

**Technical Support Document
For
Draft Air Emission Permit No. 16300110-102**

This technical support document (TSD) is intended for all parties interested in the draft permit and to meet the requirements that have been set forth by the federal and state regulations (40 CFR § 70.7(a)(5) and Minn. R. 7007.0850, subp. 1). The purpose of this document is to provide the legal and factual justification for each applicable requirement or policy decision considered in the preliminary determination to issue the draft permit.

1. General information

1.1 Applicant and stationary source location:

Table 1. Applicant and source address

Applicant/Address	Stationary source/Address (SIC Code: 4922 - Natural Gas Transmission)
Northern Natural Gas Co 1111 S 103rd St Omaha, Nebraska 68124-1072	Northern Natural Gas Co - Hugo 10825 180th St Forest Lake, MN 55025
Contact: Kelly Henry Phone: 651-456-1712	

1.2 Facility description

The facility uses a natural gas-fired turbine to compress natural gas in a pipeline. The facility operates an emergency generator as backup power. The primary emissions from natural gas combustion are nitrogen oxides and carbon monoxide.

1.3 Description of the activities allowed by this permit action

This permit action is major amendment. The MPCA has a combined operating and construction permitting program under Minn. R. ch. 7007. Under that authority, this permit action authorizes construction.

This permit action authorizes the construction of one natural gas-fired combustion turbine and emergency generator. These units will replace the existing turbine and emergency generator. The existing turbine, emergency generator, and the new units will not operate simultaneously due to physical capacity limits at the facility. This permit restricts the turbine's operating hours at low temperatures, low load, and startup and shutdown events.

1.4 Description of notifications and applications included in this action

Table 2. Notifications and applications included in this action

Date received	Application/notification type and description
03/05/2026 (Supplemental information received on 5/27/2026 and 6/16/2026)	Major amendment (IND20260001)

1.5 Facility emissions:

Table 3. Title I emissions summary

Pollutant	Unlimited potential emissions from the modification (tpy)	Limited potential emissions from the modification (tpy)	NSR/112(g) threshold for new major source (tpy)	NSR/112(g) review required? (yes/no)
PM	2.41	2.41	250	no
PM ₁₀	2.41	2.41	250	no
PM _{2.5}	2.41	2.41	250	no
NO _x	23.5	23.5	250	no
SO ₂	0.259	0.259	250	no
CO	85.9	85.9	250	no
Ozone (VOC)	8.54	8.54	250	no
Lead	0.00	0.00	250	no
CO ₂ e*	42,295	42,295	100,000	no

*Carbon dioxide equivalents as defined in Minn. R. 7007.0100.

Table 4. Total facility potential to emit summary

Total Facility Limited Potential Emissions	PM (tpy)	PM ₁₀ (tpy)	PM _{2.5} (tpy)	SO ₂ (tpy)	NO _x (tpy)	CO (tpy)	CO ₂ e (tpy)	VOC (tpy)	Single HAP** (tpy)	All HAPs (tpy)
At the time of permit issuance	1.68	1.68	1.68	0.357	25.6	74.5	29,713	8.97	0.189	0.275
After the project completion	2.41	2.41	2.41	0.26	23.5	86.0	43,881	9.01	0.288	0.422
Total Facility Actual Emissions (2025)	3.01E-03	3.01E-03	1.84E-03	1.53	3.14	0.814	*	0.341	*	

* Not reported in MN emission inventory.

**formaldehyde

Table 5. Facility classification

Classification	Major	Synthetic minor/area	Minor/area
PSD			X
Part 70 Permit Program			X
Part 63 NESHAP			X

1.6 Changes to permit

In addition to the changes described in Section 1.3 of this TSD, the MPCA has a combined operating and construction permitting program under Minnesota Rules Chapter 7007, and under Minn. R. 7007.0800, the MPCA has authority to include additional requirements in a permit. Under that authority, the following changes to the permit are also made through this permit action:

- The permit has been updated to reflect current MPCA templates and standard citation formatting;
- Completed requirements and the requirements for equipment that has been removed have been deleted;
- Subject item details have been updated based on the equipment that was actually installed;
- Some requirements have been reordered or moved to help with clarity (i.e., similar requirements are grouped);
- FUGI 4 (Compressor Blowdowns) is added to the permit. It is an existing fugitive emission source that has not been included in the previous permit, nor did it incorporate the applicable emission standards. This permit action added the following requirements to FUGI 4: Minn. R. 7011.0715 (Standards of Performance for Post-1969 Industrial Process Equipment);
- FUGI 2 (112 Flanges) and FUGI 3 (1 Compressor Seal) were removed from the permit to consolidate with FUGI 1 (fugitive emissions components), which represents the emissions from valves, flanges, and compressor seals;
- Added requirement to submit notification of removal/dismantlement of existing units at EQUI 1 and EQUI 3;
- Changed order of Appendices, and added new Appendices C and D; and
- The insignificant activities for the facility have been updated to reflect the current activities on site as well as to reflect changes to these rules since the last permit was issued.

