



DEPARTMENT ORDER

The President and Trustees of
Colby College
Kennebec County
Waterville, Maine
A-107-71-AA-A

Departmental
Findings of Fact and Order
Air Emission License
Amendment #4

FINDINGS OF FACT

After review of the air emission license amendment application, staff investigation reports, and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 Maine Revised Statutes (M.R.S.) § 344 and § 590, the Maine Department of Environmental Protection (Department) finds the following facts:

I. REGISTRATION

A. Introduction

The President and Trustees of Colby College (Colby) was issued Air Emission License A-107-71-W-R/M on April 15, 2016, for the operation of emission sources associated with their educational facility. The license was subsequently amended on October 29, 2019 (A-107-71-X-A), February 18, 2021 (A-107-71-Y-A), and on March 22, 2023 (A-107-71-Z-A).

The equipment addressed in this license amendment is located on the Colby campus at 5000 Mayflower Hill Drive, Waterville, Maine.

Colby has requested an amendment to their license in order to add a natural gas fired emergency generator, SICE #10, at the Gordon Center. Additionally, the visible emission standards of SICE #6 and #7 will be updated to the latest standards as found in 06-096 C.M.R. ch. 101.

B. Emission Equipment

The following equipment is addressed in this air emission license amendment:

Stationary Engine

Equipment	Max. Capacity (MMBtu/hr)	Rated Output Capacity (hp)	Maximum Firing Rate	Fuel Type	Date of Manuf.	Date of Install.
SICE #10	1.8	245	1,778 scf/hr	natural gas	2023	2023

C. Application Classification

All rules, regulations, or statutes referenced in this air emission license refer to the amended version in effect as of the date this license was issued.

The modification of a minor source is considered a major or minor modification based on whether or not expected emission increases exceed the “Significant Emissions” levels as defined in the Department’s *Definitions Regulation*, 06-096 Code of Maine Rules (C.M.R.) ch. 100. The emission increases are determined by subtracting the current licensed annual emissions preceding the modification from the maximum future licensed annual emissions, as follows:

Pollutant	Current License (tpy)	Future License (tpy)	Net Change (tpy)	Significant Emission Levels
PM	12.4	12.4	0	100
PM ₁₀	12.4	12.4	0	100
PM _{2.5}	12.4	12.4	0	100
SO ₂	4.8	4.8	0	100
NO _x	71.2	71.5	0.3	100
CO	38.2	38.3	0.1	100
VOC	6.1	6.1	0	100

D. Facility Classification

With the annual fuel limit on Boilers 10A, 10B, and 10C, and the operating hours restriction on the emergency generators, the facility is licensed as follows:

- As a synthetic minor source of air emissions for NO_x, because Colby is subject to license restrictions that keep facility emissions below major source thresholds for criteria pollutants; and
- As an area source of hazardous air pollutants (HAP), because the licensed emissions are below the major source thresholds for HAP.

II. **BEST PRACTICAL TREATMENT (BPT)**

A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 C.M.R. ch. 100. Separate control requirement categories exist for new and existing equipment.

BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in *Definitions*

Regulation, 06-096 C.M.R. ch. 100. BACT is a top-down approach to selecting air emission controls considering economic, environmental, and energy impacts.

B. SICE #10

Colby will operate SICE #10 as an emergency generator. SICE #10 consists of an electrical generator and a natural gas fired engine rated at 1.8 MMBtu/hr which was manufactured in 2023.

1. BACT Findings

The BACT emission limits for SICE #10 are based on the following:

PM/PM ₁₀ /PM _{2.5}	–	0.05 lb/MMBtu from 06-096 C.M.R. ch. 115 BACT
SO ₂	–	5.88x10 ⁻⁴ lb/MMBtu from AP-42 Table 3.2-2, dated 7/00
NO _x	–	0.847 lb/MMBtu from AP-42 Table 3.2-2, dated 7/00
CO	–	0.557 lb/MMBtu from AP-42 Table 3.2-2, dated 7/00
VOC	–	0.118 lb/MMBtu from AP-42 Table 3.2-2, dated 7/00
Visible Emissions	–	06-096 C.M.R. ch. 115, BACT

The BACT emission limits for SICE #10 are the following:

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
SICE #10	0.09	0.09	0.09	0.01	1.55	1.02	0.22

Visible emissions from SICE #10 shall not exceed 10% opacity on a six-minute block average basis.

