

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 9639-D5YLGH
Issue Date: July 29, 2024

Northland Power Thorold Cogen GP Inc., as general partner for and on behalf of Thorold Cogen L.P.
30 St. Clair Ave W, No. 3
Toronto, Ontario
M4V 3A1

Site Location: 90 Allanburg Road
Thorold City, Regional Municipality of Niagara
L2V 0A8

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) natural gas fired Co-generation Facility, with a nominal output rating of 288 megawatts, producing electricity and steam, consisting of the following equipment and associated accessories:

- one (1) natural gas fired gas turbine (GTG), to generate electricity through its own electrical generator, with a nominal output rating of 160 megawatts with a maximum heat input capacity of 1,899 gigajoules per hour and equipped with dry low-NOx burners, exhausting its hot flue gases to the heat recovery steam generator (HRSG) described below;
- one (1) heat recovery steam generator (HRSG), using the hot flue gases from the above noted gas turbine to generate steam, complete with natural gas fired duct burners having a total maximum heat input of 105.5 gigajoules per hour, exhausting into the atmosphere through a stack, having an exit diameter of 5.8 metres, extending 25.4 metres above the roof and 60.90 metres above grade;
- one (1) reheat/extraction/condensing steam turbine generator (STG), with a nominal rating of 95 megawatts, using the steam generated by the HRSG to generate electricity;

- two (2) natural gas fired auxiliary boilers, designated as AUXB-1 and AUXB-2, used to generate steam, each having a maximum heat input of 356 gigajoules per hour, each exhausting into the atmosphere through an individual stack, having an exit diameter of 1.8 metres, extending 42.7 metres above the roof and 61.0 metres above grade; and
- one (1) natural gas fired boiler, with a maximum heat input of 23.2 million kilojoules per hour and one (1) natural gas fired superheater, with a maximum heat input of 2.23 million kilojoules per hour, operating together to produce superheated process steam, exhausting into the atmosphere through a single stack (B3), having an exit diameter of 0.81 metre, extending 3.18 metres above the roof and 28 metres above grade.
- One (1) 1500 kilowatts standby emergency diesel generator set;
- One (1) diesel storage tank, having a storage capacity of 11,360 litres;

all in accordance with the Environmental Compliance Approval Application submitted by **Northland** Power Thorold Cogen GP Inc., as general partner for and on behalf of Thorold Cogen L.P., dated November 6, 2023, and signed by Jim Mulvale; and the supporting information, including the Emission Summary and Dispersion Modelling Report, submitted Arcadis Canada, dated November 6, 2023, and signed by Wasef Jamil; E-mail submitted by Arcadis Canada, dated April 16, 2024, and signed by Wasef Jamil.

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

1. "Acoustic Assessment Report" means the report, prepared in accordance with Publication NPC-233 submitted in support of the application, that documents all sources of noise emissions and Noise Control Measures present at the Facility. "Acoustic Assessment Report" also means the Acoustic Assessment Report dated January 2023, prepared by Arcadis Canada Inc., and signed by Parnia Lotfi Moghaddam, P.Eng.;
2. "Approval" means this Environmental Compliance Approval, including the application and supporting documentation listed above;
3. "Co-generation Unit" means the co-generation equipment including the natural gas fired gas turbine and the natural gas fired heat recovery steam generator, described in the Company's application, this Approval and in the supporting documentation referred to herein, to the extent approved by this Approval;
4. "Commissioning Date" means the first day on which the Equipment begins to produce electricity;
5. "Commissioning Period" means the 90-day period following the Commissioning Date;
6. "Company" means **Northland** Power Thorold Cogen GP Inc. as a general partner for and on behalf of Thorold Cogen L.P., the partnership under the laws of Ontario, that is responsible for the construction or operation of the Facility, and includes its successors and assignees in accordance with section 19 of the EPA.