2. Regulatory and/or statutory basis

2.1 New source review (NSR)

The facility is an existing minor source under New Source Review regulations. The permit action does not change this status but does authorize a minor modification under New Source Review as discussed in Section 3.1 and documented in Table 3 of this TSD.

2.2 Part 70 permit program

The facility is a nonmajor source under the Part 70 permit program.

2.3 New source performance standards (NSPS)

The Permittee has stated that New Source Performance Standards apply to the operations at this facility.

The new emergency generator (EQUI 5) is subject to 40 CFR pt. 60, subp JJJJ: Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. EQUI 5 is an emergency engine manufactured after January 1, 2009, with a maximum engine power greater than 500 HP.

The natural gas-fired turbine (EQUI 4) is subject to 40 CFR pt. 60, subp. KKKKa: Standards of Performance for Stationary Combustion Turbines. EQUI 4 is a combustion turbine with a heat input at base load equal to or greater than 10 MMBtu/hr, which commence construction, modification, or reconstruction after December 13, 2024.

EQUI 4 is a centrifugal compressor as defined in 40 CFR § 60.5430b, which commenced construction after December 6, 2022, and is subject to 40 CFR pt. 60, subp. OOOOb: Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After December 6, 2022. Due to the construction of EQUI 4, the existing fugitive emissions (FUGI 1) will also be subject to 40 CFR pt. 60, subp. OOOOb.

2.4 National emission standards for hazardous air pollutants (NESHAP)

The facility is an area source under 40 CFR pt. 63. Thus, no major source NESHAPs apply.

New emergency generator (EQUI 5) is subject to 40 CFR pt. 63, subp. ZZZZ: National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE). EQUI 5 is a new

RICE located at an area source; therefore, under 40 CFR § 63.6590(c)(1), EQUI 5 complies with 40 CFR pt. 63, subp. ZZZZ by meeting the requirements of 40 CFR pt. 60, subp. JJJJ for spark ignition engines. No further requirements apply for such engines under 40 CFR pt. 63, subp. ZZZZ.

2.5 Regulatory overview

Table 6. Regulatory overview of units affected by the modification/permit amendment

Subject item*	Applicable regulations	Rationale
EQUI 4 (Natural Gas-Fired Turbine)	40 CFR pt. 60, subp. KKKKa	NSPS for Stationary Combustion Turbines • unit commenced construction, modification, or reconstruction after December 13, 2024; • the unit has a base load rating equal to or greater than 10 MMBtu/hr; • heat input at peak load > 50 MMBtu/hr and ≤ 850 MMBtu/hr; • the unit is new at utilization rate > 45%; • the unit combusts natural gas; and • the unit is not using continuous parameter monitoring or water/steam injection.
	40 CFR pt.60, subp. OOOOb	NSPS for Crude Oil and Natural Gas Facilities • unit commenced construction, modification, or reconstruction after December 6, 2022; and • the unit is a centrifugal compressor.
	Minn. R. 7011.2300	Standards of Performance for Stationary Internal Combustion Engines. Fuel is limited to natural gas only, by design. Sulfur content of fuel limited to 0.0015 percent by weight.
EQUI 5 (Emergency Generator)	40 CFR pt. 60, subp. JJJJ Minn. R. 7011.2310	NSPS for Stationary Spark Ignition Internal Combustion Engines. Applicability criteria include: • Engines manufactured on or after January 1, 2009 and constructed after June 12, 2006; • Certified engines; and • Emergency, natural gas engine with maximum engine power greater than or equal to 500 hp.
	40 CFR pt. 63, subp. ZZZZ Minn. R. 7011.8150	NESHAP for Stationary Reciprocating Internal Combustion Engines. EQUI 5 is a new affected source subject to 40 CFR pt. 63, subp. ZZZZ. Under 40 CFR § 63.6590(c) the engine complies with the requirements 40 CFR pt. 63, subp. ZZZZ by complying with the requirements of 40 CFR pt. 60, subp. JJJJ and no further requirements apply under 40 CFR pt. 63, subp. ZZZZ.
	Minn. R. 7011.2300	Standards of Performance for Stationary Internal Combustion Engines. Fuel is limited to natural gas only, by design. Sulfur content of fuel limited to 0.0015 percent by weight.
FUGI 1 (Fugitive emissions components)	40 CFR pt.60, subp. OOOOb	NSPS for Crude Oil and Natural Gas Facilities • unit commenced construction, modification, or reconstruction after December 6, 2022; and • units are fugitive emissions component.

