

Durham York Energy Centre (DYEC)



Welcome

Public Information Centre #2

**Durham York Energy Centre Capacity Increase
(from 140,000 to 160,000 tonnes per year)
Environmental Screening**

Please browse the displays and talk to our staff and consultants.



DYEC – Our Story

A partnership between Durham and York Regions.

An important part of our commitment to the **2000-2020 Long Term Waste Management Strategy**.

Operating since 2016, the first energy-from-waste facility built in North America in 25 years.

An integral component of integrated waste management system “Made in Durham Solution”.

Designed to better manage waste in our communities.

... it's working

About the DYEC

Processes 140,000 tonnes of waste per year.

Returned 85,412 MWh of energy back to the provincial power grid in 2018.

In 2018, 3,440 tonnes of ferrous and 408 tonnes of non-ferrous metals were recycled. 41,000 tonnes of ash was sent to landfill.



Environmental Compliance Approval

In 2011, Durham and York received an **Environmental Compliance Approval (ECA)** from the Ontario Ministry of Environment, Conservation and Parks.

Our current ECA permits the facility to process up to 140,000 tonnes of non-hazardous municipal waste per year.

The DYEC can process 160,000 tonnes per year with existing equipment.

Our Shared Challenge

The DYEC is the primary disposal facility for non-hazardous municipal waste in Durham Region.

- Durham contributes 110,000 tonnes of waste per year to the facility.
- York Region contributes 30,000 tonnes of waste per year.

Continued growth in the Region has resulted in more waste being generated than is permitted for processing at the DYEC.

Our Opportunity

The Regions are proposing to increase the facility’s annual waste capacity by 20,000 tonnes per year.

If approved by the Ministry, the maximum capacity would increase from 140,000 to 160,000 tonnes per year.

The increase will make more efficient use of the DYEC facility to:

- Turn waste into usable energy,
- Meet the growing need for waste disposal in the Regions,
- Without any additional construction or upgrading of the facility.

Environmental Screening Process



Provincial Oversight

This project is subject to the Ministry of Environment, Conservation and Parks' **Environmental Screening Process for Waste Management Projects** in accordance with Ontario Regulation 101/07 under the Environmental Assessment Act.

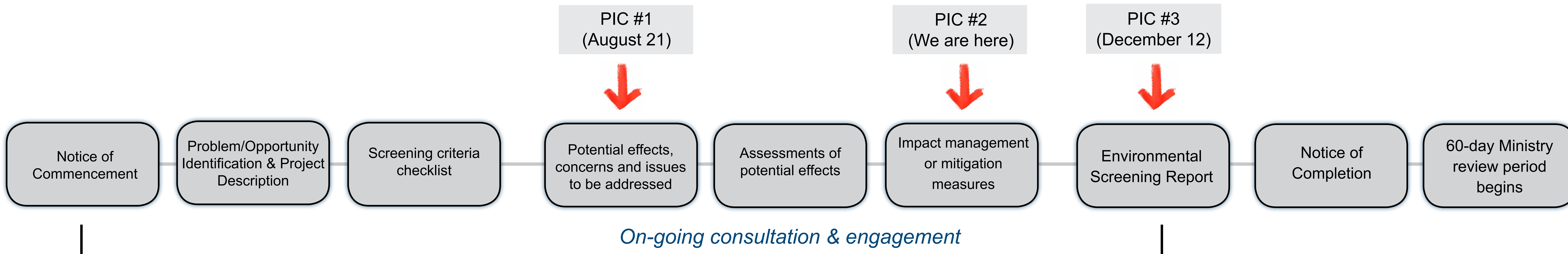
Public Consultation

Public consultation and engagement activities will be ongoing throughout the process with interested persons, Indigenous peoples and government agencies.

For updates visit durham.ca/DYEC160K

Timeline

Results of the Environmental Screening process will be documented in an **Environmental Screening Report**.



Summary of Screening Criteria



Environmental Screening Checklist

As part of the Environmental Screening Process, the Regions are required to describe the potential environmental effects, concerns and issues which were identified in the **Screening Criteria Checklist**.

This includes potential environmental effects and concerns, as well as potential positive outcomes from undertaking the project.

Environmental Impact

The screening criteria identified that the waste capacity increase to 160,000 tonnes per year has potential impacts. This requires further assessment.

Studies reviewed to determine potential impacts are described in detail on the other boards.

Screening Criteria

Based on reviews of previous studies, the capacity increase will not have additional impact to:

- Natural Environment
- Land
- Groundwater and Surface Water
- Socio-Cultural
- Heritage and Culture
- Noise



Net Benefits



Environmental Benefit

Increasing capacity at the DYEC to 160,000 tonnes of waste per year, will help the Regions divert another 20,000 tonnes of waste from disposal and turn this waste into energy.

The project will lead to a net decrease in greenhouse gas emissions when compared to trucking this waste to distant landfills.

There will be 588 fewer trucks carrying waste for disposal outside the Region that will reduce fuel consumption by 140,000 litres each year.

