

**AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL**

NUMBER 4883-BDPNMH

Issue Date: November 13, 2019

London District Energy GP Inc., as general partner for and on behalf of London District Energy LP  
301 Colborne Street  
London, Ontario  
N6B 2S8

**Site Location:** 301 Colborne Street  
London City, County of Middlesex

*You have applied under section 20.2 of Part II.1 of the Environmental Protection Act , R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:*

- one (1) *Co-generation Unit* (CHP1) consisting of:
  - one (1) natural gas fired combustion turbine, having a maximum heat input of 147,180,300 kilojoules per hour, generating 16 Megawatts of electricity; and
  - one (1) natural gas fired heat recovery steam generator, having a maximum heat input of 89,886,000 kilojoules per hour, for a maximum steam production of 59,000 kilograms per hour of steam; and
  - one (1) steam turbine generator, generating 3.3 Megawatts of electricity, exhausting into the air through a stack (GT1) having an exit diameter of 1.83 metres, extending 13.3 metres above the roof and 20.3 metres above grade;
- one (1) *Co-generation Unit*(CHP2) consisting of:
  - one (1) natural gas fired combustion turbine, having a maximum heat input of 159,206,850 kilojoules per hour, generating 16.4 Megawatts of electricity; and
  - one (1) natural gas fired heat recovery steam generator including a duct burner, having a maximum heat input of 35,004,420 kilojoules per hour, for a maximum steam production of 45,000 kilograms per hour of steam; and
  - one (1) steam turbine generator, generating 3.5 Megawatts of electricity, exhausting into the air through a stack (GT2) having an exit diameter of 1.98 metres, extending 11.1 metres above the roof and 24.4 metres above grade or, when the heat recovery steam generator is not in operation, through a bypass stack (GT2-BP) having an exit diameter of 1.98 metres, extending 6.1 metres above the roof and 18.3 metres above grade;

- one (1) natural gas fired boiler, having a maximum heat input capacity of 89,675,000 kilojoules per hour, exhausting into the air via a stack (BS1) having an exit diameter of 1.07 metres, extending 6.7 metres above the roof and 13.7 metres above grade or through the heat exchanger stack (CS1) having an exit diameter of 0.91 metre, extending 13.6 metres above the roof and 20.6 metres above grade;
- one (1) natural gas fired boiler, having a maximum heat input capacity of 57,075,500 kilojoules per hour, exhausting into the air via a stack (BS1) having an exit diameter of 1.07 metres, extending 6.7 metres above the roof and 13.7 metres above grade or through the heat exchanger stack (CS1) having an exit diameter of 0.91 metre, extending 13.6 metres above the roof and 20.6 metres above grade;
- one (1) natural gas fired boiler, having a maximum heat input capacity of 57,075,500 kilojoules per hour, exhausting into the air via a stack (BS3) having an exit diameter of 0.46 metres, extending 6.7 metres above the roof and 13.7 metres above grade or through the heat exchanger stack (CS1) having an exit diameter of 0.91 metre, extending 13.6 metres above the roof and 20.6 metres above grade;
- one (1) standby diesel generator set, having a rating of 350 kilowatts, exhausting into the air via a stack having an exit diameter of 0.2 metre, extending 0.1 metre above the roof and 3.1 metres above grade;
- three (3) cooling towers, with maximum water circulation flowrates of 25.7 cubic metres per minute, 17.1 cubic metres per minute and 8.14 cubic metres per minute, respectively;
- two (2) absorber water chillers each with a water flowrate of 4.5 cubic metres per minute;
- two (2) absorber water chillers each with a water flowrate of 10 cubic metres per minute;
- two (2) electric water chillers with water flowrates of 6.4 cubic metres per minute and 4.5 cubic metres per minute;
- one (1) electric 1300 horsepower compressor;
- one (1) storage tank, containing No. 2 fuel oil, having a maximum capacity of 48,675 litres;
- one (1) parts washer for maintenance shop, and maintenance welding exhaust;

all in accordance with the Environmental Compliance Approval Application submitted by London District Energy GP Inc., dated October 29, 2018 and signed by Sean Russell, General Manager; and the supporting information, including the Emission Summary and Dispersion Modelling Report, submitted by Golder Associates Ltd., dated October 29, 2018 and signed by Katie Armstrong; and the Acoustic Assessment

Report, submitted by Golder Associates Ltd., dated October 23, 2019, and signed by Tim Gully.