Subject item*	Applicable regulations	Rationale
FUGI 4 (Compressor Blowdown)	Minn. R. 7011.0715	Standards of Performance for post-1969 Industrial Process Equipment. Equipment for which there is no other promulgated performance standard is subject to the opacity and PM limits in this rule. Construction of the unit was on or after July 9, 1969.

*Location of the requirement in the permit (e.g., EQUI 1, STRU 2, etc.).

3. Technical information

3.1 Calculations of emissions increase analysis

Attachment 1 to this TSD contains a summary of the PTE of the Facility and the Title I emissions increase calculations for this modification. This demonstrates that this modification is not a major modification for PSD.

For the natural gas-fired turbine (EQUI 4), the PM, PM₁₀, PM_{2.5}, SO₂, and HAPs emission factors are from AP-42 Section 3.1 "Stationary Combustion Turbines," Table 3.1-2a and Table 3.1-3. The manufacturer provided emission factors and capable engine capacity when the turbines operate at ambient temperatures above and below 0°F. Emission factors and engine capacity when temperatures are less than 0°F are worst case and are used to calculate hourly emissions for NO_x, CO, and VOC. For annual emissions, three operating modes were selected for calculation: Low-temperature (-20° < T < 0°F), low-load (< 40%), and startup and shutdown (SUSD). The SUSD cycle is limited to 1,400 times per year. The duration of SUSD event is expected to be 10 minutes per event; therefore, the annual SUSD emission rate is based on 467 hours per year. The SUSD emission factor accounts for the time the turbine starts and progresses through the low-load mode until it reaches normal load.

Emergency Generator (EQUI 5) emissions of PM, PM₁₀, PM_{2.5}, SO₂, and HAPs are based on AP-42 Section 3.2 "Natural Gas-Fired Reciprocating Engines." NO_x, CO, and VOC emissions are based on 40 CFR pt. 60, subp. JJJJ (Table 1). PTE is based on EPA's memorandum entitled "Calculating Potential to Emit for Emergency Generators," allowing to use 500 hours per year (instead of 8,760 hours per year) to calculate PTE from emergency engines.

3.2 Monitoring

In accordance with the Clean Air Act, it is the responsibility of the owner or operator of a facility to have sufficient knowledge of the facility to certify that the facility is in compliance with all applicable requirements.

In evaluating the monitoring included in the permit, the MPCA considered the following:

- The likelihood of the facility violating the applicable requirements.
- Whether add-on controls are necessary to meet the emission limits.
- The variability of emissions over time.
- The type of monitoring, process, maintenance, or control equipment data already available for the emission unit.
- The technical and economic feasibility of possible periodic monitoring methods.
- The kind of monitoring found on similar units elsewhere.

The table below summarizes the monitoring requirements associated with this amendment.

Table 7. Monitoring

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
EQUI 4 (Natural Gas-Fired Turbine)	Operation hour limits: Low Temperature ($-20^{\circ} < T < 0^{\circ}\text{F}$) ≤ 720 hours per year 12-month rolling sum. Non-SoLoNO_x (low-load) ≤ 100 hours per year 12-month rolling sum. Starup and Shutdown $\leq 1,400$ events per year 12-month rolling sum. [Minn. R. 7007.0800, subp. 2(A)]	Daily records of hours of operation for each mode, and number of SUSD events, monthly calculations	The Permittee is able to use daily records of operating hours at temperature and low-load based on hour-meter readings to calculate monthly and 12-month rolling sum usage. The Permittee will use daily records of number of SUSD events based on written log to calculate monthly and 12-month rolling sum.
	SO₂ ≤ 110 ng/J (0.90 lb/MWh) gross output or 26 ng SO₂/J (0.060 lb SO₂/MMBtu) heat input. NO_x ≤ 15 ppm at 15% O₂ or 24 ng/J of useful output (0.055 lb/MMBtu). [40 CFR pt. 60, subp. KKKKa]	Records for sulfur content: maintain tariff sheet for the fuel and initial SO₂ performance test Initial and annual NO_x performance testing	Monitoring required by the NSPS is adequate to demonstrate compliance with the requirements because this standard was promulgated after November 15, 1990, and post-November 15, 1990, NSPS contain adequate monitoring requirements. SO₂ PTE is 0.0014 lb/MMBtu compared to rule limit of 0.06 lb/MMBtu. NO_x PTE is 0.060 lb/MMBtu compared to rule limit of 0.055 lb/MMBtu. The vendor spec sheet provided NO_x emissions of 0.060 lb/MMBtu. The rule limit of 15 ppm and 24 ng/J (0.055 lb/MMBtu) is intended to be equivalent. The conversions may result in differences, but the Permittee will demonstrate compliance with the limits via performance testing.
	Volumetric flow rate ≤ 10 scfm per seal [40 CFR pt. 60, subp. OOOOb]	Initial and recurring volumetric flow rate measurement	Monitoring required by the NSPS is adequate to demonstrate compliance with the requirements because this standard was promulgated after November 15, 1990, and post-November 15, 1990, NSPS and NESHAPs contain adequate monitoring requirements.
	Opacity $\leq 20\%$ SO₂ ≤ 0.0015 lbs/MMBtu [Minn. R. 7011.2300]	None	This unit uses pipeline natural gas only; therefore, the likelihood of violating either of the limits is very small. The Permittee can demonstrate that the unit will continue to operate such that emissions meet the emission limits by only burning natural gas. PTE is 0.0014 lb of SO ₂ /MMBtu.

