



# Lesson Plan: Energy from Waste, Grade 12 Living in a Sustainable World (CGR4E)

## Introduction

In the past, much of our garbage was disposed of in one of seven Durham Region (Region) owned landfills. These sites have been closed over time and the Region no longer had local landfill options available for our residential (household) waste. The Region began relying on landfill capacity across the border in the state of Michigan. However, this proved to be an unsustainable option as Michigan moved to close its border to residential garbage for disposal at Michigan landfill sites. In response, the Region shifted away from using landfills as their primary disposal option for residential garbage and now manage their garbage through Energy-from-Waste within the Region's own borders.

In this lesson, students will explore waste diversion opportunities to decrease the amount of garbage generated by their community, analyze issues related to the treatment and disposal of residential garbage, and assess the advantages and disadvantages of various treatment and disposal options.

## Learning Objectives

1. Demonstrate an understanding of residential (household) garbage is managed in the Region of Durham
2. Analyze the response by the Region to overcome the lack of waste disposal options for garbage within the Region
3. Analyze issues related to the treatment and disposal of residential garbage and assess the advantages and disadvantages of various treatment and disposal options (Energy from Waste and landfill)
4. Identify how consumer behaviour can impact the waste management system and what actions residents can make to decrease the amount of waste they create at home

## Resources Provided

- [Durham York Energy Centre Website](#)
- [Energy from Waste Process Overview](#)
- [Durham York Energy Centre Virtual Tour](#)

## Questions

1. What was the problem that led to the Region shifting to Energy from Waste from landfilling for the disposal of residential garbage?
2. What are the benefits to having a Region owned Energy from Waste facility in Durham Region, for the environment, the public, and the industry?
3. What government regulation(s) were required to approve, build, and operate the Durham York Energy Centre?
4. What actions can local area residents take at home to decrease the amount of waste being sent to the Durham York Energy Centre for disposal?

## The Regional Municipality of Durham - Waste Management Services

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5. Why is it important that residents continue to divert as much material as possible away from their garbage bag?

### Activity

1. Students will complete an independent report that analyzes the social, economic, and environmental issues related to the treatment and disposal of residential garbage
2. Students will include a table outlining the advantages and disadvantages of using Energy from Waste versus landfill for the processing and disposal of residential household garbage
3. Students will outline waste diversion programs that can be put in place to decrease the amount of garbage generated by a community
4. Students will include a final recommendation, based on their findings, for the use of landfill or Energy from Waste in their own community
5. As a class, students will share their recommendations and have an open discussion regarding their findings

### Summary

The Region no longer depends on landfills as our primary waste disposal option. Garbage that remains after maximizing the Region's waste diversion programs (Rethink, Reduce, Reuse, Recycle, and Compost) goes to the Durham York Energy Centre to generate electricity through incineration and to recover metals for recycling from the garbage. This reduces the amount of material being sent for disposal. It is important to remember that how we choose to manage waste today impacts the future.

### Curriculum Connections Expanded

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

#### Living in a Sustainable World, Grade 12, Workplace Preparation (CGR4E)

##### A. Geographic Inquiry and Skill Development

- A1. Geographic Inquiry: use the geographic inquiry process and the concepts of geographic thinking when investigating issues relating to the natural environment and sustainability

##### C. Sustainability of Natural Resources

- C1. Strategies and Stewardship Initiatives: assess the contributions of stewardship initiatives by groups and individuals to the sustainable use and management of natural resources, locally, nationally, and globally

##### D. Ecosystems and Human Activity

- D1. Protecting the Natural Environment: assess the role of various strategies, organizations, and agreements in reducing the impact of human activity on the environment

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## E. Community Action

- E1. Working Together: assess the contribution of various individual, workplace, and community initiatives to reducing the human impact on the natural environment
- E2. Ecological Footprints: assess impacts of human behaviour on the natural environment
- E3. Community Infrastructure: assess environmental impacts of various types of infrastructure, systems, and services at the community and regional levels, and assess ways of reducing these impacts