*For the purpose of this environmental compliance approval, the following definitions apply:*

1. "*Acoustical Consultant*" means a person currently active in the field of environmental acoustics and noise/vibration control, who is familiar with *Ministry* noise guidelines and procedures and has a combination of formal university education, training and experience necessary to assess noise emissions from a *Facility*;
2. "*Acoustic Assessment Report*" means the report, prepared in accordance with *Publication NPC-233*, by Golder Associates Ltd. and dated October 23, 2019 submitted in support of the application, that documents all sources of noise emissions and *Noise Control Measures* present at the *Facility*;
3. "*Acoustic Audit*" means an investigative procedure consisting of measurements and/or acoustic modelling of all sources of noise emissions due to the operation of the *Facility*, assessed to determine compliance with the performance limits for the *Facility* regarding noise emissions, completed in accordance with the procedures set in *Publication NPC-103* and reported in accordance with *Publication NPC-233*;
4. "*Acoustic Audit Report*" means a report presenting the results of an *Acoustic Audit*, prepared in accordance with *Publication NPC-233*;
5. "*Approval*" means this Environmental Compliance Approval, including the application and supporting documentation listed above;
6. "*Co-generation Units*" means the power co-generation equipment including the two (2) natural gas fired combustion gas turbines and the respective natural gas fired heat recovery steam generators, exhausting through stacks GT1, and GT2 or GT2-BP, described in the *Company's* application, this *Approval* and in the supporting documentation referred to herein, to the extent approved by this *Approval*;
7. "*Company*" means London District Energy GP Inc., as general partner for and on behalf of London District Energy LP, that is responsible for the construction or operation of the *Facility* and includes any successors and assigns;
8. "*Director*" means a person appointed for the purpose of section 20.3 of the *EPA* by the *Minister* pursuant to section 5 of the *EPA*;
9. "*District Manager*" means the District Manager of the appropriate local district office of the *Ministry*, where the *Facility* is geographically located;

10. "*EPA*" means the Environmental Protection Act, R.S.O. 1990, c.E.19, as amended ;
11. "*Equipment*" means the equipment and processes described in the *Company's* application, this *Approval* and in the supporting documentation submitted with the application, to the extent approved by this *Approval*;
12. "*ESDM Report*" means the Emission Summary and Dispersion Modelling Report which was prepared in accordance with section 26 of *O. Reg. 419/05* and the *Procedure Document* by Katie Armstrong of Golder Associates Ltd. and dated October 29, 2018 submitted in support of the application, and includes any changes to the report made up to the date of issuance of this *Approval*;
13. "*Facility*" means the entire operation located on the property where the *Equipment* is located;
14. "*Independent Acoustical Consultant*" means an *Acoustical Consultant* who is not representing the *Company* and was not involved in preparing the *Acoustic Assessment Report* or the design/implementation of *Noise Control Measures* for the *Facility* and/or *Equipment*. The *Independent Acoustical Consultant* shall not be retained by the *Acoustical Consultant* involved in the noise impact assessment or the design/implementation of *Noise Control Measures* for the *Facility* and/or *Equipment*;
15. "*Heat Output*" means the total useful heat energy recovered from the combustion turbine as heat, expressed in megawatts;
16. "*Lower Heating Value*" means the energy released during combustion of the fuel, excluding the latent heat content of the water vapour component of the products of combustion, expressed in megajoules per cubic metre at standard temperature and pressure, or megajoules per kilogram;
17. "*Manager*" means the Manager, Technology Standards Section, Technical Assessment and Standards Development Branch, or any other person who represents and carries out the duties of the Manager, Technology Standards Section, Technical Assessment and Standards Development Branch, as those duties relate to the conditions of this *Approval*;
18. "*Manual*" means a document or a set of documents that provide written instructions to staff of the *Company*;
19. "*Minister*" means the Minister of the Environment, Conservation and Parks or such other member of the Executive Council as may be assigned the administration of the *EPA* under the Executive Council Act;
20. "*Ministry*" means the ministry of the *Minister*;
21. "*Noise Control Measures*" means measures to reduce the noise emissions from