Subject item*	Requirement (rule basis)	What is the monitoring	Why is this monitoring adequate?
EQUI 5 (Emergency Generator)	$\text{NO}_x \leq 2.0 \text{ g/hp-hr}$ $\text{CO} \leq 4.0 \text{ g/hp-hr}$ $\text{VOC} \leq 1.0 \text{ g/hp-hr}$ [40 CFR pt. 60, subp. JJJJ, Minn. R. 7011.2310, 40 CFR pt.63, subp. ZZZZ Minn. R. 7011.8150]	Purchase of a certified engine, operation according to the manufacturer's emissions-related instructions, and records of maintenance	Monitoring required by the NSPS is adequate to demonstrate compliance with the requirements because this standard was promulgated after November 15, 1990, and post-November 15, 1990, NSPS and NESHAPs contain adequate monitoring requirements.
	$\text{Opacity} \leq 20\%$ $\text{SO}_2 \leq 0.0015 \text{ lbs/MMBtu}$ [Minn. R. 7011.2300]	None	This unit uses pipeline natural gas only; therefore, the likelihood of violating either of the limits is very small. The Permittee can demonstrate that the unit will continue to operate such that emissions meet emission limits by only burning natural gas. PTE is 0.0006 lb of SO_2 /MMBtu.
FUGI 4 (Compressor Blowdown)	Particulate Matter $\leq 0.30 \text{ gr/dscf}$ Opacity $\leq 20\%$ opacity [Minn. R. 7011.0715]	None	FUGI 4 is not anticipated to emit particulate emissions; therefore, the likelihood of violating either of the emission limits is very small.

*Location of the requirement in the permit (e.g., EQUI 1, STRU 2, etc.).

3.3 Insignificant activities

Northern Natural Gas Co - Hugo has several operations which are classified as insignificant activities under the MPCA's permitting rules. These are listed in Appendix A to the permit. The following insignificant activities are included in this modification.

The permit is required to include periodic monitoring for all emissions units, including insignificant activities, per EPA guidance. The insignificant activities at this Facility are only subject to general applicable requirements. Using the criteria outlined earlier in this TSD, the following table documents the justification why no additional periodic monitoring is necessary for the insignificant activities affected by this modification. See Attachment 1 of this TSD for PTE information for the insignificant activities.

Table 8. Insignificant activities

Insignificant activity	General applicable emission limit	Discussion
Individual units with potential emissions less than 2000 lb/year of certain pollutants	$\text{PM} \leq 0.4 \text{ lb/MMBtu}$, depending on year constructed $\text{Opacity} \leq 20\%$ (Minn. R. 7011.0515)	These are 9 natural gas combustion units. For the natural gas units, based on the fuels used and EPA published emissions factors, it is highly unlikely that they could violate the applicable requirement. In addition, all of these units are operated and vented inside a building, so testing for PM or opacity is not feasible.

3.4 Permit organization and standard language

This permit meets the MPCA Tempo Guidance for ordering and grouping of requirements as well as the use of permit appendices.

In this permit, federal requirements from NSPS are included in two different formats. The requirements for 40 CFR pt. 60, subps. GG, JJJJ, and KKKKa are incorporated into the permit as individual permit requirements,

which has historically been MPCA's standard practice. However, the requirements for 40 CFR pt. 60, subp. A is included in a different way.

For these rules, limits and submittal/actions are included in the permit like the other standards. For the remaining portions of the rule, a requirement in Section 5 of the permit lists the citations of all the applicable parts of the standard along with a reference to the permit appendix where the full text of the standard is included. 40 CFR pt. 60, subps. A, GG, JJJJ, KKKKa, OOOOb are included in Appendices B, F, C, D, and E, respectively.

When amending or reissuing an air permit, MPCA staff evaluate standard permit language in the permit. If the standard language has been changed in the Tempo database since the last permit was issued, staff need to decide how to proceed for each revised condition. For this permit action, all standard language was updated in the permit.

