

## 2018 SWANA Excellence Award Entry Waste to Energy

### Durham York Energy Centre Celebrating First Full Year of Commercial Operations

Jurisdiction: *The Regional Municipality of Durham, Ontario Canada  
Works Department – Waste Management Division*

Population: *655,000*  
Cost per household: *\$36 (operating)*  
Approximate budget: *\$7.5 million (operating)*  
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## Region of Durham Works Department Waste Management Services

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### Executive Summary

The Durham York Energy Centre (DYEC) is a 140,000 tonne-per-year waste to energy facility located in the Regional Municipality of Durham, Ontario, Canada. Commercial operations began on January 29, 2016 making 2017 the first full calendar year of commercial operations for the facility. The DYEC, jointly owned by the Regions of Durham and York, processes municipal solid waste that remains after maximizing diversion programs for the reduction, reuse and recycling of material.

The DYEC is the first commercial-scale greenfield WTE facility to be built in Ontario in over 20 years. The Regions entered into a long term private/public partnership (P3) contract with Covanta to design, build and operate the facility. The DYEC successfully reduces waste to landfill by 70% annually while generating electricity for up to 10,000 homes and recovering recyclable metals previously lost to landfill. The DYEC has paved the way for future waste to energy facilities in Ontario.



### Facility History

The Region of Durham is responsible for the waste management needs of over 655,000 people residing in a 2,600 square kilometre area (1,000 square miles) that includes both urban and rural areas. Waste management services provided to residents include curbside collection for source separated organics, paper and packaging recycling and residual waste. The Region also hosts community events throughout the Region to provide collection services for household hazardous waste, electronics and items suitable for reuse. The Region's integrated waste management system consists of 3 transfer stations, a materials recovery facility for processing collected paper and packaging for recycling, two aerobic composting facilities for source separated organics and leaf and yard waste, and the new waste to energy facility. The Region also manages 7 closed landfills that were uploaded to the regional municipality upon amalgamation in 1974.

The Durham York Energy Centre grew out of a long and turbulent history of landfilling waste in Durham Region and the Province of Ontario. In the mid-1990s, Durham had one remaining open municipal landfill and was searching for capacity to manage the waste disposal needs of the growing residential population. Since other municipalities were having similar landfill capacity issues, efforts were combined to search for a suitable location in Ontario for new municipal landfill construction but no new landfills were to be located in Durham Region. As these efforts failed, Durham Region began hauling waste to landfills in Michigan, over 400 kilometres away. Recognizing that long distance haulage of waste to landfill was not a sustainable or suitable long-term solution, Durham Region Council directed waste management staff to develop a home-grown, made in Durham solution to the Region's waste disposal needs.

Planning for the DYEC began as early as 1999 when Durham Regional Council endorsed the Long Term Waste Management Strategy Plan (Strategy). The Strategy was developed by an advisory committee to create a waste

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management plan for Durham Region for the period from 2000 to 2020 that included a local solution for the Region's waste disposal needs. The final recommendation included investigating WTE for disposal. WTE was further investigated as a long term disposal option through the Durham Residual Waste Study and Environmental Assessment Study. In 2005, Durham accepted York as its partner on the WTE project. Between 2005 and 2010, the Regions completed planning and approvals milestones including site and vendor selection, site specific environmental and health studies, and submission and approval of the Environment Assessment (EA). In 2011, the Ministry of Environment and Climate Change (MOECC) issued the DYEC's environmental compliance approval (ECA) and the Regions issued the Notice to Proceed to Covanta to begin constructing the DYEC.

The Durham York Energy Centre (DYEC) is a waste to energy (WTE) facility that uses thermal mass burn technology to produce energy in the form of steam and electricity. The DYEC is owned by the Regional Municipality of Durham (Durham) and the Regional Municipality of York (York) in a long term private/public partnership (P3) contract with Covanta to design, build, operate, and maintain the facility. Annually, Durham delivers up to 110,000 tonnes of garbage (78.6 per cent) and York delivers 30,000 tonnes of garbage (21.4 per cent). The garbage is municipal non-hazardous solid waste that remains after maximizing diversion programs for the reduction, reuse and recycling of material. The current waste diversion to recycling rate for Durham Region is 55% and the DYEC recovers additional ferrous and non-ferrous metals for recycling. The DYEC helps Durham Region achieve 78% diversion from landfill.

