The RFI is to gather information on cost-effective, proven and innovative technologies and commercial arrangements and/or potential business relationships which could assist the Region in achieving its objectives, which include:

A) Discovering the options for the cost-effective receipt and transfer of municipal solid wastes (MSW) and organics, as well as operations for mixed waste pre-sorting to enhance organics and recyclable waste diversion from disposal for single family and/or multi-residential households. The transfer and mixed waste pre-sorting facilities may be co-located or in separate locations.

B) Implementing a future long-term organics processing strategy that maximizes system wide investment benefits while minimizing net integrated solid waste management system costs;

C) Obtaining relevant information on end markets, revenues and potential end-destinations for by-product opportunities, including compost/digestate, recovered energy, or other opportunities associated with residues related to enhanced organics diversion and processing options;

D) Meeting all regulatory requirements under the Climate Change Mitigation and Low-carbon Economy Act, 2016 and Waste Free Ontario Act, 2016, including the Waste Diversion Transition Act, 2016, Resource Recovery and Circular Economy Act, 2016 and the proposed Ontario Food and Organic Waste Framework, 2017 and while ensuring compliance, where applicable, with the Ontario Compost Quality Standards; and

E) Assessing organic management options based upon an integrated solid waste management system-wide perspective and conducting technical, financial and business case analyses to support recommendations to Regional Council by the spring of 2018, regarding a strategy for implementation of a sustainable and viable long-term organics management plan.

5.6 The Organic and Food Waste Framework requires that by-laws related to waste reduction and resource recovery must be made consistent with the Framework's Policy Statement within two years of the final Policy Statement coming into effect. Bylaw changes may also be required based on the changing frameworks for recyclables.

6. Climate Change Considerations

6.1 Municipal solid waste management programs are key contributors to achieving a low carbon society, by diverting materials out of the residual solid waste stream for re-use, recycling and composting. Re-using and recycling materials is far less energy and carbon-intensive than the production of comparable materials from virgin sources.

6.2 A key objective of the long-term organics management study is to increase the diversion of organics and consider opportunities for energy and resource recovery from organics to further offset waste emissions and/or create offsets for sale within the cap and trade market. The Region is also completing investigations of alternative options for the remediation of landfills, including the Blackstock landfill mining pilot, which is expected to provide a sustainable option to reduce methane emissions and reduce the risk of leachate migration during extreme precipitation events.

6.3 In terms of climate adaptation and risk management, the solid waste environmental studies program is responsible for the monitoring, inspection, and remediation of Regional landfill sites, including consultations with the public and ensuring environmental protection and regulatory compliance. Climate adaptation-related activities include: inspections; monitoring and reporting; well-water testing; and, repairs or improvements to protect ground water resources, including preventing rainfall infiltration and preventing leachate springs from forming around landfills.

7. Durham York Energy Centre (DYEC)

7.1 The DYEC has an approved processing capacity of 140,000 tonnes per year (110,000 tonnes Durham Region and 30,000 tonnes York Region). For 2018, staff anticipates that Durham could generate upwards of 120,000 tonnes of residual waste for disposal which would exceed the regulated annual processing capacity of 110,000 tonnes (Durham share). Instead of disposing this by-pass waste, staff recommend that, subject to 2018 Budget approval, Durham Region enter a sole source contract with Canada Fibers Ltd. to conduct a mixed waste processing pilot to process and conduct a waste characterization study for up to 10,000 tonnes waste.

7.2 Canada Fibers Ltd. recently purchased the Dongara residential waste processing facility, located in the City of Vaughan, which previously processed residential mixed waste into fuel pellets. As a result of the Province not approving the use of these pellets as fuel in Ontario, Dongara discontinued the operation and sold the facility. Canada Fibers has repurposed this asset as a pilot mixed waste processing facility to better understand the characterization of Greater Toronto Area (GTA) residential waste as well as the mechanics and outcomes of sorting this waste to recover organics and recyclables. Canada Fibers has used this facility to analyse waste to conduct waste characterization of waste from the City of Toronto and the Region of Peel as part of their long term waste management planning.

7.3 In light of the impending and significant legislative changes for the Blue Box and organics, the proposed waste characterization study will be fundamental in providing the information necessary to verify models and make planning and operating decisions.

7.4 Although it would cost approximately $0.5 million more than the anticipated cost of 2018 haulage and disposal through the DYEC contract, the pilot would provide key current data to inform the current organics management study and plan implementation. Through the pilot, the Region could confirm the current composition of its single family and multi-residential mixed waste, receive key data on 2018 organics capture rates, and the rate of probable contamination and unmarketable wastes. All of these factors could affect the organic management strategy business case.

8. Waste Data Trends and Development

8.1 Table 1 below provides paid collection stop counts from 2012 to 2016, as well as 2017 (estimated) and 2018 budgeted stops based on anticipated household growth. Collection service stop count growth in 2018 is projected at 0.5 per cent.