3.5 Comments received

This section will be completed after the referenced review periods.

Public Notice Period: [start date] – [end date]

EPA Review Period: [start date] – [end date]

4. Permit fee assessment

Attachment 3 to this TSD contains the MPCA's assessment of Application and Additional Points used to determine the permit application fee for this permit action as required by Minn. R. 7002.0019. The action includes three new NSPSs for which additional points apply.

5. Conclusion

Based on the information provided by Northern Natural Gas Co - Hugo the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 16300110-102 and this TSD, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

Staff members on permit team: Megumi Muramoto-Mathieu (permit engineer)
Tarik Hanafy (peer reviewer)
Marc Severin (Compliance)
Ryan Maisano (Enforcement)
Beckie Olson (data coordinator)
Beckie Olson (permit writing assistant)
Laurie O'Brien (administrative support)

Tempo Activities: Major Amendment (IND20260001)

Attachments: 1. PTE summary and emissions increase calculation spreadsheets
2. Subject item inventory and requirements report
3. Points calculator

TSD Attachment 1 PTE calculations

1a) AQ Facility ID number:16300110

1b) Agency Interest ID number:714

2) Facility name:Northern Natural Gas Co - Hugo

You may use and submit this spreadsheet in place of Form GI-07. Follow the instructions for Form GI-07 to complete this spreadsheet. This spreadsheet can be copied into a tab for your emissions spreadsheet and must be submitted on a CD with your application. If you need to provide emissions information for more emissions units, add more sets of columns (3a through 3f) to the right as needed in the Emissions by Source table. If you need to provide information for more pollutants, add rows as needed.