The DYEC began accepting and processing garbage in February 2015 as the facility began its conditioning and start-up phase. The combustion system consists of a reciprocating stoker-grate with adjustable under-fire and over-fire air, flue gas recirculation, and a robust combustion control process. Combustion zone temperatures are maintained above 1,000 degrees Celsius to maximize combustion and overall plant efficiency. Heat from the combustion process is used to create high pressure steam that drives a turbine-driven generator to create electricity. Energy is sold to the provincial power grid under a Power Purchase Agreement (PPA) with the Ontario Power Authority (OPA). The DYEC generates approximately 14 megawatts of electricity on a net basis. The facility is designed to support a future 7.4 megawatt district heating component to capture additional energy.

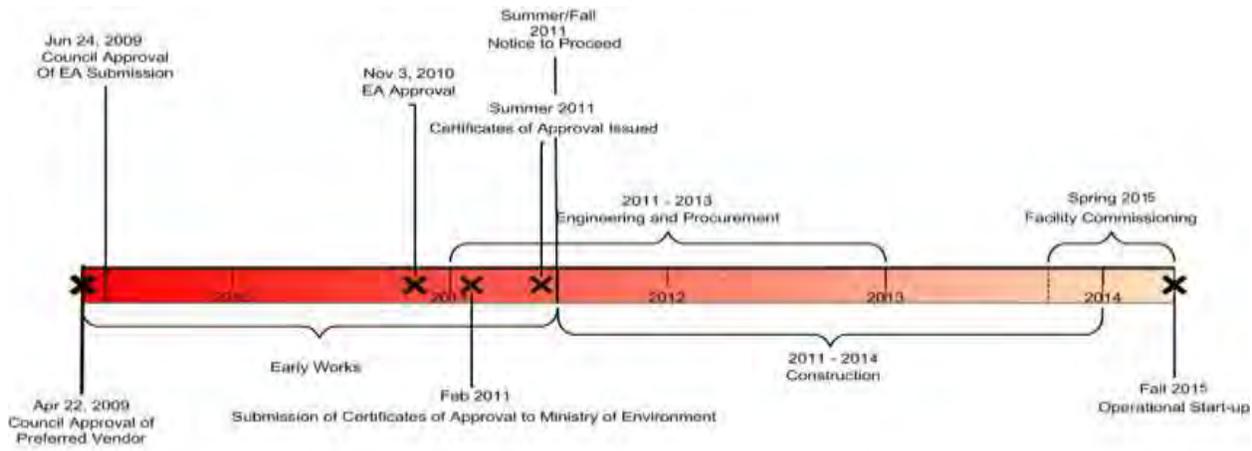
As the first commercial scale, greenfield WTE facility built in Ontario in over 20 years, education about modern WTE technology was a key challenge in obtaining community and regulatory approval for the facility. After first educating themselves, staff conducted Council education sessions to ensure regional councillors had a good understanding of WTE and the effects of modern pollution control technologies. Numerous public information sessions were also held in the community to ensure the public was aware of Region plans and understood the emphasis placed on resident health and safety in the final plant design.

Region staff also had to work extensively with the provincial power authority to ensure that a market was available for the electricity the plant would generate. Without the option to market plant electricity to the provincial energy grid, the economics of the facility were not viable; a provincial power generation contract was essential for the project to proceed.

Based on the community and regulator education provided in the design and approvals process, the DYEC has paved the way for future WTE plants in the province. It completes the final phase of Durham's waste Strategy as the Region strives

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to reach a waste diversion rate of 70%. The DYEC provides a local solution to manage Durham and York's garbage that has involved the international community. The DYEC has sourced parts, experience and design from countries across the globe including China, France, Germany, United States and Canada. The facility incorporates the latest technologies available for emission controls and complies with the most stringent environmental and regulatory limits ever imposed on a facility of its kind.