Table 1:
Region of Durham Collection Stops
(2012 to 2016 Actuals, 2017 Estimated and 2018 Budget)

	2012	2013	2014	2015	2016	2017 Estimated	2018 Budget
Ajax	33,021	33,640	34,229	34,774	35,370	35,871	36,100
Brock	4,702	4,710	4,722	4,739	4,747	4,749	4,750
Clarington	29,106	29,678	30,218	30,751	31,443	32,291	32,400
Oshawa	46,188	46,645	47,230	47,878	48,616	49,245	49,500
Pickering	25,969	26,194	26,406	26,885	27,272	27,556	27,700
Scugog	8,187	8,194	8,206	8,245	8,265	8,274	8,280
Uxbridge	7,085	7,095	7,125	7,221	7,282	7,319	7,350
Whitby	37,647	37,987	38,262	38,455	39,390	39,628	39,900
Total	**191,905**	**194,143**	**196,398**	**198,948**	**202,385**	**204,933**	**205,980**

8.2 Over the previous five years of available actuals, overall tonnage growth has averaged approximately 1.3 per cent per year, compared to approximately two per cent growth per year over previous decades. However this does not imply less waste

is being managed. In fact, more waste is being managed, but the weight of individual items has been reduced over time to improve costs and functionality of products and packaging. For example, glass containers have been replaced with plastic and large household items have been downsized or lightweighted. Table 2 lists the tonnage of managed waste from 2012 to 2016 (actuals) as well as 2017 estimated tonnages and 2018 budgeted tonnages.

Table 2:
Regional Solid Waste Tonnages [2,4]
(2012 to 2016 Actuals, 2017 Estimated and 2018 Budget)

	2012	2013	2014	2015	2016	Estimated 2017	Budget 2018
Blue Box	51,688	50,466	49,531	48,268	47,924	49,024	49,260
Food Waste	26,898	27,487	27,007	26,796	27,611	28,354	28,495
Yard Waste [1]	25,469	25,268	32,123	27,554	24,728	26,939	26,945
Reuse programs	6,724	6,364	6,284	7,152	10,814	6,824	7,021
Garbage[3]	107,722	109,641	110,417	110,498	107,887	115,743	116,319
TOTAL	**218,501**	**219,226**	**225,362**	**220,268**	**218,964**	**226,886**	**228,041**

Notes:
1 The increased yard waste tonnages in 2014 were due to the 2013 ice storm clean-up. Yard waste includes Christmas tree collections.
2 Although included in the diversion rate calculation, the table above excludes backyard composting and grass cycling credits (representing an estimated 9,566 tonnes in 2016).
3 The garbage total excludes approximately 2,400 tonnes of garbage residue from the Region's Materials Recovery Facility related to Blue Box processing.
4 Figures may not add due to rounding.

9. Financial Implications and Risk

Sole Source Pilot

9.1 Further to the recommendation to sole source the processing of up to 10,000 tonnes of mixed waste with Canada Fibres Ltd., the Region's Purchasing By-law 68-2000, Section 8, permits acquisition of goods and services through negotiations under certain circumstances, including situations where there is only one known source of supply. Canada Fibers is the only private contractor with Provincial Environmental Compliance Approval (ECA) to operate a residential mixed waste processing facility in Ontario. The cost provided by Canada Fibers to process and haul the by-pass waste and conduct the pilot characterization study at its Vaughan facility is $1.2 million. Provided 10,000 tonnes of mixed waste would be by-passed at the DYEC, this cost would be offset by the foregone cost of approximately $0.7 million to by-pass the waste from the DYEC. As a result, the net cost of the recommended pilot characterization study could be reduced from $1.2 million gross cost to approximately $0.5 million.

Operations

9.2 Regulatory changes will have a minimal impact in 2018 as the first program transition will not be fully implemented until 2019 (used tires). Therefore, waste management costs for the current budget year will continue to be driven by the usual factors, including but not limited to: tonnages, waste volumes, growth, inflationary increases and market forces. However, 2018 requirements include preparatory work to ensure adequate data, costing and transition plans to protect the Region's interests during framework transition and to ensure support for the progression of long-term plans.

9.3 Future operational or capital cost impacts to the Region, related to changing solid waste management regulatory frameworks for recycling and organics management, will depend on the final release of new provincial policy and regulations anticipated in early 2018 and will require future Works and Finance staff reviews along with related consulting costs.). As information becomes available separate reports will be presented to Committee and Council which will identify the required studies and funding requirements (eg. Blue Box system and the Long Term Waste Management Strategic Plan).

9.4 The new Resource Recovery and Circular Economy Act, 2016 (RRCEA) will shift the waste management framework away from the municipal mandate, making industry stewards wholly responsible for the management of designated wastes. This will also mean shifting costs for the delivery of the Blue Box program from Durham property taxpayers (who currently fund approximately a net $5 million annually for the Blue Box program) to industry stewards and essentially to consumers. New regulations to be released in early 2018 will set the service levels for all EPR programs across Ontario including the scope of materials for which the industry stewards will have responsibility. Opting out of Blue Box service delivery will also mean that Durham Region can avoid all liabilities and responsibilities including the achievement of prescribed program targets and specifications, with potential penalties faced for failure to meet them.

Operational Costs

9.5 In addition to annual cost impacts from tonnage increases and growth, the Region's solid waste processing, inspection, transfer, haulage and disposal contracts increase annually based on escalation benchmarks, including Statistics Canada Consumer Price Index and diesel price indices.

9.6 Operational costs are anticipated to change significantly when the current municipal mandates for the Blue Box program shifts to Stewardship Ontario (SO) and the new Organics framework and associated regulations expands organics processing requirements.

9.7 The following Table 3 demonstrates budgeted and forecasted Region of Durham costs for Blue Box, Green Bin, yard waste, other diversion programs and garbage.