Emissions by Source Table

3a) Delta ID number:						3a) Delta ID number:						3a) Delta ID number:					
3b) Tempo SI ID No.:						3b) Tempo SI ID No.:						3b) Tempo SI ID No.:					
3c)		EQUI1				3c)		EQUI3				3c)		EQUI4			
Pollutant Name	3d) CAS #	3e) Potential lbs per Hr	tpy un-restricted	tpy limited	3f) Actual tpy	Pollutant Name	3d) CAS #	3e) Potential lbs per Hr	tpy un-restricted	tpy limited	3f) Actual tpy	Pollutant Name	3d) CAS #	3e) Potential lbs per Hr	tpy un-restricted	tpy limited	3f) Actual tpy
PM	-	0.38	1.67	1.67	--	PM	-	0.04	0.01	0.01	--	PM	-	0.54	2.37	2.37	--
PM ₁₀	-	0.38	1.67	1.67	--	PM ₁₀	-	0.04	0.01	0.01	--	PM ₁₀	-	0.54	2.37	2.37	--
PM _{2.5}	-	0.38	1.67	1.67	--	PM _{2.5}	-	0.04	0.01	0.01	--	PM _{2.5}	-	0.54	2.37	2.37	--
SO ₂	-	8.15E-02	3.57E-01	3.57E-01	--	SO ₂	-	1.09E-03	2.72E-04	2.72E-04	--	SO ₂	-	0.12	0.26	0.26	--
NO _x	-	5.78	25.33	25.33	--	NO _x	-	1.06	0.27	0.27	--	NO _x	-	4.44	22.63	22.63	--
VOC	-	2.02	8.84	8.84	--	VOC	-	0.53	0.13	0.13	--	VOC	-	0.52	8.11	8.11	--
CO	-	16.89	73.97	73.97	--	CO	-	2.13	0.53	0.53	--	CO	-	4.51	84.22	84.22	--
Lead	-	--	--	--	--	Lead	-	--	--	--	--	Lead	-	--	--	--	--
GHGs:	-				--	GHGs:	-				--	GHGs:	-				--
N ₂ O (mass)	-	1.28E-02	5.58E-02	5.58E-02	--	N ₂ O (mass)	-	4.08E-04	1.02E-04	1.02E-04	--	N ₂ O (mass)	-	1.81E-02	7.93E-02	7.93E-02	--
CH ₄ (mass)	-	1.28E-01	5.58E-01	5.58E-01	--	CH ₄ (mass)	-	4.08E-03	1.02E-03	1.02E-03	--	CH ₄ (mass)	-	1.81E-01	7.93E-01	7.93E-01	--
CO ₂ (mass)	-	6.765	29.632	29.632	--	CO ₂ (mass)	-	203.38	50.85	50.85	--	CO ₂ (mass)	-	9.606	42.074	42.074	--
CO ₂ e	-	6.772	29.662	29.662	--	CO ₂ e	-	203.60	50.90	50.90	--	CO ₂ e	-	9.616	42.117	42.117	--
HAPs:					--	HAPs:					--	HAPs:					--
Acetaldehyde	75-07-0	2.31E-03	1.01E-02	1.01E-02	--	Acetaldehyde	75-07-0	5.16E-03	1.29E-03	1.29E-03	--	Acetaldehyde	75-07-0	3.28E-03	1.44E-02	1.44E-02	--
Acrolein	107-02-8	3.70E-04	1.62E-03	1.62E-03	--	Acrolein	107-02-8	4.86E-03	1.22E-03	1.22E-03	--	Acrolein	107-02-8	5.26E-04	2.30E-03	2.30E-03	--
Benzene	71-43-2	6.94E-04	3.04E-03	3.04E-03	--	Benzene	71-43-2	2.92E-03	7.30E-04	7.30E-04	--	Benzene	71-43-2	9.85E-04	4.32E-03	4.32E-03	--
1,3-Butadiene	106-99-0	2.49E-05	1.09E-04	1.09E-04	--	1,3-Butadiene	106-99-0	1.23E-03	3.06E-04	3.06E-04	--	1,3-Butadiene	106-99-0	3.53E-05	1.55E-04	1.55E-04	--
Carbon tetrachloride	58-23-5	--	--	--	--	Carbon tetrachloride	58-23-5	3.27E-05	8.18E-06	8.18E-06	--	Carbon tetrachloride	58-23-5	--	--	--	--
Chlorobenzene	108-90-7	--	--	--	--	Chlorobenzene	108-90-7	2.53E-05	6.33E-06	6.33E-06	--	Chlorobenzene	108-90-7	--	--	--	--
Chloroform	67-66-3	--	--	--	--	Chloroform	67-66-3	7.62E-05	1.90E-05	1.90E-05	--	Chloroform	67-66-3	--	--	--	--
1,4-Dichlorobenzene	25321-22-6	--	--	--	--	1,4-Dichlorobenzene	25321-22-6	--	--	--	--	1,4-Dichlorobenzene	25321-22-6	--	--	--	--
1,3-Dichloropropene	542-75-6	--	--	--	--	1,3-Dichloropropene	542-75-6	2.40E-05	6.01E-06	6.01E-06	--	1,3-Dichloropropene	542-75-6	--	--	--	--
Ethylbenzene	100-41-4	1.85E-03	8.11E-03	8.11E-03	--	Ethylbenzene	100-41-4	4.59E-05	1.15E-05	1.15E-05	--	Ethylbenzene	100-41-4	2.63E-03	1.15E-02	1.15E-02	--