DYEC Approvals and Construction Timeline

### Design and Construction of the Facility

The Durham York Energy Centre is the culmination of a 15 year planning, approval, design and construction project. The facility incorporates the latest technologies available for emission controls and complies with the most stringent environmental and regulatory limits ever imposed on a facility of its kind. All aspects of the design and technology used in the DYEC incorporate innovative features and state of the art equipment that has been sourced from all over the world and the plant performs as designed.

The DYEC was designed and permitted with the goal of enhancing the Region's already high diversion rate. The Environmental Compliance Approval (ECA) for the DYEC limits the waste accepted at the site to post-diversion residential garbage. The Region continues to focus on its successful curbside recycling programs for paper, packaging, food, and leaf and yard waste. Municipal Hazardous and Special Waste, electronics and other solid waste diversion and re-use programs are provided annually free of charge to encourage as much waste diversion as possible by Region residents. Additional materials for recycling are recovered from the bottom ash via the use of mechanical and magnetic separation. Both ferrous and non-ferrous metals are removed from the ash for recycling off site.

The facility was built using the Covanta patented Very Low NOx (VLN™) system. The VLN™ system in combination with an aqueous ammonia SCNR system allows the facility to meet its strict NOx limits. The DYEC also includes an air cooled condenser that uses ambient air to cool the exhaust steam. The condensed water is returned to the boiler and reused in

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the process. The facility is a 'zero wastewater discharge facility' with only the site restrooms connected to the sanitary sewer.

The facility has been 'right-sized' to process the waste of the growing population in both Regions after continuous improvements in waste diversion. Many of the components of the facility have been designed for an expanded processing capacity of 250,000 tonnes annually should that be required in the future.

The DYEC was developed with a public education component to help residents and visitors to the Region understand the technology used to convert waste into energy. This includes the Visitor's Centre connected to the facility via a glass enclosed, elevated skywalk and the virtual tour available on-line that provides a 360 degree view of the facility that is off-limits to the public.

Durham and York Region made a significant investment in the aesthetic appearance of the DYEC. An allowance of \$9,000,000 was included in the request for proposals to be spent at the discretion of the Regions on architectural enhancements. Through the inclusion of this allowance, Durham and York were able to plan for architectural enhancements developed in consultation with and approved by the local Municipality of Clarington which hosts the facility.

**Further information about the facility is available via our virtual tour:**

<https://www.youvisit.com/tour/covanta/94489>

### Environmental Controls and Regulatory Compliance

The Ministry of the Environment and Climate Change (MOECC) is a provincial ministry of the government of Ontario. The MOECC provides regulatory oversight of the DYEC ensuring compliance with related environmental statutes and regulations and has been involved with the DYEC since the initiation of the project.

For a project of this magnitude the first step is an Environmental Assessment (EA) that must be approved by the Ontario Minister of the Environment. The EA includes a Human Health and Ecological Risk Assessment that in most cases is not site or technology specific. A Site Specific Human Health and Ecological Risk Assessment (SSHHERA) is a more rigorous assessment that incorporated the technology of this facility with the local surrounding environment to assess potential human and environmental health risks. It was undertaken based on the actual design, emissions and site location. The



Architectural rendering of the DYEC Visitor's Centre



Completed DYEC Visitor's Centre

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SSHHERA was peer reviewed by three independent experts and approved by Durham Region’s Medical Officer of Health. Without the approval process for the SSHHERA, Regional Council would not have proceeded with the DYEC.

The MOECC issued the Environmental Compliance Approval (ECA) or permit for the DYEC with some of the strictest air contaminant limits in North America as shown in the table below. The ECA also includes extensive environmental monitoring and auditing of the facility. Monitoring includes ambient air, soil and groundwater monitoring off-property; and an annual compliance audit. Source testing is conducted annually under MOECC observation. Results of all facility monitoring are made available to the public via the DYEC website. The website and a digital display board on the exterior of the Visitors Centre post real-time data from the facility’s continuous emissions monitoring system (CEMS). The MOECC continues to provide oversight on DYEC compliance by conducting inspections/assessments and reviewing plans/reports.