7. "Continuous Monitoring Plan" means a document that describes the Continuous Monitoring System that the Company will use for continuous monitoring;
8. "Continuous Monitoring System" means the continuous monitoring equipment, data acquisition system and associated operating, maintenance, verification and auditing procedures described in the Continuous Monitoring Plan;
9. "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;
10. "District Manager" means the District Manager of the appropriate local district office of the Ministry, where the Facility is geographically located;
11. "EPA" means the *Environmental Protection Act*, R.S.O. 1990, c.E.19;
12. "Equipment" means the equipment described in the Company's application, this Approval and in the supporting documentation submitted with the application, to the extent approved by this Approval;
13. "Facility" means the entire operation located on the property where the Equipment is located;
14. "Heat Input" means the gross heat input provided by the fuel to the Equipment reported on a higher heating value basis in gigajoules per hour (GJ/hr) or megawatts (MW);
15. "Interim Sound Level Limit(s)" means a specific sound level limit at a Point of Reception in terms of descriptors outlined in Publication NPC-300, as applicable, proposed by the Company and approved by the Director as an Interim Sound Level Limit within the Memorandum of Understanding, which was developed to jointly manage and achieve compliance with the sound level limits set out in Ministry Publication NPC-300, as applicable;
16. "Licensed Engineering Practitioner" has the same meaning as in O.Reg. 1/17;
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. "Memorandum of Understanding" means the "Memorandum of Understanding to Jointly Manage the Site-Wide Noise Assessment and Mitigation, as mandated by the Ontario Ministry of the Environment (MOE), between Abitibi-Consolidated Company of Canada (now Resolute FP Canada Inc.) and Thorold Cogen L.P (now **Northland** Power Thorold Cogen GP Inc.)" and agreed upon by the Ministry in the letter dated April 11, 2007 signed by Vic Schroter, the Ministry Senior Noise

Engineer;

20. "Ministry" means the ministry of the government of Ontario responsible for the EPA and includes all officials, employees or other persons acting on its behalf;
21. "Noise Control Measures" means measures to reduce the noise emissions from the Facility and/or Equipment including, but not limited to, silencers, acoustic louvers, enclosures, absorptive treatment, plenums and barriers, described in the Company's application, this Approval and in the supporting documentation referred to herein, to the extent approved by this Approval. It also means the Noise Control Measures as detailed in the Acoustic Assessment Report dated January 2023, prepared by Arcadis Canada Inc., and signed by Parnia Lotfi Moghaddam, P.Eng.;
22. "NOx" means oxides of nitrogen, including nitric oxide (NO) and nitrogen dioxide (NO₂);
23. "Power Output" means the gross electrical power output of the Equipment reported in gigajoules per hour (GJ/hr) or megawatts (MW);
24. "Publication NPC-233" means the Ministry Publication NPC-233, "Information to be Submitted for Approval of Stationary Sources of Sound", October, 1995, as amended;
25. "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.
26. "Shut-down" has the same meaning as in O.Reg. 1/17;
27. "Start-up" has the same meaning as in O.Reg. 1/17;
28. "Thermal Efficiency" means the ratio of delivered useful energy output to the energy input expressed as a percentage on a higher 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. 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, including spill clean-up procedures;
 - iii. procedures for any record keeping activities relating to operation and maintenance of the Equipment;
 - iv. all appropriate measures to minimize noise emissions from all potential sources; and
 - v. the frequency of inspection and replacement of the filter material in the Equipment;
- b. implement the recommendations of the Manual.

2. 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 produced by the Continuous Monitoring System;
 - c. all records of the Thermal Efficiency test, including calculations of the Thermal Efficiency of the Co-generation Unit; 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.

3. 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.

4. NOISE

1. The Company shall:
 - a. operate the Equipment/Facility as outlined in the Acoustic Assessment Report dated January 2023, prepared by Arcadis Canada Inc., and signed by Parnia Lotfi Moghaddam, P.Eng.;
 - b. ensure at all times that the noise emissions from the Facility comply with the Interim Sound Level Limits and limits set out in Ministry Publication NPC-300; and
 - c. ensure that the Noise Control Measures are properly maintained and continue to provide the acoustical performance outlined in the Acoustic Assessment Report.