The Department has determined that the proposed BACT visible emission limit is more stringent than the applicable limit in 06-096 C.M.R. ch. 101. Therefore, the visible emission limit for SICE #10 has been streamlined to the more stringent BACT limit, and only this more stringent limit shall be included in the air emission license.

2. Chapter 169

Stationary Generators, 06-096 C.M.R. ch. 169 (Chapter 169), is applicable to SICE #10. It is an emergency generator powered by an engine with a rated output of less than 1,000 brake horsepower (747 kW). Chapter 169 identifies emission standards for generator engines subject to this chapter and stack height requirements for certain generator engines subject to this chapter.

a. Chapter 169 Emission Standards Requirements

For SICE #10, Colby shall comply with the emission standards for emergency generators by complying with the applicable standards contained in 40 C.F.R. Part 60, Subpart JJJJ. [06-096 C.M.R. ch. 169, § 4(B)(1)]

b. Chapter 169 Stack Height Requirements

Chapter 169 identifies stack height requirements for any stack used to exhaust a generator engine or combination of generator engines with a combined rated output equal to or greater than 1,000 brake horsepower (747 kW). Individual generator engines with a maximum power capacity of less than 300 kW are not included in the assessment of the combined generator power capacity exhausted through a common stack. [06-096 C.M.R. ch. 169, § 6]

There are no stack height requirements in Chapter 169 applicable to SICE #10 because it exhausts through its own stack and its rated output, 245 hp, is less than 1,000 brake horsepower (747 kilowatts). [06-096 C.M.R. ch. 169, § 6]

3. New Source Performance Standards

Standards of Performance for Spark Ignition Internal Combustion Engines, 40 C.F.R. Part 60, Subpart JJJJ is applicable to the emergency engine listed above since the unit was ordered after June 12, 2006, and manufactured after January 1, 2009. [40 C.F.R. § 60.4230] By meeting the requirements of 40 C.F.R. Part 60, Subpart JJJJ, the unit also meets the requirements found in the *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, 40 C.F.R. Part 63, Subpart ZZZZ. [40 C.F.R. § 63.6590(c)]

A summary of the currently applicable federal 40 C.F.R. Part 60, Subpart JJJJ requirements is listed below.

a. Emergency Engine Designation and Operating Criteria

Under 40 C.F.R. Part 60, Subpart JJJJ, a stationary reciprocating internal combustion engine (ICE) is considered an emergency stationary ICE (emergency engine) as long as the engine is operated in accordance with the following criteria. Operation of an engine outside of the criteria specified below may cause the engine to no longer be considered an emergency engine under 40 C.F.R. Part 60, Subpart JJJJ, resulting in the engine being subject to requirements applicable to non-emergency engines.

(1) Emergency Situation Operation (On-Site)

There is no operating time limit on the use of an emergency engine to provide electrical power or mechanical work during an emergency situation. Examples of use of an emergency engine during emergency situations include the following:

- Use of an engine to produce power for critical networks or equipment (including power supplied to portions of a facility) because of failure or interruption of electric power from the local utility (or the normal power source, if the facility runs on its own power production);
- Use of an engine to mitigate an on-site disaster;
- Use of an engine to pump water in the case of fire, flood, natural disaster, or severe weather conditions; and
- Similar instances.

(2) Non-Emergency Situation Operation

An emergency engine may be operated up to a maximum of 100 hours per calendar year for maintenance checks, readiness testing, and other non-emergency situations as described below.

- (i) An emergency engine may be operated for a maximum of 100 hours per calendar year for maintenance checks and readiness testing, provided that the tests are recommended by federal, state, or local government; the manufacturer; the vendor; the regional transmission organization or equivalent balancing authority and transmission operator; or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE more than 100 hours per calendar year.
- (ii) An emergency engine may be operated for up to 50 hours per calendar year for other non-emergency situations. **However, these operating hours are counted as part of the 100 hours per calendar year operating limit described in paragraph (2) and (2) (i) above.**

The 50 hours per calendar year operating limit for other non-emergency situations cannot be used for peak shaving, demand response, or to generate income for a facility by providing power to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

b. 40 C.F.R. Part 60, Subpart JJJJ Requirements

(1) Manufacturer Certification Requirement

The engine shall be certified by the manufacturer as meeting the emission standards for new nonroad spark ignition engines found in 40 C.F.R. Part 60, Subpart JJJJ, Table 1. [40 C.F.R. § 60.4233]