**In-Stack Emission Limits**

Parameter	In-Stack Emission Limit	Verification of Compliance
Total Suspended Particulate	9 mg/Rm <sup>3</sup>	Source Testing
Cadmium	7 µg/Rm <sup>3</sup>	Source Testing
Lead	50 µg/Rm <sup>3</sup>	Source Testing
Mercury	15 µg/Rm <sup>3</sup>	Source Testing
Dioxins and furans	60 pg/Rm <sup>3</sup>	Source Testing; expressed as I-TEQ
Hydrochloric acid (HCl)	9 mg/Rm <sup>3</sup>	CEMS
Sulphur dioxide (SO <sub>2</sub> )	35 mg/Rm <sup>3</sup>	CEMS
Nitrogen oxides (NOx)	121 mg/Rm <sup>3</sup>	CEMS
Organic matter (as equivalent methane)	50 ppm <sub>dv</sub> (33 mg/Rm <sup>3</sup> )	Source Testing
Carbon monoxide	35 ppm <sub>dv</sub> (40 mg/Rm <sup>3</sup> )	CEMS
Opacity	10 percent	CEMS (1 minute readings)
	5 percent	CEMS (15 minute readings)



Trucks arriving at the site are inspected for radiation using detectors located at the weigh scales before being allowed to drop off waste in the waste receiving area (tipping hall). The tipping hall is maintained under negative air pressure to prevent odours and dust from escaping the facility while waste material is discharged into the waste storage pit. The crane operator removes any unacceptable material and materials that cannot be processed from the waste storage pit and places them in a dedicated storage area for removal and proper disposal. As a requirement of the facility’s ECA, one truck load of waste per hour is discharged onto the tipping floor for a more detailed inspection to ensure only acceptable materials are arriving at the DYEC. Upon completion of the inspection the waste material is pushed into the pit by a loader.

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The DYEC's two boilers have their own separate air pollution control (APC) systems or trains that exit through a common stack. Air pollution control begins in the combustion zone of the boilers. Waste is burned at temperatures exceeding 1,000 degrees Celsius, which contributes to removal of air pollutants, such as dioxins and furans (D/F). The boilers also include a selective non-catalytic reduction (SNCR) system and the patented Very Low NOx (VLN) system to reduce NOx in the flue gas. The components of the DYEC's APC system include: the evaporative cooling tower, dry recirculation lime reactor for acid gas control, activated carbon system for mercury and D/F control, and bag house for particulate removal. Flue gas is cooled and humidity added through the evaporative cooling system to ensure appropriate conditions for the neutralization reactions to occur. In the dry recirculation lime reactor, hydrated lime is injected into the humidified flue gas stream for sulfur dioxide and acid gas reduction. Recirculated fly ash, which contains unreacted lime and activated carbon, is also injected to reduce consumption of fresh lime and carbon. A crusher at the bottom of the reactor reduces the size of large particles allowing them to re-enter the flue gas stream. Fresh activated carbon is injected in the duct between the outlet of the reactor and the baghouse to further reduce heavy metals and dioxins and furans. The flue gas then moves through the bag house to remove particulate matter from the flue gas stream. The table below provides stack test results for key contaminants of concern from the 2017 compliance stack test at the facility.

### October 2017 DYEC Stack Test Results

Contaminant	Boiler 1 Average	Boiler 2 Average	In-Stack Limit
Carbon Monoxide (mg/Rm <sup>3</sup> )	11.5	12.2	40
Hydrogen Chloride (mg/Rm <sup>3</sup> )	2.0	5.1	9
Nitrogen Oxides (mg/Rm <sup>3</sup> )	112	111	121
Sulphur Dioxide (mg/Rm <sup>3</sup> )	2.4	1.7	35
Dioxins and Furans (pg TEQ/RM <sup>3</sup> )	<5.94	<10.1	60
Total VOCs (µg/Rm <sup>3</sup> )	<359	<339	Not applicable
Filterable Particulate (mg/Rm <sup>3</sup> )	1.40	<0.66	9