5. PERFORMANCE LIMITS

1. The Company shall ensure that the Co-generation Unit is designed and operated to comply with the following performance requirements:
 - a. the concentrations of nitrogen oxides and carbon monoxide, in the undiluted gas emitted from the Co-generation Unit are not greater than the limits specified in Schedule A of this Approval; and
 - b. the Thermal Efficiency of the Co-generation Unit is not less than the efficiency specified in Schedule A of this Approval.
2. Condition 5.1 does not apply during the Start-up and Shut-down periods of the Co-generation Unit if the Start-up or Shut-down is conducted according to a written plan that minimizes discharges into the air during the period of Start-up or Shut-down.
3. The Company shall, not later than twelve (12) months from the date of this Approval, install, operate and maintain continuous monitoring devices to measure the Heat Input and Power Output of the Co-generation Unit and record the integrated averages on an hourly basis with a known date and time reference.
4. The Company shall record each occurrence where the Thermal Efficiency of the Co-generation Unit falls below 4 percent for more than 3 consecutive hours when the Co-generation Unit is in an operative state including Start-up and Shut-down. The record shall include the start time, end time and duration of the decreased Thermal Efficiency occurrence.

6. PERFORMANCE ASSESSMENT

1. The Company shall calculate the Thermal Efficiency of the Co-generation Unit within three (3) months of the Commissioning Period and every two (2) calendar years thereafter, in accordance with the following:
 - a. The Company shall operate the Co-generation Unit for a minimum of one (1) hour during the testing at as close to 100 percent of the maximum Power Output as possible, with a minimum load of 70 percent of the maximum Power Output.
 - b. The Company shall calculate the Thermal Efficiency of the Co-generation Unit on an hourly basis using the monitored Heat Input and Power Output according to the following formula:
Thermal Efficiency (%) = Power Output / Heat Input x 100.
 - c. The Company shall prepare a report on the testing and Thermal Efficiency calculation not later than three (3) months after completing the testing and make the report available for review by staff of the Ministry upon request. The report shall be dated, signed and sealed by a Licensed Engineering Practitioner and include, but not be limited to:
 - i. an executive summary;
 - ii. all records of operating conditions at the time of testing;
 - iii. results of the Thermal Efficiency calculation; and
 - iv. the name and license number of the Licensed Engineering Practitioner.

7. CONTINUOUS MONITORING

1. The Company shall submit, to the Manager, not later than sixty (60) days from the date of this Approval, a Continuous Monitoring Plan for the Continuous Monitoring System that will continuously monitor the following chemicals in the undiluted gas leaving the Co-generation Unit:
 - a. Nitrogen oxides;
 - b. Carbon monoxide; and
 - c. Oxygen;
2. The Continuous Monitoring Plan shall include descriptions of, but not be limited to:
 - a. Source and air pollutants / parameters requiring continuous monitoring and associated targets / in-stack limits;

- b. Design of Continuous Monitoring System and analyzer performance specifications;
 - c. Location of sample extraction point relative to control devices and upstream/downstream flow disturbances;
 - d. Sample probe, gas calibration port location(s), transfer line and associated flue gas conditions at the extraction point;
 - e. Means of sample extraction, transport and sample conditioning;
 - f. Relative accuracy test audit procedure to be used and verification frequency;
 - g. Performance indicators and monitoring frequency;
 - h. Communication protocol(s) and corrective action(s) regarding malfunctions;
 - i. Preventative maintenance measures and spare parts inventory;
 - j. Service contractor and staff responsibilities including training;
 - k. Other operating and maintenance procedures as applicable;
 - l. Data acquisition system; and
 - m. Data verification/editing/backfilling procedures.
3. The Company shall finalize the Continuous Monitoring Plan in consultation with the Manager.
4. The Company shall procure, install, operate and maintain the Continuous Monitoring System not later than six (6) months after the Manager has approved the Continuous Monitoring Plan. A current copy of the Continuous Monitoring Plan shall be kept at an accessible location for easy access by persons responsible for supervising, operating and maintaining the Continuous Monitoring System and associated data as well as by a Ministry representative, upon request.