Table 3:
Budgeted Operational Costs ($000's)

	2016	2017	2018
1. Blue Box	**Budget Cost**	**Budget Cost**	**Forecast Cost**
Collection	10,940.6	10,928.1	10,988.3
Processing & Disposal	4,421.2	4,586.1	4,543.1
Material Revenues	(4,567.4)	(4,767.6)	(5,016.6)
Stewardship Ontario Cost Recovery	(5,349.8)	(5,764.9)	(5,762.0)
Sub-total Blue Box	**5,444.6**	**4,981.7**	**4,752.8**
2. Food Waste			
Collection	1,878.4	1,853.1	1,857.7
Processing & Disposal	4,445.8	4,409.6	4,622.5
Sub-total Food Waste	**6,324.2**	**6,262.7**	**6,480.2**
3. Yard Waste (including xmas trees)			
Collection	1,220.6	1,190.9	1,274.3
Processing & Disposal	2,231.9	2,197.4	2,284.6
Sub-total Yard Waste	**3,452.5**	**3,388.3**	**3,558.9**
4. Garbage			
Collection	4,349.5	4,298.5	4,345.9
Haulage, Processing & Disposal	18,522.4	18,886.6	18,382.1
DYEC Revenues & Recoveries	(11,537.0)	(11,406.2)	(11,421.1)
Sub-total Garbage	**11,334.9**	**11,778.9**	**11,306.9**
5. Other diversion (e.g. Transfer Stations)			
Collection	73.1	79.8	86.5
Net processing and disposal	14.8	15.4	16.7
Sub-total Other Curbside Diversion	**87.9**	**95.2**	**103.2**
Total Collection, Processing & Disposal	**26,644.0**	**26,506.7**	**26,202.0**
Annual box/bin promotional cost	**355.8**	**358.2**	**353.3**

Notes:

1. Excludes program-related administration, promotion and education costs and capital costs as well as the approximate net $0.15 million cost to run the Region's WMF facilities.

2. Reflects the Budgeted expenditures for DYEC and Collection, Processing and Disposal, net of associated Blue Box recoveries and revenues.

9.8 The transferred Blue Box mandate is anticipated to reduce net Regional solid waste costs by approximately $5-6 million once SO assumes the program mandate. Once transitioned SO is required to include an expanded host of waste materials in the province-wide standardized program as well as report on performance in achieving a set of diversion targets for each material representing an increase in province-wide diversion for the basket of Blue Box materials from today's 60 per cent to a level of 75 per cent.

9.9 The following presents the operational forecast for the DYEC, including DYEC operations and maintenance which is provided by Covanta Durham York Renewable Energy Ltd. (Covanta) through the Project Agreement and non-Covanta costs primarily related to environmental monitoring programs, Regional weigh scale staffing and technical and environmental consulting.

Table 4:
Durham-share of DYEC Operating and Maintenance Costs (2018 to 2022)

	2017	Forecast				
DYEC (Durham share only)	**Budget**	**2018**	**2019**	**2020**	**2021**	**2022**
Program Costs	14.8	15.0	15.2	15.5	15.5	15.8
Operating Revenues	(7.4)	(7.4)	(7.4)	(7.5)	(7.5)	(7.6)
DYEC Net Cost (Durham share only)	**7.4**	**7.6**	**7.7**	**8.0**	**8.0**	**8.2**

The Preliminary 10-year Solid Waste Management Capital Program

9.10 Major ongoing waste initiatives include the following and will be reported on in early 2018:

A) The long-term organics management study with $0.4 million expended to date and up to $0.3 million approved for consulting services to support the RFI in gathering market information for an organics management plan; and,

B) The Blackstock Landfill mining pilot is scheduled for project completion in mid-2018 with $1.1 million in approved funding and an additional $0.25 million anticipated in 2019 for landscaping restoration.

9.11 The preliminary 10-year capital program is shown in Table 5 below and remains subject to the release of finalized provincial regulatory frameworks, conclusions from the ongoing organics management study, business case results and Regional Council approvals.

Table 5:
Preliminary Solid Waste Management Major Capital Forecast ($ Millions)[(1)]

Capital Expenditures	Proposed 2018	2019	2020	2021	2022	2023-2027	Total 2018-2027
Capital Expenditures							
Landfill Remediation/ Reclamation		3.3	0.7	0.6	0.2	2.2	7.0
Organics Management Plan		169.5					169.5
Seaton WMF				8.5			8.5
Total Capital	**0**	**172.8**	**0.7**	**9.1**	**0.2**	**2.2**	**185.0**
Financing	**Proposed 2018**	**2019**	**2020**	**2021**	**2022**	**2023-2027**	**Total 2018-2027**
Property Taxes		3.3	0.7	4.6	0.2	2.2	10.5
Other				5.0			5.0
Debentures		169.5					169.5
Total Financing	**0**	**172.8**	**0.7**	**9.1**	**0.2**	**2.2**	**185.0**

Notes:
(1) Depending upon the new provincial regulatory and funding framework for existing and potential new diversion programs and potential opportunities available to the Region as service provider under the shift to extended producer responsibility, an additional $9 million could be added to the capital forecast, subject to business case, for the implementation of eco-stations or related reuse program modifications to existing WMFs.
(2) Other financing includes funding to be received as part of the Seaton Front-Ending Agreement.
(3) The Capital Forecast is subject to business case reviews.

Asset Management

9.12 The Region owns six facilities related to Solid Waste Management with an estimated replacement cost at year-end 2016 totaling $233 million. These facilities were given an overall condition rating of “fair” to “very good,” at year-end 2016 (Report 2017-COW-147) based on recent assessments. The remaining life of waste assets is estimated at over 35 years.