the *Facility* and/or *Equipment* including, but not limited to, silencers, acoustic louvres, enclosures, absorptive treatment, plenums and barriers, described in the *Company's* application, and in the supporting documentation referred to herein, including the *Acoustic Assessment Report*, to the extent approved by this *Approval*;

22. "*O. Reg. 419/05*" means Ontario Regulation 419/05, Air Pollution – Local Air Quality, as amended;
23. "*Power Output*" means the electricity and shaft power production of the combustion turbine, expressed in megawatts;
24. "*Pre-Test Plan*" means a plan for the *Source Testing* including the information required in Section 5 of the *Source Testing Code*;
25. "*Procedure Document*" means *Ministry* guidance document titled "Procedure for Preparing an Emission Summary and Dispersion Modelling Report" dated March 2018, as amended;
26. "*Publication NPC-103*" means the *Ministry* Publication NPC-103 of the Model Municipal Noise Control By-Law, Final Report, August 1978, published by the *Ministry* as amended;
27. "*Publication NPC-233*" means the *Ministry* Publication NPC-233, "Information to be Submitted for Approval of Stationary Sources of Sound", October, 1995 as amended;
28. "*Publication NPC-300*" means the *Ministry* Publication NPC-300, "Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning, Publication NPC-300", August 2013, as amended;
29. "*Source Testing*" means site specific sampling and testing to measure emissions resulting from operating the *Co-generation Units* under conditions that will derive an emission rate that, for the relevant averaging period of the contaminant, is at least as high as the maximum emission rate that the source of contaminant is reasonable capable of, within the approved operating range of the *Co-generation Units* which satisfies paragraph 1 of subsection 11(1) of *O.Reg. 419/05*;
30. "*Source Testing Code*" means the Ontario Source Testing Code, dated June 2010, prepared by the *Ministry*, as amended;
31. "*Test Contaminants*" means Nitrogen Oxides and Carbon Monoxide.
32. "*Thermal Efficiency*" means the fraction of the total energy input into each *Co-generation Unit* which is transformed into useful energy output expressed as a percentage on a lower heating value basis.

*You are hereby notified that this environmental compliance approval is issued to you*

subject to the terms and conditions outlined below:

## **TERMS AND CONDITIONS**

### **1. PERFORMANCE LIMITS**

1. The *Company* shall ensure that the *Co-generation Units* are designed and operated to comply, at all times, with the following performance requirements:
  - a. The concentrations of nitrogen oxides and carbon monoxide, in the undiluted gas emitted from the *Co-generation Units* are not greater than the limits specified in Schedule A of this *Approval*.
  - b. The *Thermal Efficiency* of the *Co-generation Units* is not less than the efficiency specified in Schedule A attached to this *Approval*.
2. The *Company* shall, at all times, ensure that the noise emissions from the *Facility* comply with the limits set out in *Ministry Publication NPC-300*.

