# Residential Waste Diversion Calculation

**Recommendation**

That Utility Committee recommend to the June 26, 2018, City Council Meeting:

> That the proposed single unit residential waste diversion rate calculation methodology, as set out in the June 8, 2018, City Operations report CR_5824, be approved.

## Previous Council/Committee Action

At the March 20, 2018, City Council meeting, the following motion was passed:

That Administration review the scope and assumptions of the residential waste diversion metric, as outlined in the February 9, 2018, Office of the City Auditor report CR_5555 (Waste Services Audit) and return to Utility Committee by June 2018 with a recommendation on the diversion calculation methodology.

## Executive Summary

The key strategic goal for the City of Edmonton's Waste Services is maximizing diversion of single unit residential waste. As processes and technologies change at the Edmonton Waste Management Centre (EWMC), it is important to verify diversion metrics to accurately track progress toward a single unit residential diversion rate of 90 percent. The 2018 Waste Services Audit prompted Waste Services to re-evaluate the diversion rate calculation methodology as it relates to single unit residential waste.

Waste Services assessed and incorporated the audit recommendations. The refined methodology enables Waste Services to:

- identify accurate and verifiable waste quantities;
- compare residential waste performance year over year;
- communicate results of waste diversion programs;
- inform budgets; and
- illustrate the success of Edmonton's sustainable waste management system.

This report summarizes Waste Services' efforts and results under the adjusted single unit residential waste diversion rate calculation.

## Report

Background

Edmonton's residential waste is collected through the single unit curbside collection program and the multi-unit bin collection program. Waste is then transported to the Edmonton Waste Management Centre (EWMC) for processing or disposal. Situated on 233 hectares, the EWMC is a collection of waste processing and research facilities that reduce how much waste goes to landfill.

The goal of diverting 90 percent of residential waste from landfill was established in 2007 in the Waste Management Policy C527 and the City of Edmonton's overall Environmental Strategic Plan (*The Way We Green*). Over the past 25 years, the City introduced various programs aimed at diverting waste from landfill and encouraging residents to reduce, reuse and recycle. The 90 percent target drives all Waste Services planning and program development toward a more sustainable approach to waste management.

The diversion rate calculates the percentage of waste from single unit residential households that is processed, reduced or otherwise diverted from landfill. There is a gap between the current residential diversion rate and the 90 percent goal. Planned and approved operational adjustments (including having the Anaerobic Digestion Facility and Waste-to-Biofuels Facility fully operational) will position the City to achieve a single unit residential diversion rate of approximately 73 percent. The remaining gap will be addressed by aligning Edmonton's waste collection system and programs with best practices for municipal waste.

Residential Waste Diversion Methodology

In response to the City Auditor's recommendations, Waste Services will develop and implement a formal Performance Management Framework, review performance measure targets and calculation methodologies. This will be integrated into the enterprise performance management system described in the May 8, 2018, Urban Form and Corporate Strategic Development report CR_5839rev, and ensure reliable, comparable and consistent information that supports management decision making and helps to achieve corporate and branch goals. The first step is the methodology development, which was completed as part of this report.

The balance of the work involves Waste Services re-evaluating the consistency, adequacy, reliability and comparability of its performance measures, including the single unit residential waste diversion rate calculation. This work is ongoing.

Waste Services has completed the following:

- updated assumptions for grasscycling and backyard composting programs based on revised survey results;

- reconciled the tonnage of waste diverted through waste facilities, such as recycling depots and Eco Stations;
- revised assumptions to more accurately split residential and non-residential waste; and
- revised assumptions to split single unit and multi-unit residential waste, in line with other municipalities.

Waste Services calculates the single unit residential waste diversion rate as follows:

$$\%\ \text{Single Unit Residential Waste Diverted} = \frac{\text{volume of waste generated by residents - volume of residential waste to landfill}}{\text{volume of waste generated by residents}}$$

The waste diversion rate calculation presented in this report only relates to waste from single unit residences; it does not include multi-unit residential or non-residential waste.

Edmonton is the only large municipality in Canada that collects all multi-unit residential waste. A 2016 waste characterization study examined the composition of waste and recycling from both single unit and multi-unit residences. The study highlighted differences in the types of waste found in each stream, as well as differences affecting diversion rates.