9.13 Aspects of rehabilitation, repair and renewal and replacement are accounted for as part of the operating and maintenance fee and inspection and reporting clauses of the solid waste management programs public – private partnership contracts (P3s) for the material recovery facility and the DYEC. For other assets a strategic approach is undertaken and supported by regular and proactive maintenance and periodic building condition assessments through the asset management program.

9.14 In 2018, replacement capital assets are anticipated to include equipment replacements as well as maintenance investments at the Oshawa and Brock WMFs primarily roadway resurfacing and re-grading. New tangible capital assets will include, among other items, equipment for the Clarington MHSW facility to be operational by the third quarter of 2018.

The Climate Change Mitigation and Low Carbon Economy Act, 2016

9.15 The Climate Change Mitigation and Low Carbon Economy Act, received Royal Assent on May 18, 2016 and with associated regulations established Ontario’s cap and trade emissions trading program with an effective date of January 1, 2017. The cap and trade emissions trading system presents additional uncertainties as well as potential opportunities related to solid waste management.

9.16 Mandatory emitters such as the DYEC have a compliance obligation and are required to remit a total number of emission allowances or related equivalent compliance instruments equal to the carbon dioxide-equivalent (CO2e) emissions created during the compliance period.

9.17 On November 17, 2017, the Region received confirmation from the MOECC that the request for free allowances, totaling 75,170 tonnes of CO2e (net of biomass) had been approved. There is some risk given that should reported DYEC emissions increase over time, or the biomass proportion decrease, additional allowances may be required to true-up the Region's obligation in late-2021 after the end of the current compliance period.

9.18 Based on the $17.38 per tonne of CO2e auction price, the total value of DYEC's current 2018 free allowances is approximately $1.3 million.

9.19 The Region may also be able to use compliance-based carbon offset credits, purchased through the secondary market or created through projects in non-capped sectors, to meet future compliance obligations.

9.20 Carbon offsets represent one tonne of CO2e reduced, avoided or removed from the earth's atmosphere attributable to an eligible project or initiative undertaken. Offset credits can provide flexibility to the cap and trade market and can lower overall compliance costs (depending on emission program, jurisdiction and related protocol requirements). The province is allowing up to eight per cent of an emitter's compliance requirement to be met through verified offset credits (i.e. potentially eight per cent of the DYEC obligation could be met through approved offset credits).

9.21 Additional clarity will be required around the creation and possible uses of carbon offsets, as the province currently proposes that offset credits can only be generated through projects/initiatives that are not already included within regulated sectors (only in non-capped sectors). It is anticipated that future carbon offset protocols may provide opportunities for Regional participation within the solid waste management (organics processing). Clear and reliable price signals will be essential to inform project evaluation and associated quantification of offset financial benefits and it is important that the Ministry ensure the proposed organics landfill ban will not eliminate offset opportunities related to potential organics processing.

9.22 Additional certainty is anticipated from pending organic waste digestion and organic waste management protocols. The MOECC is currently establishing these and other protocols under the carbon offset regulatory framework, which will set project rules to determine eligibility for carbon offset creation.

9.23 Regional staff continue to monitor market, regulatory and policy developments to assess possible implications regarding the cap and trade program and in particular, implications to the DYEC and opportunities to generate carbon offset credits as part of development of the Region's long-term organics management plan. Feedback to the province will continue to be provided through public review processes and comment periods as appropriate.

Financial Risk and Uncertainty

9.24 The changing regulatory context for waste management programs as outlined in this report results in uncertainty and challenges in projecting 10-year capital and 5-year operations requirements. Financial risks result from:

A) DYEC emission compliance cost risk related to: changing emission caps as they are reduced through time by the province; the availability of free allowances beyond 2020; actual facility GHG emissions and biomass changes over time;
B) Shifts in waste composition related to changing Regional waste programs and changes resulting from the private sector response to provincial EPR programs (e.g. continued light weighting of packaging, regulated waste reductions and impacts from private sector retail-return programs etc.);
C) Pending regulatory protocols for organics management and potential impacts to opportunities for Regional carbon offset credits;
D) Potential for increased municipal capital, operating and contractual costs to comply with new recycling and organics frameworks;
E) Ongoing market fluctuations for diverted products marketing and sales; and,
F) Growth rates and related fluctuations in tonnages managed, collection stop counts, contractual escalation based on macro-economic indicators and Statistics Canada Benchmarks.

9.25 Annual revenues from Blue Box material marketing continues to present risks due to market based fluctuations (i.e. commodity markets for metals, plastics, and paper fibres). Budget to actual price variances and tonnage variances are tracked and assessed continuously. Plastics and metals are affected by:

A) Industry light-weighting of packaging materials;
B) World oil prices;
C) Demand for raw materials relative to recycled content; and,
D) Population growth and economic activity.

9.26 The 2017 Budget for commodity revenues generated from the curbside collection of fibres, plastics and metals was set at $4.8 million. The current forecast for 2018 Budget for materials commodity revenues will be based on average actual revenues received over 2016 and 2017 and staff analysis of market trends, and will be in the range of approximately $5.0 million.

9.27 In order to mitigate these risks Regional staff are undertaking due diligence analysis and studies focused on potential changes. In addition, Regional staff have reviewed affected contracts, assets, programs and services and are undertaking the ongoing organics management study (RFI closes in January 2018). Further, this report recommends that a mixed waste composition study be undertaken in 2018. The goal of ongoing work is to ensure adequate knowledge and data to inform potential future transition negotiations as well as long-term capital and operational programs.