Economic Benefit

The capacity increase to 160,000 tonnes of waste per year will result in significant cost savings and added revenue for the Regions.

These benefits will be realized through reduced transportation costs, operational efficiencies, increased revenue for energy and reduced operating fees.

Estimated Cost Savings (\$ millions)

2020	2021	2022	2023
\$1.3	\$1.7	\$2.1	\$2.1

There is no additional cost for construction or upgrading the facility for this increase in operating capacity.

Some Frequently Asked Questions



From our first Public Information Centre (Aug 2019)

Why are the Regions not recycling more materials?

The Regions' Blue Box programs encourages everyone to recycle and we accept materials for which there are stable markets.

Does the Region enforce the use of Green Bins or Blue Boxes?

Yes, the Region does enforce the use of Green Bins and Blue Boxes however our first approach is to work with residents providing education and resources.

Why are we drafting the Environmental Assessment (EA) Terms of Reference for a potential expansion to a 250,000-tonne facility?

As required by the Ministry, the Region must demonstrate that we are addressing both the short and long-term options for waste disposal.

Will staff need Council's approval to submit the draft EA Terms of Reference (TOR) to the Ministry?

Yes, Council approval must be sought to finalize and submit the EA TOR for the potential expansion to 250,000 tonnes per year.

What is the Region doing to decrease the amount of waste that gets disposed of at the DYEC?

Along with our diversion programs, the Region has approved the implementation of mixed waste pre-sort/transfer with anaerobic digestion facilities to divert additional organics and recyclables from the DYEC.

How can the Region state that the increase in disposal capacity to 160,000 tonne facility will not have a negative climate change impact?

The previous EA study undertaken, identified that traditional landfilling and associated transportation creates more greenhouse gases than processing waste at the DYEC on a per tonne basis.

DYEC Report Card



2018 Air Emissions Performance

The DYEC performs stack emissions tests twice each year, once in accordance with approval conditions set by the Ministry of Environment, Conservation and Parks, and an additional test at the direction of Regional Council.

Recent stack test results demonstrate that the DYEC operates in compliance with the limits for stack test parameters.

Parameter	Compliance Limit	Boiler #1		Boiler #2	
		Fall 2018	Spring 2019	Fall 2018	Spring 2019
Particulate Matter (mg/Rm ³)	9	0.34	0.62	0.32	0.38
Cadmium (µg/Rm ³)	7	0.14	0.10	0.04	0.08
Lead (µg/Rm ³)	50	0.18	0.59	0.22	0.46
Mercury (µg/Rm ³)	15	0.30	0.35	0.13	0.10
Dioxins and Furans (pg/Rm ³)	60	5.05	4.55	3.22	4.58
Hydrochloric Acid (mg/Rm ³)	9	2.9	1.9	4.10	4.2
Sulphur Dioxide (mg/Rm ³)	35	0.00	0.03	0.10	0.02
Nitrogen Dioxide (mg/Rm ³)	121	109	110	111	110
Organic Matter (ppmdv)	50	0.7	1.8	1.00	0.5
Carbon Monoxide (mg/Rm ³)	40	13.00	13.1	13.40	12.2

Environmental Modelling



2019 Golder Emissions Summary and Dispersion Modelling (ESDM) Report

In 2019, Golder Associates Limited (Golder) simulated the potential change in local air quality levels resulting from the DYEC increasing its annual waste capacity by 20,000 tonnes per year (t/y) to 160,000 t/y.

The results were compared to the 140,000 t/y scenario which is in support of the original DYEC approval. All results were lower than the approved MECP limits and the DYEC would remain in compliance.

Simulations Undertaken

All simulations were carried out using the original air quality modelling software (CALMET/CALPUFF) with original geophysical and meteorology data used for 140,000 t/y.

The stack exhaust conditions are from recent measured data (i.e., mass emission rates, flow and temperature data). These data were used to simulate exhaust conditions for the 160,000 t/y.

The 140,000 t/y model was based on a 216 tonne per unit per day processing rate, approximately 325 days per year of operation.

The 160,000 tonne per year model was based on a 232 tonne per unit per day processing rate, approximately 345 days per year of operation.

Compliance with Limits

The reference point in the model for this ECA application was selected as the point resulting in the highest concentration possible for each contaminant modelled. The emission concentrations used for the ECA application to 160,000 t/y uses the same stack concentrations.

All predicted air quality concentrations were compared to the Ontario Ministry of the Environment, Conservation and Parks (MECP) Regulation (O.Reg.) 419/05 limits (update April 2018) demonstrating compliance with all regulations, guidelines and limits.

Environmental Modelling



Study Results

The results of the Golder assessment were compared to the assessment for 140,000 tonnes per year completed in 2011.

The study concluded that the DYEC would remain in compliance with O.Reg. 419/05 with a 20,000 t/y processing increase.