(2) Non-Resettable Hour Meter Requirement

A non-resettable hour meter shall be installed and operated on the engine. [40 C.F.R. § 60.4237]

(3) Operation and Maintenance Requirement

The engine shall be operated and maintained according to the manufacturer's written instructions or procedures developed by Colby that are approved by the engine manufacturer. Colby may only change those settings that are permitted by the manufacturer. [40 C.F.R. § 60.4243]

Colby shall have available for review by the Department a copy of the manufacturer's written instructions or procedures developed by Colby that are approved by the engine manufacturer for engine operation and maintenance. [06-096 C.M.R. ch. 115, BPT]

(4) Annual Time Limit for Maintenance and Testing

As an emergency engine, the unit shall be limited to 100 hours/year for maintenance and testing. The emergency engine may operate up to 50 hours per year in non-emergency situations, but those 50 hours are included in the 100 hours total allowed for maintenance and testing. The 50 hours for non-emergency use cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. [40 C.F.R. § 60.4243(d)]

(5) Recordkeeping

Colby shall keep records that include maintenance conducted on the engine and the hours of operation of the engine recorded through the non-resettable hour meter. Documentation shall include the number of hours the unit operated for emergency purposes, the number of hours the unit operated for non-emergency purposes, and the reason the engine was in operation during each time. [40 C.F.R. § 60.4245(b)]

C. Emission Statements

Colby is subject to emissions inventory requirements contained in *Emission Statements*, 06-096 C.M.R. ch. 137. Colby shall maintain the following records in order to comply with this rule:

1. The amount of natural gas fired in Boilers 10A, 10B, 10C, #1, #2, #3, and #4, and SICE #4, #5, #6, #8, #9, and #10 (each) on a monthly basis;
2. The amount of propane fired in Boilers 10A, 10B, and 10C (each) on a monthly basis;
3. The amount of wood fired (at 45% moisture) in Boilers BIO1 and BIO2 on a monthly basis;
4. The sulfur content of the distillate fuel fired in SICE #1-#3, and #7; and
5. Hours each emission unit was operating on a monthly basis.

In reporting year 2023 and every third year thereafter, Colby shall report to the Department emissions of hazardous air pollutants as required by 06-096 C.M.R. ch. 137, § (3)(C). The Department will use these reports to calculate and invoice for the applicable annual air quality surcharge for the subsequent three billing periods. Colby shall pay the annual air quality surcharge, calculated by the Department based on these reported emissions of hazardous air pollutants, by the date required in Title 38 M.R.S. § 353-A(3).
[38 M.R.S. § 353-A(1-A)]

D. Annual Emissions

The table below provides an estimate of facility-wide annual emissions for the purposes of calculating the facility's annual air license fee and establishing the facility's potential to emit (PTE). Only licensed equipment is included, i.e., emissions from insignificant activities are excluded. Similarly, unquantifiable fugitive particulate matter emissions are not included except when required by state or federal regulations. Maximum potential emissions were calculated based on the following assumptions:

- A combined heat input limit of 246,840 MMBtu/year in Boilers 10A, 10B, and 10C;
- Operating Boilers BIO1 and BIO2 for 8,760 hours/year each;
- Operating generators SICE #1-#10 for 100 hrs/yr each;
- Operating Boilers #1-#4 for 8,760 hr/yr each.

This information does not represent a comprehensive list of license restrictions or permissions. That information is provided in the Order section of this license.

Total Licensed Annual Emissions for the Facility
Tons/year
 (used to calculate the annual license fee)

	PM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	VOC
Boilers 10A, 10B, and 10C	6.2	6.2	6.2	0.1	12.3	10.2	2.5
Boilers BIO1 and BIO2	5.3	5.3	5.3	4.4	54.8	26.3	3.0
SICE #1-10	0.1	0.1	0.1	0.1	1.9	0.9	0.2
Boilers #1-#4	0.8	0.8	0.8	0.2	2.5	0.9	0.4
Total TPY	12.4	12.4	12.4	4.8	71.5	38.3	6.1

Pollutant	Tons/year
Single HAP	9.9
Total HAP	24.9

III. AMBIENT AIR QUALITY ANALYSIS

The level of ambient air quality impact modeling required for a minor source is determined by the Department on a case-by case basis. In accordance with 06-096 C.M.R. ch. 115, an ambient air quality impact analysis is not required for a minor source if the total licensed annual emissions of any pollutant released do not exceed the following levels and there are no extenuating circumstances:

Pollutant	Tons/Year
PM ₁₀	25
PM _{2.5}	15
SO ₂	50
NO _x	50
CO	250

The total annual licensed emissions for Colby are above at least one of the emission levels contained in the table above. However, Colby has previously submitted an ambient air quality impact analysis for PM₁₀, SO₂, NO₂, and CO for air emission license A-107-71-Q-R/A (dated November 5, 2010) and one for NO₂ for air emission license amendment A-107-71-S-M (dated October 25, 2013). Results from those analyses demonstrated that emissions from the facility, in conjunction with all other sources, do not violate Ambient Air Quality Standards (AAQS). Due to the minimal increase in annual air emissions that will result from the execution of this project, no additional air quality impact analysis is required for this license amendment.

This determination is based on information provided by the applicant regarding the expected construction and operation of the proposed emission units. If the Department determines that any parameter (e.g., stack size, configuration, flow rate, emission rates, nearby structures, etc.)

deviates from what was included in the application, the Department may require Colby to submit additional information and may require an ambient air quality impact analysis at that time.

ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards, and
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License Amendment A-107-71-AA-A subject to the conditions found in Air Emission License A-107-71-W-R/M, in amendments A-107-71-X-A, A-107-71-Y-A, and A-107-71-Z-A, and the following conditions.

Severability. The invalidity or unenforceability of any provision of this License Amendment or part thereof shall not affect the remainder of the provision or any other provisions. This License Amendment shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

SPECIFIC CONDITIONS

The following shall replace Specific Condition (19) of Air Emission License A-107-71-Y-A:

(19) Emergency Engines SICE #6, #7, #8, #9, and #10

- A. SICE #6, #7, #8, #9, and #10 shall each be limited to 100 hours of operation per calendar year, excluding operating hours during emergency situations. [06-096 C.M.R. ch. 115, BPT/BACT]
- B. Emissions shall not exceed the following:

Unit	Pollutant	lb/MMBtu	Origin and Authority
SICE #8	PM	0.12	06-096 C.M.R. ch. 115, BPT

- C. Emissions shall not exceed the following [06-096 C.M.R. ch. 115, BPT for SICE #6, #7, #8, and #9; 06-096 C.M.R. ch. 115, BACT for SICE #10]:

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
SICE #6	0.01	0.01	0.01	0.01	0.86	1.72	0.43
SICE #7	0.06	0.06	0.06	0.01	0.66	0.7	0.66
SICE #8	0.16	0.16	0.16	0.01	2.73	3.66	0.91
SICE #9	0.07	0.07	0.07	0.01	0.68	1.37	0.34
SICE #10	0.09	0.09	0.09	0.01	1.55	1.02	0.22

D. Visible Emissions

1. Visible emissions from SICE #7 shall not exceed 20% opacity on a six-minute block average basis, except for no more than two six-minute block averages in a continuous three-hour period. [06-096 C.M.R. ch. 101(3)(A)(4)]
 - a. Maintain a log (written or electronic) of the date, time, and duration of all generator startups.
 - b. Operate the generator in accordance with the manufacturer's emission-related operating instructions.
 - c. Minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations shall apply.
 - d. Operate the generator, including any associated air pollution control equipment, at all times in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Department that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the unit.
 2. Visible emissions from SICE #6, #8, #9, and #10 shall each not exceed 10% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BPT for SICE #6, #8 and #9; 06-096 C.M.R. ch. 115, BACT for SICE #10]
- E. SICE #7 shall meet the applicable requirements of 40 C.F.R. Part 60, Subpart III, including the following: [incorporated under 06-096 C.M.R. ch. 115, BPT]
1. Manufacturer Certification
The engine shall be certified by the manufacturer as meeting the emission standards for new nonroad compression ignition engines found in § 60.4202.
[40 C.F.R. § 60.4205(b)]