10. Conclusions

10.1 Staff will keep Regional Council apprised of emerging Provincial direction and transition requirements and will make recommendations that best position the Region related to changes that may affect programs over the current and future planning periods. In addition, staff will identify and report back on the need for specific studies which will provide baseline information and options analysis as well as inform the update of the Region's Long Term Waste Management Strategy as more information emerges.

10.2 Final recommendations for the detailed Solid Waste Management Business Plan and Budget will be presented to Committee of the Whole and Regional Council on February 7, 2018.

11. Attachments

Attachment #1: Update on Existing Solid Waste Management Programs

Attachment #2: Solid Waste Management Performance Measures

Attachment #3: List of Acronyms

Respectfully submitted,

Original Signed By

R.J. Clapp, CPA, CA
Commissioner of Finance

Original Signed By

S. Siopis, P. Eng.
Commissioner of Works

Recommended for Presentation to Committee

Original Signed By

G.H. Cubitt, MSW
Chief Administrative Officer

2018 Solid Waste Management Program Updates

Promotion and Education

Promotion and Education (P&E) have proven to be an effective way of enhancing participation in and adherence to waste diversion programs. With the implementation of new waste legislation (*Waste Free Ontario* Act, 2016) in 2018, P&E will play a critical role in supporting public participation in resource recovery. Blue box messaging will be marginalized and the new direction will focus on organic and non-transitioned EPR programs (like batteries, electronics, etc.) Organic program messaging will follow the Region's Four R hierarchy (Reduce, Reuse, Recycle, and Recover) emphasizing food waste prevention. Effective food waste prevention programs can reduce the amount generated for curb collection and their associated costs.

In addition, the Region's population is becoming **increasingly diverse**. There is a growth in the number of new residents to the Region without recycling competencies. Message/promotion translation is needed to make Regional programs accessible to these communities.

School Outreach Program

The lesson plan and message taught in 2018 will reflect the changes in both the Region's strategic direction and legislated transitional period. There will be a focus on food waste prevention and an effort to supply content relating the Region's program to specific class subjects, thereby, increasing the relevance of the Regions message for both teachers and students.

In addition to conventional education tools, lesson plans will leverage the new high-quality virtual tour of the the Durham York Energy Centre (DYEC) thereby enhancing the quality and interactivity of the Region's message.

Holiday Collection Schedule

The following are dates on which waste collection services will not be provided in 2018:

Monday, December 25, 2017 (Christmas Day)
Monday, January 1, 2018 (New Year's Day)
Monday, February 19, 2018 (Family Day)
Friday, March 30, 2018 (Good Friday)
Monday, April 2, 2018 (Easter Monday)
Monday, May 21, 2018 (Victoria Day)

In the event that a waste collection day falls on a statutory holiday, a "day" shift schedule will be enacted. Monday collection will move to Tuesday, Tuesday will move to Wednesday and so on until Friday collection moves to Saturday

Durham York Energy Centre

The Durham York Energy Centre (DYEC) processed approximately 140,000 (pit inventory) tonnes of waste from January 1, 2017 to December 30, 2017, while recovering approximately 2,940 tonnes of ferrous metal, 375 tonnes of non-ferrous material and generating approximately 98,200 MWh of electricity for sale to the provincial grid.

The 2017 environmental monitoring data has be submitted to the MOECC as part of the annual reporting requirements for ambient air, groundwater and soil. In 2017, there were no environmental exceedances of water, air or soil verified to be due to DYEC operations. Source testing at the DYEC has shown that the facility is operating within environmental requirements and has confirmed that the facility is not significantly impacting the surrounding environment.

On the Region's behalf, Covanta is developing an ISO 14001:2015 system and is expected to meet the January 29, 2018 deadline for completion.

Durham York Energy Centre Presentations / Tours

The DYEC garners significant interest with the public. Facility tours and presentations can provide the Region with an excellent opportunity to educate and increase goodwill among stakeholders. There were approximately thirty-three (33) tours involving approximately 450 participants in 2017. Tours and presentation will continue will be booked through wastefacilitytours@durham.ca in 2018, and approved on a case-by-case basis.

Clarington Municipal Hazardous and Special Waste (MHSW) Facility

The DYEC Host Community Agreement with the Municipality of Clarington includes agreement for the Region to implement a Regional MHSW facility located in the Municipality of Clarington. The former police station at 1998 Regional Road 57, was selected as the location of the new MHSW facility in cooperation with Clarington. The operation of a MHSW facility requires an ECA from the MOECC. Dillon Consulting was retained in September 2017 to assist the Region with the ECA application. The design and construction phases of the project will proceed in parallel with the ECA approval process with a planned start date in the summer of 2018.

Landfill – Rehabilitation

Blackstock Landfill Mining Project

This project includes excavating, sorting and screening of waste from the Blackstock landfill. Metals and oversized waste will be removed for recycling and the balance of the waste will be screened to remove soil and organic matter. The recovered waste will be processed at the DYEC and the soils and organic matter will be used to regrade the property. Once completed, the site will be covered in a natural vegetated cover.

This project began in December 2017 and is scheduled to last 18 weeks. A report outlining the mining activity will be included in the annual groundwater and surface water report for the MOECC on June 30th, 2018. As per the ECA, the Region may request changes to the Blackstock Landfill annual monitoring program to reflect the site's transition from a "closed landfill site" to a "greenfield site".

