



Memorandum

TO: Committee of the Whole
FROM: Erin Mahoney, Commissioner of Environmental Services
DATE: September 8, 2016
RE: **Durham York Energy Centre Update**

On August 5, 2016, the Ministry of the Environment and Climate Change (Ministry) authorized Durham Region and York Region to restart Boiler #1 at the Durham York Energy Centre. The restart occurred after a ten week shutdown to address May 2016 stack test results that exceeded the in-stack limit for dioxins and furans. This memo provides a status update on the Ministry-approved Abatement Plan and a summary of next steps.

Voluntary stack test conducted in May exceeds dioxin and furan limit for Boiler #1

The Ministry requires annual stack testing of the Durham York Energy Centre each October to demonstrate compliance with air emissions limits. In addition, Durham Region and York Region have agreed to complete a voluntary stack test during each of the first three years of operation. The first voluntary stack test was conducted from May 2 to May 11, 2016. The facility's two boiler units (Boiler #1 and Boiler #2) were tested independently.

Results from the Boiler #1 test conducted in May 2016 were compliant with all emissions limits with the exception of dioxins and furans, which reported an average concentration of 818 pg/m³ as compared to a limit of 60 pg/m³. Boiler #2 was compliant with all emissions limits, including dioxins and furans at 12 pg/m³.

Predicted maximum ground level concentrations remain within limits that are protective of human health

The Ministry sets in-stack limits conservatively to protect human health and the environment. Although the May 2016 dioxin and furan result exceeded the in-stack limit in Boiler #1, the maximum ground-level concentration as predicted by a Ministry-approved dispersion model was 0.019 pg/m³. This predicted concentration is less than two per cent of the 24-hour Upper Risk Threshold of 1 pg/m³ specified in *Ontario Regulation 419/05, Schedule 6*, and less than twenty per cent of the new 24-hour

standard of 0.1 pg/m³ specified in *Ontario Regulation 419/05, Schedule 3*, which took effect on July 1, 2016.

Covanta shut down Boiler #1 to conduct a root-cause analysis and submit an Abatement Plan

Upon receiving written confirmation of the lab results on May 26, 2016, Covanta shut down Boiler #1 to conduct a root-cause analysis of the dioxin and furan test results. Results of the analysis and proposed corrective measures were summarized in an Abatement Plan submitted to the Ministry on June 10, 2016. Boiler #2 continued to operate.

The Abatement Plan is divided into two phases. Phase1 included a comprehensive inspection and data review with Boiler #1 offline. Phase2 involves additional diagnostic tests conducted after restarting Boiler #1.

On June 15, 2016 the Ministry provided conditional approval of the Abatement Plan, subject to receipt, review, and approval of a report on Phase 1 activities by the Regions' technical consultant, HDR. Boiler #1 was required to remain offline until the Ministry completed its review of the HDR technical report. On August 5, 2016, the Ministry authorized Covanta to restart Boiler #1 and proceed to Phase 2 diagnostic testing. The timeline of events through the Boiler #1 restart is summarized in Table 1.

Table 1
Timeline of Events through Boiler #1 Restart

Event	Date
Start of voluntary stack test	May 2, 2016
End of voluntary stack test	May 11, 2016
Confirmation of laboratory results and Boiler #1 shutdown	May 26, 2016
Abatement Plan submitted	June 10, 2016
Conditional approval of Abatement Plan by the Ministry	June 15, 2016
Submission of technical report by HDR	June 16, 2016
Ministry completes review of HDR technical report and authorizes restart	August 5, 2016

Inspections identified excessive fly ash accumulation in baghouse and hoppers as probable cause of elevated dioxins and furans in Boiler #1

Phase 1 inspections identified excessive accumulation of fly ash in the Boiler #1 baghouse as the probable cause of elevated dioxin and furan levels recorded during the May 2016 stack test. Excess fly ash accumulation in the boiler hoppers was also identified as a potential contributing factor.

During the shutdown, the Boiler #1 baghouse and hoppers were cleaned and inspected. Some of the filter bags were replaced, including one bag with a small hole in it. Covanta

conducted a tracer test to confirm that there are no more leaking bags, and ordered a filter bag leak detection system to provide early warning if a leak develops in the future. The unit is expected to be installed and commissioned prior to the annual stack test in October.

Covanta has installed air cannons in the boiler hoppers to help prevent and clear blockages. Covanta has also implemented improved inspection procedures to provide earlier blockage detection, including new techniques to allow for more frequent inspections with the unit online. Training has been provided for all front-line staff in the new operating procedures.

Phase 2 of the Abatement Plan includes online diagnostic testing followed by a complete retest to demonstrate compliance

On August 5, 2016, Covanta received authorization from the Ministry to restart Boiler #1 and commence with Phase 2 of the Abatement Plan. After the unusually long shutdown, Covanta required a ramp-up period of approximately three weeks to test all systems with the unit online. The plant's auxiliary natural gas burners were used to provide supplemental heat during the first week to stabilize furnace temperatures and steam temperatures until normal operations were re-established.

After this initial ramp-up period, Covanta started the Phase 2 diagnostic testing program. The diagnostic testing program includes a series of online tests to evaluate dioxin and furan generation rates and removal efficiencies under different operating conditions. The diagnostic testing will be followed by a complete retest of both boilers to demonstrate compliance with the conditions of the Environmental Compliance Approval. A successful result on the final compliance test will complete the Abatement Plan and also satisfy the annual stack testing requirement. It is currently anticipated that the final compliance test will be completed in mid-October, with the final results being received in early November 2016.

York Region maintains diversion from landfill by diverting tonnage to Emerald Energy from Waste

Boiler #2 remained online throughout the shutdown period, allowing the facility to continue to process waste at fifty per cent capacity. As a result of the reduced capacity, York Region needed to divert approximately 4,000 tonnes of residual waste that would otherwise have been processed at the Durham York Energy Centre. This material was diverted to the Emerald Energy from Waste facility, preventing any loss of diversion as a result of the shutdown. York Region's cost for transportation and processing at the two facilities are roughly equivalent, resulting in minimal budget impacts.

Staff will continue to monitor progress of the Abatement Plan and update Council as required

Since restarting Boiler #1 on August 5, the Durham York Energy Centre has returned to full capacity and the Phase 2 Abatement Plan is underway. Staff continue to monitor

progress of the Abatement Plan and anticipate a successful stack retest in October of this year. Staff will continue to provide updates on the Abatement Plan if required. In addition, staff will provide a comprehensive summary report to Council in Q2 2017 after the facility completes its first full year of commercial operation.

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