### **2. OPERATION AND MAINTENANCE**

1. The *Company* shall ensure that the *Equipment* is properly operated and maintained at all times. The *Company* shall:
  - a. prepare, not later than three (3) months after the date of this *Approval*, and update, as necessary, a *Manual* outlining the operating procedures and a maintenance program for the *Equipment*, including:
    - i. routine operating and maintenance procedures in accordance with good engineering practices and as recommended by the *Equipment* suppliers;
    - ii. emergency procedures;
    - iii. procedures for any record keeping activities relating to operation and maintenance of the *Equipment*; and
    - iv. all appropriate measures to minimize noise and odorous emissions from all potential sources;
  - b. implement the recommendations of the *Manual*.

### **3. SOURCE TESTING**

1. The *Company* shall perform *Source Testing*, every two (2) calendar years, in accordance with the procedure outlined in Schedule B, to determine the rate of emission of the *Test Contaminants* from the *Co-generation Units* for each of the scenarios presented in Schedule A. The first *Source Testing* program shall be conducted not later than three (3) months after the commencement of operation for *Co-generation Unit* CHP2 and within one (1) year of the date

of the *Approval for Co-generation Unit CHP1*.

#### 4. THERMAL EFFICIENCY VERIFICATION

1. The *Company* shall perform a test once, not later than the completion of the first *Source Testing* program required in Condition 3, and once every two (2) calendar years thereafter, to determine the *Thermal Efficiency* of the *Co-generation Units* for each of the scenarios presented in Schedule A. The *Company* shall, as a minimum:
  - a. determine the parameters described in Schedule C, during the *Thermal Efficiency* testing for the *Co-generation Units*;
  - b. calculate the *Thermal Efficiency* of the *Co-generation Units* according to the formula described in Schedule C; and
  - c. prepare a summary of the results of the *Thermal Efficiency* testing no later than two (2) months after completing the test. The summary shall indicate the *Thermal Efficiency* of the *Co-generation Units* and include all parameters described in Schedule C.
2. If the measured *Thermal Efficiency* is less than the anticipated *Thermal Efficiency* specified in Schedule A of this *Approval* (with a tolerance of 0.05 multiplied by the anticipated *Thermal Efficiency*), the *Company* shall notify the *Ministry* so that the emission limits specified in Schedule A of this *Approval* could be revised accordingly.
3. *Thermal Efficiency* testing should be conducted at maximum rating or at the maximum load achievable at the time of testing and shall employ an average time of not less than three hours.

#### 5. RECORD RETENTION

1. The *Company* shall retain, for a minimum of two (2) years from the date of their creation, all records and information related to or resulting from the recording activities required by this *Approval*, and make these records available for review by staff of the *Ministry* upon request. The *Company* shall retain:
  - a. all records on the maintenance, repair and inspection of the *Equipment*;
  - b. all records and summaries produced from the *Source Testing*;
  - c. all records and summaries produced from the *Thermal Efficiency* verification testing; and
  - d. all records of any environmental complaints, including:
    - i. a description, time and date of each incident to which the complaint relates;

- ii. wind direction at the time of the incident to which the complaint relates; and
- iii. a description of the measures taken to address the cause of the incident to which the complaint relates and to prevent a similar occurrence in the future.

## 6. NOTIFICATION OF COMPLAINTS

1. The *Company* shall notify the *District Manager*, in writing, of each environmental complaint within two (2) business days of the complaint. The notification shall include:
  - a. a description of the nature of the complaint; and
  - b. the time and date of the incident to which the complaint relates.

## 7. NOISE CONTROL MEASURES

1. The *Company* shall:
  - a. fully implement the *Noise Control Measures* specified in the *Acoustic Assessment Report* prior to commencement of operation of the *Equipment*;
  - b. ensure that the *Noise Control Measures* are properly maintained and continue to provide the acoustical performance outlined in the *Acoustic Assessment Report*.