On August 1, 2017 the Federation of Canadian Municipalities (FCM) confirmed that it will grant the Region $350,000 toward the Blackstock landfill mining project upon completion ($1.1 million approved total project cost).

Oshawa Landfill

The Post Closure Care Plan for the Oshawa Landfill recommended site maintenance activities ranging from low cost bio-remediation options to more expensive engineering solutions. In this effort, a geomorphology study identified five high priority areas requiring remediation. Coordination with external stakeholders and approval agencies has delayed these remediation projects to 2018.

Material Recovery Facility (MRF)

Problematic Markets

It is anticipated that recyclable markets in 2018 will be uncertain. In July 2017, the government for the People's Republic of China notified the World Trade Organization that it intended to prohibit the import of certain wastes including mixed paper and mixed plastics. China has also announced a new, excessively stringent 0.5 per cent contamination standard for recycling material imports. These new restrictions are scheduled to come into effect on January 1, 2018 and will effectively ban recycling and scrap commodity imports into China.

The restrictions by China will likely decrease the value of plastics and paper materials sold into Ontario recycling markets and may result in the need for the Region to store materials temporarily at the MRF until more favourable markets can be found. It is anticipated that the recently completed capital upgrades to the MRF will improve container processing throughput and increase the MRF's ability to adapt to these recycling market changes.

Bale Wrap

Until recently, Durham collected bale wrap for recycling at its three WMFs as a no cost program to residents under contract to Think Plastics of Fergus, Ontario who used bale wrap in the production of plastic lumber. Durham's WMFs collect approximately 50 tonnes of this material annually.

Recent market changes have resulted in there being no processors in Ontario who collect bale wrap from municipal depots. Switch Energy Corporation of Clinton, Ontario

is currently the only vendor accepting bale wrap at all; however, Switch Energy will only collects directly from farms.

Before staff considers discontinuing its WMF bale wrap recycling program, staff will investigate alternate opportunities, including a possible partnership with Switch Energy Corporation to collect bale wrap directly from farmers on Durham's behalf.

Polystyrene

Until recently, Durham collected expanded polystyrene for recycling at its three WMFs as a no cost program to residents under contract to Grace Canada Inc. of Ajax. Grace Canada Inc. uses expanded polystyrene as a raw material in its industrial/commercial fireproofing products. Durham WMFs collect approximately six tonnes of material annually. Tightening market conditions required Grace Canada not to renew its contract with the Region in 2016 and staff issued a Request for Quotation (RFQ) in 2017; however, it received no bids.

Vendors commented that the Region collects loose polystyrene, but industry prefers it to be densified to save on transportation costs. At the writing of this report, the polystyrene market in Ontario has been significantly reduced and investing in a densifier unit (approximately $10,000) will not guarantee an end market for Durham's polystyrene. Staff continues to work with industry to identify alternative market opportunities.

Curbside Battery Collection Program

Durham's curbside battery collection program continues to maximize the capture of batteries while keeping mercury, cadmium, and other heavy metals out of the waste stream. Household batteries are actively managed in Ontario and recycled responsibly through proper processing and conservation of valuable resources.

Two scheduled curbside battery collections will occur in 2018; one in April and another in November. Program details will be posted on the Region's web site, on the Durham Region Waste Application, and shared on social media channels.

Waste staff will continue to educate and promote the curbside battery collection program with our residents, including enhanced partnerships and messaging with the local fire departments in order to keep the program momentum trending upwards.

Multi-Residential Waste Collection and Diversion

The Region provides battery, WEEE and textile collection programs at multi-residential properties in partnership with third parties, in addition to recycling collection. A total of 65 properties now have WEEE collection services and battery collection, supplied by Raw Materials Inc., continues to expand. It is now available at 94 properties.

On February 17, 2016 Council approved Report #2016-J-7 recommending a one-year multi-residential textile recycling pilot program with the Diabetes Canada Clothesline© Program. The pilot ran from November 1, 2016 to October 31, 2017 at nine host

properties. The charity has concluded the results were positive and that a region-wide program could divert up to 100 tonnes of textiles per year from disposal. Property manager feedback was also positive on the cleanliness and convenience of the program. Diabetes Canada proposes expanding its Clothesline© Program across Durham's multi-residential sector at no cost to the Region.

MHSW Operations

Durham operates its MHSW program in partnership with three stewardship organizations. Stewardship Ontario (SO) oversees the recycling of compressed cylinders and single-use dry cell batteries, Product Care Association (PCA) oversees paint recycling and re-use, solvents, pesticides and fertilizers, and The Automotive Materials Stewardship (AMS) oversees antifreeze, oil filters, and automotive fluid containers.

Durham collects approximately 1,000 metric tonnes of MHSW materials annually (2016). Of this total weight, Durham receives funding for approximately 70 percent of its operating costs from the stewardship organizations.

