

EXECUTIVE SUMMARY

Enbridge Gas Inc. operating as Union Gas (“Enbridge”) retained ORTECH Consulting Inc. (“ORTECH”) to update the Emission Summary and Dispersion Modelling (“ESDM”) Report for the Dawn Compressor Station (the Facility) located at 3332 Bentpath Line, Dresden, Ontario.

On November 5, 2019, ORTECH prepared an ESDM Report that supported an Environmental Compliance Approval (ECA) amendment application to the Ontario Ministry of the Environment, Conservation and Parks (“MECP” or “Ministry”) for a Province-Wide Environmental Compliance Approval (“PWECA”), which was subsequently granted on March 25, 2020 (number 4459-BJGQQY). Therefore, the Facility is currently covered by the PWECA number 4459-BJGQQY.

This ESDM report is updated to address the proposed change at the Facility:

- Replacement of one (1) existing Cleaver Brooks boiler with two (2) new Raypak MVB-1003A Boilers.

This report reflects more up-to-date site plans, emission sources and parameters and maximum emission scenario information supplied by Enbridge and considers all sources of air emissions at the site, including emergency power equipment.

The Facility is used to compress natural gas for transmission and storage purposes. The NAICS Code applicable to the Facility is ‘486210 – Pipeline Transportation of Natural Gas’.

This ESDM Report follows the requirements of the Ontario Regulation 419/05 Air Pollution – Local Air Quality and the MECP publications “Procedure for Preparing an Emission Summary and Dispersion Modelling Report, March 2018, Version 4.1,” (the Procedure)[1], and “Air Dispersion Modelling Guideline for Ontario, February 2017, Version 3.0” (the ADMGO) [2].

The ESDM report includes the quantification of emission rates for all significant sources of contaminants, specifically NO_x at the Facility and an estimation of the aggregate maximum 1-hour and 24-hour point-of-impingement (POI) concentrations for NO_x under the predictable worst case hour of operation as described below. The NO_x emission rates that have been estimated in this report are for maximum 1-hour and 24-hour operating scenarios as per O. Reg. 419/05 Schedule 3 regulatory requirements. Due to the underlying assumptions used for these scenarios, the emission rates cannot be realistically extrapolated to annual values and should not be used for such purposes.

Enbridge indicates that the predicted worst case hour of operation could see up to nine (9) compressor plants (C, D, E, F1, F2, G, H, I and J) operating at full load. The dispersion modeling assessment presented in this report considered nine (9) plants operating simultaneously at full load to ensure the Facility emissions meet the applicable limits.

In addition to nine (9) plants operating simultaneously, five (5) power generators, three (3) emergency generators and two (2) water pumps can be operated at the same time. To address the maximum impact, the operation of all combustion equipment is assessed to identify the worst case scenario. It is noted that the boiler/line heaters, comforting heating and other combustion equipment were deemed negligible and thus excluded from the air dispersion modeling assessment.

As shown in Table 1, the predicted maximum NO_x point of impingement (POI) concentrations are below the corresponding ½-hour, 1-hour and 24-hour Ministry POI Limits.

All five (5) natural gas fired power generators have been equipped with catalytic converters, which are expected to meet the in-stack limits specified in the “Emission limits and operating conditions for emergency generator sets in non-emergency situations”[4].

In summary, the ESDM report demonstrates that the nine (9) natural gas fired turbines (C, D, E, F1, F2, G, H, I and J) , five (5) natural gas fired power generators (PGAux3, PGAux4A, PGAux4B, PGH1 and PGH2), three (3) natural gas fired emergency generators (EGAB, EGAux5 and EGAux2) and two (2) diesel fired water pumps (FPD and FPD2) can operate in compliance with the Regulation, and meets the requirements of published Ministry air emissions related performance and operations criteria relevant to obtaining an ECA.

Table 1: Emission Summary Table

Scenario	Contaminant Name	CAS#	Total Facility Emission Rate (g/s)	Air Dispersion Model Used	Maximum POI Conc. [2] ($\mu\text{g}/\text{m}^3$)	Averaging Period (hours)	Ministry POI Limit [3] ($\mu\text{g}/\text{m}^3$)	Limiting Effect	Regulation Schedule #	Percentage of Ministry POI Limit (%)
Simultaneous operation of nine (9) turbines (C, D, E, F1, F2, G, H, I and J) and five (5) power generators (PGAux3, PGAux4a, PGAux4b, PGH1 and PGH2)	Nitrogen Oxides	10102-44-0	59.4	AERMOD 16216r	78.1	1	400	Health	3	20%
					32.9	24	200	Health	3	16%
Simultaneous operation of nine (9) turbines (C, D, E, F1, F2, G, H, I and J) and five (5) power generators (PGAux3, PGAux4a, PGAux4b, PGH1 and PGH2), three (3) emergency generators (EGAB, EGAUX5 and EGAUX2) and two (2) water pumps (FPD and FPD2)	Nitrogen Oxides	10102-44-0	67.5	AERMOD 16216r	671.0	0.5	1,880	Health	[1]	36%

Notes:

- [1] ½-hr screening limit of $1,880 \mu\text{g}/\text{m}^3$ is given in the Ministry publication 7976e "Emergency Generator Checklist, Supplement to Application for Approval, EPA s.9", November 2010.
- [2] Meteorological outliers have been removed from the results in accordance with Section 6.5 of the ADMGO.
- [3] "Air Contaminants Benchmarks (ACB) List: Standards, guidelines and screening levels for assessing point of impingement concentrations of air contaminants, April 2018, Version 2.0" (Ministry POI Limits).