## 8. ACOUSTIC AUDIT

1. The *Company* shall carry out acoustic audit measurements on the actual noise emissions due to the operation of the *Facility*. The *Company*:
  - a. shall carry out acoustic audit measurements in accordance with the procedures in *Publication NPC-103*;
  - b. shall submit an *Acoustic Audit Report* on the results of the *Acoustic Audit*, prepared by an *Independent Acoustical Consultant*, in accordance with the requirements of *Publication NPC-233*, to the *District Manager* and the *Director* not later than six (6) months after the full implementation of the *Noise Control Measures*.
2. The *Director*:
  - a. may not accept the results of the *Acoustic Audit* if the requirements of *Publication NPC-233* were not followed;
  - b. may require the *Company* to repeat the *Acoustic Audit* if the results of the *Acoustic Audit* are found unacceptable to the *Director*.

# SCHEDULE A



## Emission and Thermal Efficiency Limits

Parameter	Co-generation Unit CHP1 Limit	Co-generation Unit CHP2 Limit	Co-generation Unit CHP2 (Bypass) Limit
Nitrogen Oxides (1)	42.0 ppmv (2)	46.2 ppmv	40.0 ppmv
Carbon Monoxide	60.0 ppmv	60.0 ppmv	60.0 ppmv
<i>Thermal Efficiency</i>	81.0 percent	54.4 percent	28.4 percent

(1) "Nitrogen oxides" means oxides of nitrogen, including nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>).

(2) "ppmv" means parts per million by volume on a dry basis normalized to 15 per cent oxygen.

## SCHEDULE B

### Source Testing Procedures

1. The *Company* shall submit, at least three (3) months prior to the scheduled date of the *Source Testing*, to the *Manager* a *Pre-Test Plan* for the *Source Testing* required under this *Approval*. The *Company* shall finalize the *Pre-Test Plan* in consultation with the *Manager*.
2. The *Company* shall not commence the *Source Testing* required under this *Approval* until the *Manager* has approved the *Pre-Test Plan*.
3. The *Company* shall notify the *Manager*, the *District Manager* and the *Director* in writing of the location, date and time of any impending *Source Testing* required by this *Approval*, at least fifteen (15) days prior to the *Source Testing*.
4. The *Company* shall submit a report (electronic format) on the *Source Testing* to the *Manager*, the *District Manager* and the *Director* not later than three (3) months after completing the *Source Testing*. The report shall be in the format described in the *Source Testing Code*, and shall also include, but not be limited to:
  - a. an executive summary;
  - b. an identification of the applicable North American Industry

Classification System code (NAICS) for the *Facility*;

- c. date, time and duration of each test;
- d. records of operating conditions at the time of *Source Testing* including, but not limited to, the following:
  - a. production data and equipment operating rate as a percent of maximum capacity;
  - b. *Facility/process* information related to the operation of the *Co-generation Units*;
- e. oxygen concentration (percent by volume);
- f. stack gas volumetric flowrate (cubic metres per second at reference conditions);
- g. stack gas temperature (degrees Celsius);
- h. average of emission concentration readings of the *Test Contaminants* (part per million by volume);
- i. results of *Source Testing*, including the emission rate, emission concentration, and relevant emission factor of the *Test Contaminants* from the *Co-generation Units*; and
- j. a tabular comparison of *Source Testing* results for the *Co-generation Units* and *Test Contaminants* to original emission estimates described in the *Company's* application and the *ESDM Report*.

5. The *Director* may not accept the results of the *Source Testing* if:

- a. the *Source Testing Code* or the requirements of the *Manager* were not followed;
- b. the *Company* did not notify the *Manager*, the *District Manager* and *Director* of the *Source Testing*; or
- c. the *Company* failed to provide a complete report on the *Source Testing*.

6. If the *Director* does not accept the results of the *Source Testing*, the *Director* may require re-testing. If re-testing is required, the *Pre-Test Plan* strategies need to be revised and submitted to the *Manager* for approval. The actions taken to minimize the possibility of the *Source Testing* results not being accepted by the *Director* must be noted in the revision.

