



Module: Durham Region's Integrated Waste Management System

Introduction

Durham Region's (Region) integrated Waste Management is a strategic approach to managing waste by combining waste handling and waste reduction strategies that include rethink, reduce, reuse, recycle and recover. This lesson helps students understand waste management practices in the Region. Students will have the opportunity to discuss and make connections to waste disposal, their actions, and the environment.

Learning Objectives

1. Describe the Region's roles and responsibilities in relation to waste management.
2. Describe the Waste Hierarchy and understand why it is used by the Region.
3. Identify and describe the Region's five Rs using the Waste Hierarchy.
4. Explore and make connections between human actions, waste management, and the environment.

Resources Provided (located in the resource folder)

- [Durham's Integrated Waste Management System Video](#)
- [2022-2040 Long-term Waste Management Plan](#)
- Infographics
 - How Does Durham Currently Manage Waste?
 - Waste Management Hierarchy
 - What is a Circular Economy?
 - What is Extended Producer Responsibility?

Waste Management in the Region

In Durham, the responsibility for managing and reducing waste is shared by the Region, its eight area municipalities and their residents.

The Region manages curbside collection of residential green bin organics, leaf and yard waste and garbage in Ajax, Brock, Clarington, Pickering, Scugog and Uxbridge. The Region partners with both the municipalities of Oshawa and Whitby to ensure uniform collection programs Region-wide.

The Region is responsible for the final disposal or processing of the collected residential or household waste that is generated within residential homes, multi-residential buildings and for the waste collected at the Region's waste management facilities.

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Integrated Waste Management System

The Region developed its first waste plan in 1999, covering the period of 2000-2020, to guide the management of residential waste generated within the Region. Under the first waste plan, the Region began developing its Integrated Waste Management System (IWMS). This is a strategic approach to managing waste by combining waste handling and waste reduction strategies that includes the waste management hierarchy. As outlined in the video [Durham's Integrated Waste Management System](#), using the IWMS, the Region evolved from collecting only garbage and Blue Box materials to also collecting Green Bin organics, leaf and yard waste, electronics, tires, batteries, household hazardous waste, porcelain, and bulky goods. A goal under the Region's 2000 to 2020 Waste Plan was to achieve 50 per cent diversion of waste from disposal. The goal was achieved in 2008 and the Region reset the waste diversion target to 70 per cent.

Waste Management Hierarchy

The waste management hierarchy is a tool used to evaluate different processes, services, and options to manage waste that protects the environment from most favourable to least favourable actions. The hierarchy establishes preferred program priorities based on sustainability and climate change mitigation impacts. The Region recognizes the following waste hierarchy: rethink, reduce, reuse, recycle (including compost), recover, and disposal.

Rethink

Rethink means reconsidering how we view natural resources. Understanding that natural resources are limited can greatly influence the choices and products we buy.

Reduce

Waste reduction or waste prevention is about minimizing waste at the source, so it is not created in the first place. Reducing waste requires planning and making informed choices about products and packaging. Examples of reducing waste include drinking municipal tap water, buying in bulk, or meal planning to reduce food waste.

Reuse

Reuse means using a product more than once. Repairing products, selling them, or donating them also creates less waste. Reuse, when possible, is preferable to recycling because it does not need to be reprocessed before it can be used again.

Recycle

Recycling is the process of collecting and processing materials that would otherwise be disposed of as waste and turning them into new products. Recycling also includes composting, as it involves converting organic matter into something new.

Recover

Recover allows us to recover value from the waste that cannot currently be reused or recycled. Energy from waste is an example of recovery. After applying the first four Rs (rethink, reduce, reuse, and recycle), whatever is left over can be safely burned to create energy and to recover additional metals for recycling. By recovering the energy from the waste, we are significantly decreasing methane produced by landfills, offsetting the consumption of other fuels to produce energy, and reducing greenhouse gas emissions.

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Disposal

The disposal process is the final option in the waste management hierarchy. Landfills are the common form of waste disposal. This is the least preferred option to manage waste.

How is waste managed in the Region's current IWMS?

Curbside Collection

Under the current IWMS many materials are collected at the curb. Blue box materials and green bin organics are collected weekly while garbage is collected every other week. Leaf and yard waste are collected seasonally. Larger items such as scrap metal, porcelain bathroom fixtures, electronics and non-recyclable bulky goods are collected on request. Household batteries are collected twice per year in a special collection.

Multi-residential Collection

The Region provides waste services to just over 75 per cent of all multi-residential apartment/condominium properties in the Region. Special collection services at multi-residential properties include onsite battery, electronic waste, and textile collections.

Waste Management Facilities

The Region maintains three Waste Management Facilities in Oshawa, Port Perry and Brock for public drop-off of household hazardous waste, tires, electronics, leaf and yard waste, garbage porcelain bathroom fixtures, wood, drywall, large appliances and bulky items. There are two additional drop-off locations in Pickering and Bowmanville for household hazardous waste only. Materials such as tires, electronics and household hazardous waste are received at the Waste Management Facilities where they are picked up by various service providers for recycling or disposal.