2. Ultra-Low Sulfur Fuel
The fuel fired in the engine shall not exceed 15 ppm sulfur (0.0015% sulfur). Compliance with the fuel sulfur content limit shall be demonstrated by fuel delivery receipts from the supplier, fuel supplier certification, certificate of analysis, or testing of the tank containing the fuel to be fired. [40 C.F.R. § 60.4207(b) and 06-096 C.M.R. ch. 115, BPT]
3. Non-Resetable Hour Meter
A non-resetable hour meter shall be installed and operated on the engine. [40 C.F.R. § 60.4209(a)]
4. Annual Time Limit for Maintenance and Testing
 - a. As an emergency engine, the unit shall be limited to 100 hours/year for maintenance checks and readiness testing. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations (this does not include peak shaving, demand response, or to generate income for a facility by providing power to an electric grid or otherwise supply power as part of a financial arrangement with another entity). These limits are based on a calendar year. Compliance shall be demonstrated by records (electronic or written log) of all engine operating hours. [40 C.F.R. § 60.4211(f) and 06-096 C.M.R. ch. 115, BPT]
 - b. Colby shall keep records that include the hours of operation of the engine recorded through the non-resetable hour meter. Documentation shall include the number of hours the unit operated for emergency purposes, the number of hours the unit operated for non-emergency purposes, and the reason the engine was in operation during each time.
5. Operation and Maintenance
The engine shall be operated and maintained according to the manufacturer's emission-related written instructions. Colby may only change those emission-related settings that are permitted by the manufacturer. [40 C.F.R. § 60.4211(a)]

Colby shall have available for review by the Department a copy of the manufacturer's emission-related written instructions for engine operation and maintenance. [06-096 C.M.R. ch. 115, BPT]
- F. SICE #6, #8, #9, and #10 shall meet the applicable requirements of 40 C.F.R. Part 60, Subpart JJJJ, including the following: [incorporated under 06-096 C.M.R. ch. 115, BPT for SICE #6, #8, and #9; 06-096 C.M.R. ch. 115, BACT for SICE #10]

1. **Manufacturer Certification**

The engines shall be certified by the manufacturer as meeting the emission standards for new nonroad spark ignition engines found in 40 C.F.R. Part 60, Subpart JJJJ, Table 1.

2. **Non-Resettable Hour Meter**

A non-resettable hour meter shall be installed and operated on each engine. [40 C.F.R. § 60.4237 and 06-096 C.M.R. ch. 115, BPT]

3. **Annual Time Limit for Maintenance and Testing**

a. As emergency engines, the units shall each be limited to 100 hours/year for maintenance checks and readiness testing. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations (this does not include peak shaving, demand response, or to generate income for a facility by providing power to an electric grid or otherwise supply power as part of a financial arrangement with another entity). The limits are based on a calendar year. Compliance shall be demonstrated by records (electronic or written log) of all engine operating hours. [40 C.F.R. § 60.4243(d) and 06-096 C.M.R. ch. 115, BPT]

b. Colby shall keep records that include maintenance conducted on the engines and the hours of operation of each engine recorded through the non-resettable hour meter. Documentation shall include the number of hours each unit operated for emergency purposes, the number of hours each unit operated for non-emergency purposes, and the reason each engine was in operation during each time.

4. **Operation and Maintenance**

Each engine shall be operated and maintained according to the manufacturer's written instructions or procedures developed by Colby that are approved by the engine manufacturer. Colby may only change those settings that are permitted by the manufacturer. [40 C.F.R. § 60.4243]

Colby shall have available for review by the Department a copy of the manufacturer's emission-related written instructions for engine operation and maintenance. [06-096 C.M.R. ch. 115, BPT]

The President and Trustees of
Colby College
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A-107-71-AA-A

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Departmental
Findings of Fact and Order
Air Emission License
Amendment #4

The following shall replace Specific Condition (24)(B)(1) of Air Emission License A-107-71-Z-A. The rest of this condition in the earlier amendment remain in effect as currently written:

(24) Annual Emission Statements

B. Colby shall keep the following records in order to comply with 06-096 C.M.R. ch. 137:

1. The amount of natural gas fired in Boilers 10A, 10B, 10C, #1, #2, #3, and #4 and SICE #4, #5, #6, #8, #9, and #10 (each) on a monthly basis;

DONE AND DATED IN AUGUSTA, MAINE THIS 22nd DAY OF AUGUST, 2023.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:  for
MELANIE LOYZIM, COMMISSIONER

The term of this license amendment shall be ten (10) years from the issuance of Air Emission License A-107-71-W-R/M (issued April 15, 2016).

[Note: If a renewal application, determined as complete by the Department, is submitted prior to expiration of this license, then pursuant to Title 5 M.R.S. § 10002, all terms and conditions of the license shall remain in effect until the Department takes final action on the license renewal application.]

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 6/15/23

Date of application acceptance: 6/15/23

Date filed with the Board of Environmental Protection:

This Order prepared by Chris Ham, Bureau of Air Quality.