The DYEC's combustion process reduces the volume of waste by 70 to 90 per cent. Remaining by-products include fly ash, bottom ash, ferrous metals and non-ferrous metals. Fly ash is treated onsite using an encapsulation process. The process involves adding cement, pozzolan and water to the fly ash to render the material non-hazardous. This process has been tested and approved by the MOECC. Fly ash and bottom ash are sent to landfill and used as alternative daily cover, reducing the need for soil cover. Both ash streams are subject to an approved testing program to demonstrate that the material is non-hazardous. Covanta continues to look for viable markets for the beneficial reuse of bottom ash. There is a financial incentive within Covanta's contract for ongoing improvements in efficiency and environmental performance, including beneficial reuse of bottom ash. Ferrous and non-ferrous metals, resources that would have otherwise been lost to landfill, are recovered from the bottom ash. The recovered metals are sent to a local steel plant (within 10 kilometers from the DYEC) for recycling.

During the EA, it was determined that the DYEC would result in an overall reduction in the environmental burden associated with residential waste disposal as compared to other alternatives. With respect to climate change, the EA found that the facility would result in a net reduction in greenhouse gas emissions resulting from reduced transportation emissions, prevention of methane gas generation in landfills, and displacement of fossil fuel energy sources. The DYEC can generate enough electricity to power its own operations and up to 10,000 homes.

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## Coordination and Relationship with the Community

Starting with the Environmental Assessment (EA) process, Region of Durham staff actively communicated with residents regarding the plans for long-term waste management in the Region. As the plans to construct a waste to energy facility in the Region developed, numerous public information sessions were held to provide information to and receive feedback from local residents. Through these information sessions, it emerged that residents were primarily concerned with potential human and environmental health risks related to emissions. To more fully address these concerns, the Regions chose to do a Site Specific Human Health and Environmental Risk Assessment (SSHHERA) that uses the DYEC technology and site location for the Environmental Assessment. To further ease community concerns, extensive off-property monitoring of ambient air, soil and groundwater is conducted by the Region. Since the start of waste incineration in February 2015, the DYEC has largely been able to meet the strict emissions limits set by the DYEC's Environmental Compliance Approval (ECA). Documentation and emissions data is available to the public on the DYEC's website ([durhamyorkwaste.ca](http://durhamyorkwaste.ca)). The website is the primary method of communicating information about the facility to the public and streams real-time emissions data. In addition to the information provided via the website, Region staff also coordinate two community advisory committees that support ongoing public engagement in Region waste diversion efforts and the DYEC.



DYEC Emissions on Electronic Sign

Link to the real-time CEMS data: <https://www.durhamyorkwaste.ca/EmissionsData/EmissionsData.aspx>

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Durham Region regularly hosts community Waste Fairs to promote Region waste diversion programs and other conservation initiatives. These family friendly events are well attended by the community and are a fun way to educate the public regarding Durham's waste programs. Waste education is paired with face painting, puppet shows and Birds of Prey shows to appeal to all age ranges. The DYEC Visitor's Centre further promotes positive community relations by providing informational displays and a space and computer for members of the public to review documentation and emissions data related to the facility. The Visitor's Centre includes meeting space for committee meetings to be held on site and is the starting point for tours of the DYEC. The Regions have also developed a complaint protocol to establish a mechanism for receiving and responding to inquiries and complaints about the facility. The protocol provides a centralized project email account and telephone number that is available 24-hours per day. The telephone and project mailbox are monitored by trained personnel. Responses to all complaints and inquiries are recorded on a monthly project log which is submitted to the MOECC.



Photos from Recent Waste Fairs

**A detailed Community Communications Plan is available on the DYEC website:**

<https://www.durhamyorkwaste.ca/Documents/FacilityManagementPlans/CommunityCommunications.aspx>

To educate other professionals about waste to energy, Durham staff has presented at various conferences including NAWTEC, Canadian Waste Resource Symposium, NY Federation Solid Waste & Recycling Conference, Wastecon, Federation of Canadian Municipalities, Southern Alberta Energy from Waste Association, and SWANA. Durham has also hosted delegates from Poland, Barbados, Latvia and Japan with specific meetings and tours to inform about the DYEC.