Blue Box Materials

For many years, Durham Region has effectively managed the Blue Box program, collecting and sorting recyclable materials such as paper, cardboard, plastics, glass, and metal to prevent them from ending up in landfills or incinerators.

On August 15, 2019, the Ontario Government announced that the Blue Box program would transition to an Extended Producer Responsibility (EPR) model. In Durham, the shift to EPR began on July 1, 2024, with residents continuing to receive the same service including a two-box system, collection schedules, and accepted materials. As of January 1, 2026, producers assumed full, province-wide responsibility for the Blue Box program.

Collected blue box material is collected and transported to a Material Recovery Facility where it is sorted, baled, and shipped to other facilities to be made into new products.

Compost Facility

Green bin and leaf and yard waste organics are composted at privately owned and operated facilities. Leaf and yard waste is processed using an aerobic composting process, meaning the microorganisms breaking down the organic materials require oxygen. The finished compost is rich in nutrients and can be used on home lawns and in gardens. Green bin organics are processed through anaerobic digestion. This biological process involves microorganisms breaking down organic

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materials—such as food scraps and pet waste—without oxygen. The result is biogas, primarily composed of methane and carbon dioxide, and a nutrient-rich digestate.

Durham York Energy Centre

After all diversion efforts have been utilized, the Region manages its remaining residual waste primarily through energy recovery at a facility in Clarington. The Durham York Energy Centre (DYEC) is a waste management facility that produces energy from the combustion of waste. The DYEC generates enough electricity to power approximately 10,000 homes a year, captures residual metals and reduces the volume of waste going to landfill by up to 90 per cent.

2021-2040 Long-term Waste Management Plan

With the Region's Integrated Waste Management System, and the operation of the DYEC, the goals of the 2000-2020 Long Term Waste Plan were achieved. That is why the Region has developed its next 20-year Waste Plan from 2021 to 2040 (Waste Plan).

The Waste Plan guides the Region in developing innovative ways to use waste as a resource in a [circular economy](#), while demonstrating leadership in sustainability and mitigating environmental impacts. It emphasizes using the 5Rs (rethink, reduce, reuse, recycle and recover) as the first steps in reducing waste generation. The plan also outlines working with producers and importers of products and packaging to implement [Extended Producer Responsibility](#) and adjust the Region's waste programs, as required. As Durham Region's diverse population continues to grow, the Waste Plan also highlights the importance of delivering cost effective and accessible waste management services.

Action Plans will support the Waste Plan by setting smaller goals and milestones for the Region to achieve while working towards long-term objectives. There will be a total of three action plans, each picking up where the last one left off; the timelines include short-term (2022 to 2026), mid-term (2027 to 2033) and long-term (2034 to 2040). Action plans, with measurable targets accompanying actions, will be reviewed, and updated as necessary to ensure they are aligned with corporate direction and associated legislation.

Conclusion

Durham Region is one of the fastest growing municipalities in North America with its population expected to grow to 1.2 million by 2041 from an estimated 691,585 at the year-end 2018. Rapid, diverse population growth and urban intensification will impact the Region's future service delivery models and the amount of waste the Region will manage. Our integrated waste management system allows us to continue delivering innovative waste reduction, diversion, and disposal programs to meet the needs of our growing population.

Curriculum Connections

[The Ontario Curriculum, Grade 9 and 10: Canadian and World Studies, 2018 \(revised\)](#)

- Issues in Canadian Geography, Grade 9, Academic (CGC1D)
- Issues in Canadian Geography, Grade 9, Applied (CGC1P)
- Civics and Citizenship, Grade 10, Open (CHV2O)

[The Ontario Curriculum, Grades 11 and 12: Canadian and World Studies, 2015 \(revised\)](#)

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- Regional Geography, Grade 11, University/College Preparation (CGD3M)
- World Geography: Urban Patterns and Population Issues, Grade 12, University/College Preparation (CGU4M)
- Environmental Resource Management, Grade 12, University/College Preparation (CGR4M)
- World Issues: A Geographic Analysis, Grade 12, College Preparation (CGW4C)
- Living in a Sustainable World, Grade 12, Workplace Preparation (CGR4E)

[The Ontario Curriculum, Grade 9 and 10: Science, 2008 \(revised\)](#)

- Science, Grade 9, Academic (SNC1D)
- Science, Grade 9, Applied (SNC1P)
- Science, Grade 10, Applied (SNC2P)
- Science, Grade 10, Academic (SNC2D)

[The Ontario Curriculum, Grade 11 and 12: Science, 2008 \(revised\)](#)

- Environmental Science, Grade 11, University/College Preparation (SVN3M)