Solid Waste Management Performance Measures

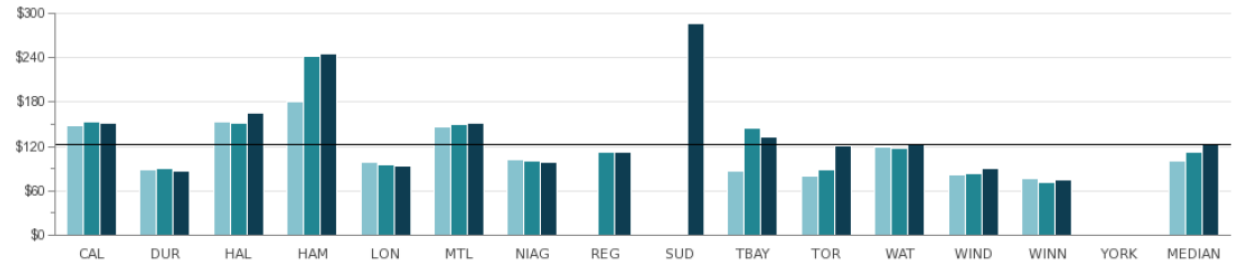
Once programs are implemented, performance is monitored, measured and evaluated. Performance measurement processes at Durham Region include:

- Measures incorporated into the annual detailed business plan and budget;
- Measures reported to provincial authorities as part of the Municipal Performance Measurement Program; and,
- Measures developed and reported through collaborative initiatives with other municipalities, including the Municipal Benchmarking Network Canada Performance Measurement Report.

The Municipal Benchmarking Network Canada 2016 Performance Measurement Report results are available for over 25 Durham Region service areas, including Solid Waste Management. Compared to peers, Durham Region's 2016 collection costs are relatively low, totaling $87 per tonne of garbage collected, compared to the median cost of $123 per tonne for the peer group overall.

Fig. 34.5 Total Cost for Garbage Collection per Tonne - All Property Classes

All Property Classes includes residential, and industrial, commercial and institutional (ICI) locations.



2014	$148	$88	$153	$180	$98	$147	$102	N/A	N/A	$87	$79	$120	$82	$76	N/A	$100
2015	$153	$90	$152	$242	$96	$150	$101	$113	N/A	$145	$89	$117	$84	$72	N/A	$113
2016	$151	$87	$165	$245	$94	$152	$99	$113	$287	$133	$121	$124	$90	$75	N/A	$123

Source: SWST311T (Efficiency)

Comment:

York Region operates a two-tier system, which means they are not responsible for curbside collection; however they are responsible for all processing. Therefore, York is able to report the total tonnes collected (see Fig 34.1 – SWST205); but not able to report the total cost.

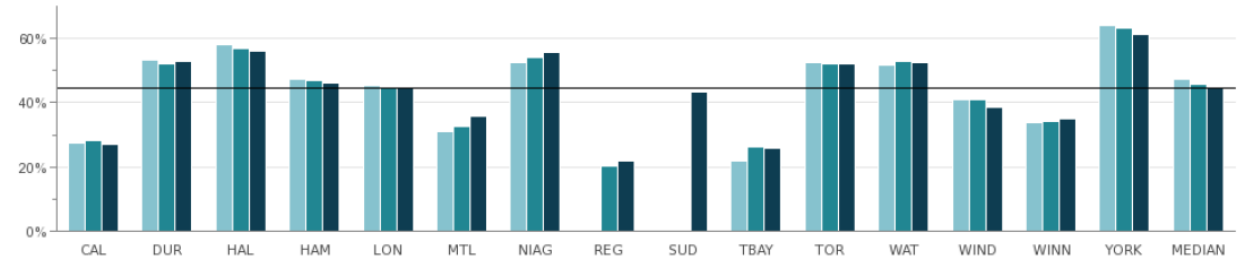
Durham Region is responsible for the curbside collection of all municipal solid waste within six of Durham's local area municipalities and collects Blue Box waste materials

within the City of Oshawa and the Town of Whitby who maintain responsibility for collection of garbage, Green Bin kitchen waste, yard waste, bulk goods and white goods materials within their jurisdiction. The Region receives all waste from each of the eight local area municipalities and is responsible for its processing, haulage, recyclables marketing and disposal.

Durham Region remains above the median diversion rate of its peers (a median of 44.7 per cent diversion compared to Durham Region's 52.8 per cent diversion rate for 2016).

Fig. 34.4 Percent of Residential Solid Waste Diverted

This measure demonstrates the percent of residential waste diverted away from landfills and incineration through programs such as organics, blue box, leaf and yard, municipal hazardous or special waste and other recyclable materials, e.g. wood, metal, tires.



2014	27.5%	53.2%	58.2%	47.3%	45.4%	30.9%	52.4%	N/A	N/A	21.8%	52.7%	51.7%	41.1%	33.6%	64.2%	47.3%
2015	28.3%	52.0%	56.9%	47.1%	44.5%	32.5%	54.3%	20.3%	N/A	26.1%	52.3%	53.0%	40.9%	34.3%	63.5%	45.8%
2016	27.2%	52.8%	56.2%	46.0%	44.7%	35.9%	55.9%	21.7%	43.3%	25.9%	52.1%	52.6%	38.7%	34.9%	61.5%	44.7%

Source: SWST105M (Community Impact)

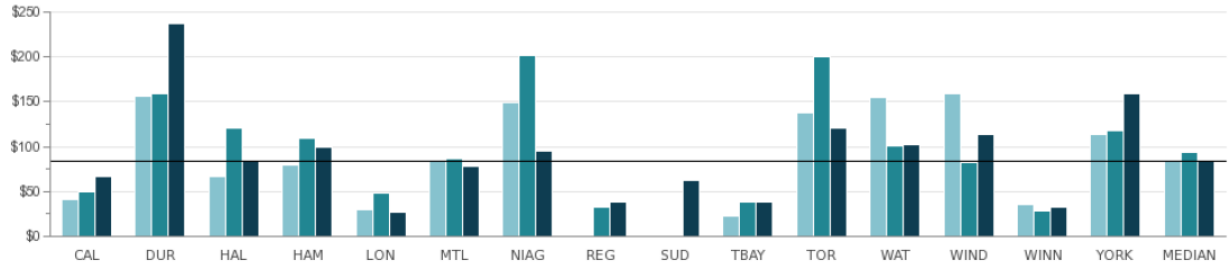
Durham Region's 2016 costs for waste disposal were above its peers at approximately $237 per tonne; compared to the median of $83 per tonne. Disposal costs are influenced by many factors including availability and distance to disposal sites, fuel costs and disposal site requirements. Also influencing disposal costs, the Region must monitor and provide perpetual care to seven existing closed landfill sites. Landfill sites represent long-term liabilities and continued environmental protection and periodic remediation, including surface and groundwater protection measures, are required periodically over the long-term.