The DYEC has been recognized with the following pre-operations awards:

- **Municipal Waste Integration Network Project of the Year, 2009** for DYEC public consultation efforts.
- **KPMG Infrastructure 100: World Cities Edition 2012 Project** as a Recycling and Waste Management project with the potential to change the nature of the urban environment.
- **NAWTEC Greenfield Development Leadership Award** for bringing new waste to energy development to the marketplace in North America.
- **Association of Municipalities of Ontario (AMO)** with an honorable mention for excellence in the use of the federal Gas Tax Fund.
- **Ontario Public Works Association (OPWA) Project of the Year in 2015** for excellence in the management and administration of public works projects recognizing an alliance among the managing agency, the consultant/engineer and the contractor.

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## Worker Health and Safety

At the outset, Durham Region made worker health and safety a priority for the facility. Covanta has demonstrated the same commitment to safety. Safety was built into the facility contract as a priority with a detailed operational health and safety plan required before the facility was allowed to begin operations. During construction of the DYEC, more than one million man hours were worked at the site without a lost time incident. As the facility has entered full commercial operation, Covanta continues to operate without any lost time incidents.

There is a comprehensive Spill Contingency and Emergency Response Plan in place at the facility that addresses actions to be taken in the event of a spill or environmental emergency in addition to employee safety. The employee training plan ensures that all employees receive initial safety training and annual refresher training that is both classroom and on the job based. The plan also outlines the type and location of safety equipment in place such as eye wash stations, first aid kits and emergency showers.

In addition to the personal protective equipment and personnel training provided to all employees working at the DYEC, there are engineering safeguards built into the facility to protect employees and the environment. Along with an extensive fire protection system, there is a self-contained breathing apparatus, radiation detectors, spill kits and eye



wash stations. The facility is equipped with a public address system and an alarm system for site-wide communication in the event of an emergency. An annual emergency drill conducted with site personnel and coordinated with outside emergency response personnel is part of the employee training program.

As the facility operator, Covanta is committed to providing comprehensive safety and training to all site operations staff to ensure that safety procedures and regulations are followed at all times. A training plan is a requirement of Covanta's contract with the Regions and the facility's Environmental Compliance Approval (ECA). A minimum of 24 hours of safety training are

provided to each employee over the course of a year. Staff training requirements include training for the following: testing, monitoring and operating requirements, maintenance and inspection procedures, record keeping procedures, nuisance impact control and housekeeping procedures, complaint procedures, emergency response procedures, environmental and occupational health and safety concerns related to waste handling, and relevant legislation. These and other topics requiring training are reflected in Covanta's extensive list of standard operating procedures (SOPs). In addition, Covanta includes a health and safety status update in each monthly operations report.

Since the DYEC Visitors Centre is open to the public and is the starting point for facility tours, safety orientation is provided to those who visit the facility depending on the nature of the visit. A safety talk is provided to all tour participants before they leave the Visitors Centre and cross the skywalk to the operating facility. Contractors working at the DYEC must complete safety training and a written Contractor Safety Evaluation test before commencing work.

The Regions perform periodic document reviews to ensure that required health and safety training records are maintained.

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### Performance, Economics and Cost Effectiveness

The Durham York Energy Centre just completed its first full year of commercial operation in 2017. The facility was constructed as a public-private partnership between the Regions of Durham and York and Covanta to design, build and operate the DYEC. The DYEC has allowed Durham Region to successfully meet its primary goal of developing a 'made-in-Durham' local solution for the waste management needs of its residents. Not only has the DYEC ended the need to transport Region waste long distance to landfills in other jurisdictions, the Region has increased waste diversion from landfill and reduced the fossil fuel electricity generation needs of the province.

#### 2017 Highlights (tonnes):

- **Total Waste Processed: 140,000**
- **Ferrous Metals Recovered: 2,944**
- **Non-Ferrous Metals Recovered: 432**
- **Electricity Exported to Grid: 98,577 MWh**

The public-private partnership (P3) business model was determined to be the most cost effective method to build the DYEC and minimize financial risk to the Regions. The total capital cost of the project was \$296.05 million. The Durham portion of the costs was partially funded through Canada's Federal Gas Tax program. The use of predictable federal gas tax funds allows Durham to pay down its debenture requirements within five years. An up-front amount totaling \$100 million of federal gas tax funding was expended during the early stages of project construction, with Durham's subsequent annual federal gas tax allocations applied in order to speed the payment of debentures utilized to finance the project. Federal gas tax funding provided an ease in matching funding to the DYEC project cash flow requirements; minimized overall borrowing requirements; and increased financial affordability through pay-as-you-go financing which lowered debenture servicing costs over the long-term.