Ethylene Dibromide	106-93-4	--	--	--	--	Ethylene Dibromide	106-93-4	3.94E-05	9.85E-06	9.85E-06	--	Ethylene Dibromide	106-93-4	--	--	--	--
Formaldehyde	50-00-0	4.11E-02	1.80E-01	1.80E-01	--	Formaldehyde	50-00-0	3.79E-02	9.48E-03	9.48E-03	--	Formaldehyde	50-00-0	5.83E-02	2.55E-01	2.55E-01	--
Hexane	110-54-3	--	--	--	--	Hexane	110-54-3	--	--	--	--	Hexane	110-54-3	--	--	--	--
Methanol	67-56-1	--	--	--	--	Methanol	67-56-1	5.66E-03	1.41E-03	1.41E-03	--	Methanol	67-56-1	--	--	--	--
Methylene chloride (Dichloromethane)	75-09-2	--	--	--	--	Methylene chloride (Dichloromethane)	75-09-2	7.62E-05	1.90E-05	1.90E-05	--	Methylene chloride (Dichloromethane)	75-09-2	--	--	--	--
Naphthalene	91-20-3	7.52E-05	3.29E-04	3.29E-04	--	Naphthalene	91-20-3	1.80E-04	4.49E-05	4.49E-05	--	Naphthalene	91-20-3	1.07E-04	4.68E-04	4.68E-04	--
PAH	-	1.27E-04	5.57E-04	5.57E-04	--	PAH	-	--	--	--	--	PAH	-	1.81E-04	7.91E-04	7.91E-04	--
POM	-	--	--	--	--	POM	-	4.40E-04	1.10E-04	1.10E-04	--	POM	-	--	--	--	--
Propylene oxide	75-56-9	1.68E-03	7.35E-03	7.35E-03	--	Propylene oxide	75-56-9	--	--	--	--	Propylene oxide	75-56-9	2.38E-03	1.04E-02	1.04E-02	--
Styrene	100-42-5	--	--	--	--	Styrene	100-42-5	2.20E-05	5.50E-06	5.50E-06	--	Styrene	100-42-5	--	--	--	--
Toluene	108-88-3	7.52E-03	3.29E-02	3.29E-02	--	Toluene	108-88-3	1.03E-03	2.58E-04	2.58E-04	--	Toluene	108-88-3	1.07E-02	4.68E-02	4.68E-02	--
1,1,2,2-Tetracholoroethane	79-34-5	--	--	--	--	1,1,2,2-Tetracholoroethane	79-34-5	4.68E-05	1.17E-05	1.17E-05	--	1,1,2,2-Tetracholoroethane	79-34-5	--	--	--	--
1,1,2-Trichloroethane	79-00-5	--	--	--	--	1,1,2-Trichloroethane	79-00-5	4.68E-05	1.17E-05	1.17E-05	--	1,1,2-Trichloroethane	79-00-5	--	--	--	--
1,1-Dichloroethane	75-34-3	--	--	--	--	1,1-Dichloroethane	75-34-3	2.09E-05	5.22E-06	5.22E-06	--	1,1-Dichloroethane	75-34-3	--	--	--	--
1,2-Dichloropropane	78-87-5	--	--	--	--	1,2-Dichloropropane	78-87-5	2.40E-05	6.01E-06	6.01E-06	--	1,2-Dichloropropane	78-87-5	--	--	--	--
Vinyl chloride	75-01-4	--	--	--	--	Vinyl chloride	75-01-4	1.33E-05	3.32E-06	3.32E-06	--	Vinyl chloride	75-01-4	--	--	--	--
Xylene	1330-20-7	3.70E-03	1.62E-02	1.62E-02	--	Xylene	1330-20-7	3.61E-04	9.01E-05	9.01E-05	--	Xylene	1330-20-7	5.26E-03	2.30E-02	2.30E-02	--
Arsenic	--	--	--	--	--	Arsenic	--	--	--	--	--	Arsenic	--	--	--	--	--
Beryllium	--	--	--	--	--	Beryllium	--	--	--	--	--	Beryllium	--	--	--	--	--
Cadmium	--	--	--	--	--	Cadmium	--	--	--	--	--	Cadmium	--	--	--	--	--
Chromium	--	--	--	--	--	Chromium	--	--	--	--	--	Chromium	--	--	--	--	--
Cobalt	--	--	--	--	--	Cobalt	--	--	--	--	--	Cobalt	--	--	--	--	--
Manganese	--	--	--	--	--	Manganese	--	--	--	--	--	Manganese	--	--	--	--	--
Mercury	--	--	--	--	--	Mercury	--	--	--	--	--	Mercury	--	--	--	--	--
Nickel	--	--	--	--	--	Nickel	--	--	--	--	--	Nickel	--	--	--	--	--
Selenium	--	--	--	--	--	Selenium	--	--	--	--	--	Selenium	--	--	--	--	--
Total HAPs		5.94E-02	2.60E-01	2.60E-01	--	Total HAPs		6.00E-02	1.50E-02	1.50E-02	--	Total HAPs		8.44E-02	3.70E-01	3.70E-01	--