7. If the *Source Testing* results are higher than the emission estimates in the

*Company's ESDM Report, the Company shall update their ESDM Report in accordance with Section 26 of O. Reg. 419/05 with the results from the Source Testing report and make these records available for review by staff of the Ministry upon request.*

## **SCHEDULE C**

### ***Thermal Efficiency Verification***

The *Company* shall, as a minimum:

1. Determine the following parameters:
  - a. *Power Output* (megaWatts)
  - b. *Heat Output* (megaWatts)
  - c. Fuel Flow Rate (in cubic metres per second at standard temperature and pressure, or kilograms per second)
  - d. *Lower Heating Value* of the Fuel (megajoules per cubic metre)
  - e. Ambient air temperature (degree of Celsius)
  - f. Barometric pressure (kilopascal)
  - g. Relative humidity (per cent)
  - h. Date, time and duration of test.
2. Calculate the *Thermal Efficiency* of the *Co-generation Units* according to the following formula:
  - Thermal Efficiency = (Power Output + Heat Output) x 100% / (Fuel Flow Rate x Lower Heating Value).

*The reasons for the imposition of these terms and conditions are as follows:*

1. Conditions No. 1 is included to provide the minimum performance requirement considered necessary to prevent an adverse effect resulting from the operation of the *Facility/Equipment*.
2. Condition No. 2 is included to emphasize that the *Equipment* must be maintained and operated according to a procedure that will result in compliance with the *EPA*, the Regulations and this *Approval*.
3. Conditions No. 3 and 4 are included to require the *Company* to gather accurate information so that compliance with the *EPA*, the Regulations and this *Approval*

can be verified.

4. Condition No. 5 is included to require the *Company* to keep records and to provide information to staff of the *Ministry* so that compliance with the *EPA*, the Regulations and this *Approval* can be verified.
5. Condition No. 6 is included to require the *Company* to notify staff of the *Ministry* so as to assist the *Ministry* with the review of the site's compliance.
6. Condition No. 7 is included to require the *Company* to implement a *Noise Control Measures* designed to ensure that the noise emissions from the *Facility* will be in compliance with applicable limits set in the *Ministry's* noise guidelines.
7. Condition No. 8 is included to require the *Company* to gather accurate information and submit an *Acoustic Audit Report* in accordance with procedures set in the *Ministry's* noise guidelines, so that the environmental impact and subsequent compliance with the *EPA*, the regulation and this *Approval* can be verified.

**Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 4126-ABJGQE issued on August 29, 2016**

*In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me, the Environmental Review Tribunal and in accordance with Section 47 of the Environmental Bill of Rights, 1993, the Minister of the Environment, Conservation and Parks, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Minister of the Environment, Conservation and Parks will place notice of your appeal on the Environmental Registry. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:*

- a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
- b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

*Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.*

*The Notice should also include:*

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;

5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

*And the Notice should be signed and dated by the appellant.*

*This Notice must be served upon:*

The Secretary*		The Minister of the Environment, Conservation and Parks		The Director appointed for the purposes of Part II.1 of the Environmental Protection Act
Environmental Review Tribunal				Ministry of the Environment, Conservation
655 Bay Street, Suite 1500	AND	777 Bay Street, 5th Floor	AND	and Parks
Toronto, Ontario		Toronto, Ontario		135 St. Clair Avenue West, 1st Floor
M5G 1E5		M7A 2J3		Toronto, Ontario
				M4V 1P5

**\* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or [www.ert.gov.on.ca](http://www.ert.gov.on.ca)**

*This instrument is subject to Section 38 of the Environmental Bill of Rights, 1993, that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek leave to appeal within 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry at [www.ebr.gov.on.ca](http://www.ebr.gov.on.ca), you can determine when the leave to appeal period ends.*

*The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.*

DATED AT TORONTO this 13th day of  
November, 2019

Jeffrey McKerrall, P.Eng.  
Director  
appointed for the purposes of Part  
II.1 of the *Environmental Protection  
Act*

KS/  
c: District Manager, MECP London - District  
Katie Armstrong, Golder Associates Ltd.