Based on the results of the characterization study, diversion calculations for single unit and multi-unit residences will be reported separately. Waste Services will report back on diversion targets and processes for calculating these waste streams in June 2019.

Edmonton's single unit residential waste diversion calculation methodology aligns with the residential waste diversion rate calculation methodology outlined in the Residential GAP - Manual on Generally Accepted Principles (GAP) for Calculating Municipal Solid Waste System Flow. The GAP process addresses a need for a common reporting framework to be used by municipalities across Canada to report waste generation, diversion and disposal. There is no standard approach, other than Residential GAP, for measuring solid waste system flow for municipalities in Canada.

The methodology was developed in 2003 by Corporations Supporting Recycling. It is used in Ontario by the Resource Productivity and Recovery Authority (RPRA) for municipal waste measurement reporting. RPRA is Ontario's oversight, compliance and enforcement organization that oversees development, implementation and operation of the diversion program for wastes designated under the *Waste Diversion Transition Act*.

Waste Services chose to follow the GAP framework because it is comprehensive, transparent and the only methodology publicly available in Canada. Many Canadian cities do not publish their methodologies, making city-to-city comparisons difficult.

Residential GAP defines the following terms:

- Diversion = allowance for deposit system + allowance for on-property management + reported reuse + reported recycling (net of processing residues) + reported composting (net of processing residues)
- Disposal = processing residues + energy-from-waste + landfill
- Generation = total waste diversion + total waste disposal
- Diversion rate = diversion divided by generation multiplied by 100 to yield a percentage

The notable differences between Waste Services' single unit residential diversion rate calculation and Residential GAP are:

- The allowance from deposit system is not included in the calculation, as this program is not operated by the City.
- Reported reuse is not included in the calculation, but material reused through the Reuse Centre is included.
- The waste-to-biofuels technology is included as diversion in the calculation. Waste-to-biofuels technology was not referenced in the residential GAP definition of diversion in 2003. However, we include it at this time, as its inclusion as diversion is consistent with similar technology across Europe.

Next Steps

Waste Services presented a revised diversion methodology calculation to the Office of the City Auditor. The Auditor's Office determined that the model is reasonable.

Procedural documentation will now be developed to assess the revised assumptions and validate the accuracy of the model. Waste Services will continue to work closely with the Office of the City Auditor to ensure the procedure documentation is sound and the results are accurate and replicable. Once this work is complete, a revised diversion measure result for 2017 and 2018 projections will be updated; these details will be included in the Waste Services Business Plan to be presented in August 2018.

Conclusion

Based on the City Auditor's recommendation, Waste Services re-evaluated the methodology for calculating single unit residential waste diversion. The diversion rate calculations, procedure and methodology will continue to be validated and reported as new processes begin, as facilities are fully commissioned and as new strategies are implemented.

## Public Engagement

No public engagement was completed for this report as public input was not necessary for development of the calculation methodologies.

## Corporate Outcomes and Performance Management

| Corporate Outcome(s): The City of Edmonton has a resilient financial position | | | |
|---|---|---|---|
| **Outcome(s)** | **Measure(s)** | **Result(s)** | **Target(s)** |
| The City of Edmonton has a resilient financial position | Implement a branch performance measurement framework that includes a process to regularly monitor and report on performance by December 31, 2018 | TBD | December 31, 2018 |

## Risk Assessment

| Risk Element | Risk Description | Likelihood | Impact | Risk Score (with current mitigations) | Current Mitigations | Potential Future Mitigations |
|---|---|---|---|---|---|---|
| Information | The single unit residential waste diversion rate calculation is only as accurate as the data used in the calculation. Inaccuracy of data could result in an inaccurate calculation | 2 - Moderate | 3 - Possible | 6 - Low | Regular management review and correction of data source | Implementation of new, fully automated weigh scale system and analytic tool |

## Others Reviewing this Report

- R. Kits / S. Padbury, Acting Deputy City Managers, Financial and Corporate Services
- C. Campbell, Deputy City Manager, Communications and Engagement
- L. McCarthy, Deputy City Manager, Urban Form and Corporate Strategic Development