The DYEC has also brought economic benefit to the community in the form of materials procurement and employment. Local contractors were utilized wherever possible in the construction phase of the facility and Covanta employs approximately 40 full time personnel to operate the DYEC on its 24 hour per day, 7 days a week schedule.

The Project Agreement with Covanta includes a 20 year operation period which began in January 2016. The total annual operation fee for 2017 was approximately \$16.45 million. This fee is offset by electricity generation revenues of \$6 million based on Covanta's electricity production guarantee at 767 kWh/Tonne (13MJ/kg) and a guaranteed electricity price of \$0.08 per kWh. The guaranteed electricity price is made possible through a 20 year Power Purchase Agreement (PPA) with the Ontario Power Authority (OPA). Escalation will be applied to a portion of this revenue based on the Consumer Price Index over the 20-year operations period. Metals recovery is expected to generate an additional \$0.5-\$1 million annually based on spot market pricing to further offset the operation fee. The DYEC annual operating fee was approximately \$7.5 million in 2017 after revenue recoveries and cost sharing with York Region.

Prior to commercial operation, the facility underwent an extensive commissioning process and acceptance testing. The purpose of the acceptance testing was to prove the facility could meet the design and contractual requirements for throughput, electricity generation and environmental criteria prior to the start of commercial operations.

Planned maintenance and inspection activities are an important part of maintaining all plant processes and equipment. The facility has been designed with equipment redundancies such that maintenance of critical equipment does not require a full plant shutdown. There are two separate waste combustion units with independent air pollution control

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Test	Contractual Guarantee	Covanta Acceptance Test Result
<b>Reliability</b>	95% design steam flow	101.6% design steam flow
	95% availability of boiler	99.93% availability of boiler
<b>Throughput Capacity</b>	2,124 tonnes	2,260 tonnes
<b>Energy Recovery</b>	Gross Energy 937 kWh/Tonne	Gross Energy 961 kWh/Tonne
	Net Energy 829 kWh/Tonne	Net Energy 840 kWh/Tonne
<b>Residue Quality</b>	Unburned Combustible less than 3%	Unburned Combustible less than 0.83%
	Moisture less than 25%	Moisture averaged 16.7%
<b>Residue Quantity</b>	HHV of 13,359 kJ/kg 30 days: Maximum 29.4%	26.7%
	HHV of 13,180 kJ/kg 30 days: Maximum 29.7%	26.8%
<b>Ferrous Recovery</b>	80% by weight	87.7% by weight
<b>Non-Ferrous Recovery</b>	60 % by weight	84.7% by weight

A portion of the Performance Acceptance Test Table demonstrating that the DYEC meets or exceeds the performance guarantees included in the contract with Covanta. The detailed table can be viewed at:  
[https://www.durhamyorkwaste.ca/Assets/Documents/FacilityAcceptance/20151223\\_DYECAcceptanceTestTable\\_Performance.pdf](https://www.durhamyorkwaste.ca/Assets/Documents/FacilityAcceptance/20151223_DYECAcceptanceTestTable_Performance.pdf)

This allows the facility to continue operations during boiler maintenance as one boiler can be shut down while the other processes waste. Covanta uses the PeopleSoft Asset Lifecycle Management system to track all maintenance and preventative maintenance activities at the DYEC. This allows for detailed preventative maintenance tracking and planning for all critical equipment. Maintenance plans are reviewed annually and provided to the Regions prior to the start of each year. This includes the annual service plan for the operations and maintenance of the facility; the rolling five year maintenance plan for all major elements, components systems and equipment; and, the assets life cycle and rehabilitation plan for all elements, component, systems and equipment.