Fig. 34.6 Total Cost for Solid Waste (All Streams) Disposal per Tonne - All Property Classes

All Property Classes includes residential, and industrial, commercial and institutional (ICI) locations.

Other impacts such as additional costs of transporting waste outside a community, aging infrastructure, capital costs, and the cost associated with the incineration of garbage, service agreements, increase in leachate treatment and fluctuating fuel costs can impact the results. In addition, declining landfill capacities typically result in increased landfill rates.

The results can be impacted significantly due to the recording of post-closure landfill liability costs.



2014	$41	$157	$66	$79	$30	$85	$149	N/A	N/A	$23	$138	$155	$159	$35	$114	$85
2015	$50	$159	$120	$109	$48	$87	$202	$32	N/A	$38	$200	$101	$82	$28	$118	$94
2016	$66	$237	$83	$99	$27	$78	$95	$38	$62	$38	$120	$102	$114	$32	$159	$83

Source: SWST325T (Efficiency)

Comment:

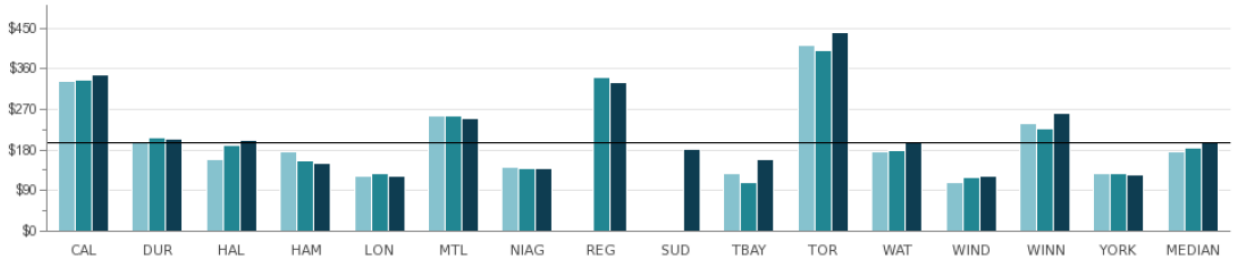
Durham and York Region's increase is due to the first full year of operations for the Durham York Energy Centre.

2016 MBNCanada Performance Measurement Report Waste Management - 199

Durham's cost to divert a tonne of garbage was $205 per tonne, slightly above the peer group median of $195 per tonne in 2016. Cost differences across municipalities reflect diverse service levels and differing circumstances, including the types and amounts of diversion materials collected, the level of promotion and education expenditures, the magnitude, age and condition of recycling infrastructure, private versus public service providers and other factors (e.g. distance to market and material revenues and composition).

Fig. 34.7 Total Cost for Solid Waste Diversion per Tonne - All Property Classes

All Property Classes includes residential and Industrial, Commercial and Institutional (ICI) locations.



2014	$332	$199	$159	$175	$123	$255	$142	N/A	N/A	$126	$413	$175	$108	$238	$128	$175
2015	$335	$208	$191	$156	$126	$255	$138	$340	N/A	$106	$401	$179	$120	$227	$126	$185
2016	**$346**	**$205**	**$201**	**$151**	**$123**	**$249**	**$138**	**$331**	**$181**	**$159**	**$442**	**$195**	**$123**	**$260**	**$125**	**$195**

Source: SWST330T (Efficiency)

List of Acronyms

a-BBPP	Amended Blue Box Program Plan
AD	Anaerobic Digestion
AMS	Automotive Materials Stewardship
CIF	Continuous Improvement Fund
COW	Committee of the Whole
CO_2e	Carbon Dioxide-Equivalent
DYEC	Durham York Energy Centre
EBR	Environmental Bill of Rights
ECA	Environmental Compliance Approval
EPR	Extended Producer Responsibility
FCM	Federation of Canadian Municipalities
GHG	Greenhouse Gas
GMF	Green Municipal Fund
GTA	Greater Toronto Area
ICI	Industrial, Commercial and Institutional
ISO	International Organization for Standardization
MBN	Municipal Benchmarking Network
MHSW	Municipal Hazardous and Special Wastes
MOECC	Ministry of the Environment and Climate Change
MRF	Materials Recovery Facility
MSW	Municipal Solid Waste
MWh	Megawatt-Hour
OTS	Ontario Tire Stewardship
P&E	Promotion and Education

PCA	Product Care Association
RFI	Request for Information
RFQ	Request for Quotation
RPRA	Resource Productivity and Recovery Authority
RRCEA	*Resource Recovery and Circular Economy Act*
SO	Stewardship Ontario
SSO	Source-Separated Organics
WDTA	*Waste Diversion Transition Act*
WEEE	Waste Electrical and Electronic Equipment
WFOA	*Waste Free Ontario Act*
WMF	Waste Management Facility