The results of the modelling for the 160,000 tonne scenario demonstrated compliance with all regulations, guidelines and limits. In each scenario, predicted Point of Impingement (POI) concentrations of all contaminants were significantly lower than the corresponding MECP limits. Nitrogen oxides (NO_x) had the highest predicted concentration in both modelling assessments. The 160,000 t/y scenario showed nitrogen oxides at eight per cent of the MECP limit. This is one per cent higher compared to the 140,000 t/y which produces NO_x at seven per cent of the MECP limit over a one hour average.

The majority of the modelled concentrations (approximately 85 per cent) for the 160,000 tonne scenario show lower levels at the maximum points of impingement (POI) as compared to the 140,000 tonne scenario. This is caused by increased flow rates at the stack resulting in higher exit velocities and higher observed stack temperatures which improves dispersion.

The maximum potential change, assuming the facility is operating at the ECA limit, would result in a two per cent increase in the POI for sulphur dioxide (SO_2) and NO_x when background concentrations are also included.

Environmental Modelling



Study Conclusions

The modelling approach is conservative and a level of safety is built in by assuming the worst case operating and environmental conditions. Additionally, the DYEC operates below the ECA limits for all parameters which adds another layer of protection.

Ambient Air

The modelling assessment demonstrates that the DYEC will comply with regulatory air quality standards operating at 160,000 t/y.

Modelling also demonstrated that the processing increase is not likely to have a significant impact on ambient air quality near the DYEC as the POI for most concentrations decreased as a result of improved dispersion.

Ambient Air Stations

Two ambient air monitoring stations were sited upon approval of the facility at upwind and downwind locations.

These stations monitor several parameters within the area and provide an indication of overall ground level air quality. The monitoring includes air quality contributions from industrial facilities, transportation, agriculture, construction both locally and resulting from transboundary effects.

Protecting Air Quality



Controlling Air Emissions

State-of-the-art air pollution control technology allows the DYEC to comply with the air quality standards for Environmental Compliance Approval. This technology includes:

- Martin Integrated Combustion Control System
- Furnace Temperature of 1000°C
- Selective non-catalytic reduction (SNCR) ‘using’ aqueous ammonia injection
- Powder Activated Carbon Injection
- Dry Hydrated Lime Injection
- Fabric Bag House

Reducing Greenhouse Gases

“Climate change is caused by the increase in concentrations of greenhouse gases (GHGs) in the atmosphere. These increases are primarily due to human activities such as the use of fossil fuels or agriculture.”

- *Environment & Climate Change Canada (2019)*

Greenhouse gas emissions were assessed as part of the original EA for the facility as per the document “Supplement to Annex E-5: Comparative Analysis of Thermal Treatment and Remote Landfill on a Lifecycle Basis”.

The waste processing increase at the DYEC facility would result in a net reduction in GHG emissions.

Minimizing Off-site Odours

DYEC uses several methods to effectively prevent off-site odours during regular operations:

- Enclosed offloading of waste vehicles
- Negative air pressure inside DYEC
- Fully enclosed trucks

There is not expected to be an off-site impact from odours due to the processing increase.

Durham York Energy Centre (DYEC)



Public Information Centre #3

Our next public information event will be held on December 12, 2019 at the Garnet B. Rickard Recreation Complex at 5 p.m.

PIC #3 will focus on the **Environmental Screening Report** for the capacity increase.

The report will include:

- The work completed to determine environmental impacts.
- Any mitigation measures if required to reduce impacts.
- A summary of the consultation activities, including comments received from the public.

Submit Your Comments

Your input and feedback on this project is important.

Your comments will be received as part of the **Record of Consultation** up until project completion on or before December 20, 2019.

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durham.ca/DYEC160K

Looking Ahead

Other Waste Projects



Long-Term Waste Management Strategy Update

In addition to work on optimizing capacity at the DYEC, Durham Region is proceeding with three other major initiatives over the coming months.

Early in 2020, Durham Region will be launching public consultation on a **Long-Term Waste Management Strategy 2021 to 2040**.

Waste Pre-Sort and Anaerobic Digestion

Durham Region Council recently approved construction of a **mixed waste pre-sort** and **transfer facility** and an **anaerobic digestion facility**.

The **waste pre-sort facility** will remove organics that are not captured by our Green Bin program for processing in an anaerobic digester.

Recyclable material and non-combustible material will also be removed from the waste stream at the pre-sort facility.

This will optimize the use and capacity of the DYEC facility by further diverting recyclables and compostable materials and reducing the total amount of waste that must be processed.

Terms of Reference (TOR): DYEC Potential Expansion to 250,000 tonnes of waste per year

DYEC needs to meet the demands of the future.

In June 2019, Regional Council approved drafting a **Terms of Reference (TOR) for an Environmental Assessment** for the potential expansion of the DYEC to process up to 250,000 tonnes per year.

A TOR is a framework for the studies to be completed during the environmental assessment stage. Once a draft TOR has been completed, Council will determine if the Draft TOR can be submitted to the MECP. If the TOR is submitted and approved by the MECP, Council will decide whether to proceed with a full Environmental Assessment.

In 2020, the TOR will provide opportunities for public engagement including input into the type of studies to be completed as part of a full Environmental Assessment.