8. CHANGE OF OWNERSHIP

1. The Company shall notify the Director in writing, and forward a copy of the notification to the District Manager, within thirty (30) days of the occurrence of any of the following changes to Facility operations:
- a. the ownership of the Facility;
 - b. the operator of the Facility;

- c. the address of the Company;
 - d. the partners, where the Company is or any time becomes a partnership and a copy of the most recent declaration filed under the Business Names Act, R.S.O. 1990, c. B.17, shall be included in the notification; or
 - e. the name of the corporation where the Company is or at any time becomes a corporation, other than a municipal corporation, and a copy of the most current information filed under the Corporations Information Act, R.S.O. 1990, c. C.39, shall be included in the notification.
2. In the event of any change in ownership of the Facility, the Company shall notify the successor of the existence of this Approval and provide the successor with a copy of this Approval, and the Company shall provide a copy of the notification to the District Manager and the Director.

SCHEDULE A

Emission Limits and Thermal Efficiency

Parameter	Limits
Nitrogen Oxides (1)	38 ppmv (2) (3)
Carbon Monoxide	50 ppmv (2) (3)
Thermal Efficiency	47%

"Nitrogen oxides" means nitrogen oxides as prescribed in O. Reg. 419/05.

- 1. "Nitrogen oxides" means nitrogen oxides as prescribed in O. Reg. 419/05.
- 2. Demonstration of compliance with the limits of NOx and carbon monoxide is based on the "arithmetic averaging" of the emissions recorded in their respective Continuous Monitoring System under "normal operation" of the Co-generation Unit. "Normal operation" means the full-load operation of the Co-generation Unit as defined by the manufacturer. "Arithmetic averaging" means arithmetic averaging of the emissions recorded by the Continuous Monitoring System in the entire normal operation cycle, when the normal operation cycle lasted for less than 24 hours, or arithmetic averaging of the emissions recorded by the Continuous Monitoring System in the normal operation cycle based on a 24-hour rolling average basis, when the normal operation cycle lasted more than 24 hours.
- 3. "ppmv" means parts per million by volume at Reference Conditions (ambient temperature at 15 degrees Celsius, 60 percent relative humidity and 101.3 kiloPascals barometric pressure) on a dry volume basis normalized to 15 percent oxygen.

4. The calculated Thermal Efficiency shall be converted to Reference Conditions.

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

1. Condition No. 1 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.
2. Condition No. 2 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.
3. Condition No. 3 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.
4. Condition No. 4 is included to provide the minimum performance requirements considered necessary to prevent an adverse effect resulting from the operation of the Facility.
5. Conditions No. 5, 6 and 7 are included to require the Company to gather accurate information so that the environmental impact and subsequent compliance with the EPA, the regulations and this Approval can be verified.
6. Condition No. 8 is included to require the Company to notify/report to the Ministry so that compliance with the EPA, the regulations and this Approval can be verified.

**Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s).
3700-BNFNU2 issued on May 1, 2020**

In accordance with Section 139 of the *Environmental Protection Act*, you may by written notice served upon me and the Ontario Land Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. 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 available 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:

Registrar*
Ontario Land Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5
OLT.Registrar@ontario.ca

and

The Director appointed for the purposes of Part II.1
of the *Environmental Protection Act*
Ministry of the Environment, Conservation and
Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

* **Further information on the Ontario Land Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349 or 1 (866) 448-2248, or www.olt.gov.on.ca**

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

DATED AT TORONTO this 29th day of July, 2024



Nancy E Orpana, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

ML/

c: District Manager, MECP Niagara
Jamil Wasef, Arcadis Canada Inc.