- 5)

☐ Application is being submitted on a compact disc (CD) or flash drive, and the editable calculation spreadsheet(s) are included on the CD or flash drive.

☒ Application is being submitted on paper, and editable calculation spreadsheet(s) are included on an enclosed CD or flash drive.

1a) AQ Facility ID number:

16300110

1b) Agency Interest ID number:

714

1b) Agency Interest ID number:

714

2) Facility name:

Northern Natural Gas Co - Hugo

Emissions by Source Table

3a) Delta ID number:					3a) Delta ID number:					3a) Delta ID number:					3a) Delta ID number:				
3b) Tempo SI ID No.:					3b) Tempo SI ID No.:					3b) Tempo SI ID No.:					3b) Tempo SI ID No.:				
EQUI5					FUGI1					FUGI4					IA - Fuel Gas Heater				
3c)	3d)	3e) Potential			3f)	3c)	3d)	3e) Potential			3f)	3c)	3d)	3e) Potential			3f)	3c)	3d)
Pollutant Name	CAS #	lbs per Hr	tpy un-restricted	tpy limited	Actual tpy	Pollutant Name	CAS #	lbs per Hr	tpy un-restricted	tpy limited	Actual tpy	Pollutant Name	CAS #	lbs per Hr	tpy un-restricted	tpy limited	Actual tpy	Pollutant Name	CAS #
PM	-	0.13	0.03	0.03	--	PM	-	--	--	--	--	PM	-	2.24E-03	9.79E-03	9.79E-03	--	PM	-
PM ₁₀	-	0.13	0.03	0.03	--	PM ₁₀	-	--	--	--	--	PM ₁₀	-	2.24E-03	9.79E-03	9.79E-03	--	PM ₁₀	-
PM _{2.5}	-	0.13	0.03	0.03	--	PM _{2.5}	-	--	--	--	--	PM _{2.5}	-	2.24E-03	9.79E-03	9.79E-03	--	PM _{2.5}	-
SO ₂	-	3.80E-03	9.49E-04	9.49E-04	--	SO ₂	-	--	--	--	--	SO ₂	-	1.76E-04	7.73E-04	7.73E-04	--	SO ₂	-
NO _x	-	3.40	0.85	0.85	--	NO _x	-	--	--	--	--	NO _x	-	0.03	0.13	0.13	--	NO _x	-
VOC	-	1.70	0.42	0.42	--	VOC	-	4.10E-03	1.00E-02	1.00E-02	--	VOC	-	0.11	4.61E-01	4.61E-01	--	VOC	-
CO	-	6.79	1.70	1.70	--	CO	-	--	--	--	--	CO	-	--	--	--	--	CO	-
Lead	-	--	--	--	--	Lead	-	--	--	--	--	Lead	-	--	--	--	--	Lead	-
GHGs:	-	--	--	--	--	GHGs:	-	--	--	--	--	GHGs:	-	--	--	--	--	GHGs:	-
N ₂ O (mass)	-	1.42E-03	3.56E-04	3.56E-04	--	N ₂ O (mass)	-	--	--	--	--	N ₂ O (mass)	-	--	--	--	--	N ₂ O (mass)	-
CH ₄ (mass)	-	1.42E-02	3.56E-03	3.56E-03	--	CH ₄ (mass)	-	0.49	2.15	2.15	--	CH ₄ (mass)	-	12.43	54.46	54.46	--	CH ₄ (mass)	-
CO ₂ (mass)	-	710.12	178	177.53	--	CO ₂ (mass)	-	5.30E-03	2.30E-02	2.30E-02	--	CO ₂ (mass)	-	0.36	1.59E+00	1.59E+00	--	CO ₂ (mass)	-
CO ₂ e	-	710.90	178	177.73	--	CO ₂ e	-	13.75	60.24	60.24	--	CO ₂ e	-	348.48	1526.35	1,526.35	--	CO ₂ e	-
HAPs:					--	HAPs:					--	HAPs:					--	HAPs:	
Acetaldehyde	75-07-0	1.80E-02	4.50E-03	4.50E-03	--	Acetaldehyde	75-07-0	--	--	--	--	Acetaldehyde	75-07-0	--	--	--	--	Acetaldehyde	75-07-0
Acrolein	107-02-8	1.70E-02	4.24E-03	4.24E-03	--	Acrolein	107-02-8	--	--	--	--	Acrolein	107-02-8	--	--	--	--	Acrolein	107-02-8
Benzene	71-43-2	1.02E-02	2.55E-03	2.55E-03	--	Benzene	71-43-2	--	--	--	--	Benzene	71-43-2	6.18E-07	2.71E-06	2.71E-06	--	Benzene	71-43-2
1,3-Butadiene	106-99-0	4.28E-03	1.07E-03	1.07E-03	--	1,3-Butadiene	106-99-0	--	--	--	--	1,3-Butadiene	106-99-0	--	--	--	--	1,3-Butadiene	106-99-0
Carbon tetrachloride	58-23-5	1.14E-04	2.86E-05	2.86E-05	--	Carbon tetrachloride	58-23-5	--	--	--	--	Carbon tetrachloride	58-23-5	--	--	--	--	Carbon tetrachloride	58-23-5
Chlorobenzene	108-90-7	8.84E-05	2.21E-05	2.21E-05	--	Chlorobenzene	108-90-7	--	--	--	--	Chlorobenzene	108-90-7	--	--	--	--	Chlorobenzene	108-90-7
Chloroform	67-66-3	2.66E-04	6.65E-05	6.65E-05	--	Chloroform	67-66-3	--	--	--	--	Chloroform	67-66-3	--	--	--	--	Chloroform	67-66-3
1,4-Dichlorobenzene	25321-22-6	--	--	--	--	1,4-Dichlorobenzene	25321-22-6	--	--	--	--	1,4-Dichlorobenzene	25321-22-6	3.53E-07	1.55E-06	1.55E-06	--	1,4-Dichlorobenzene	25321-22-6
1,3-Dichloropropene	542-75-6	8.39E-05	2.10E-05	2.10E-05	--	1,3-Dichloropropene	542-75-6	--	--	--	--	1,3-Dichloropropene	542-75-6	--	--	--	--	1,3-Dichloropropene	542-75-6
Ethylbenzene	100-41-4	1.60E-04	4.00E-05	4.00E-05	--	Ethylbenzene	100-41-4	--	--	--	--	Ethylbenzene	100-41-4	--	--	--	--	Ethylbenzene	100-41-4
Ethylene Dibromide	106-93-4	1.38E-04	3.44E-05	3.44E-05	--	Ethylene Dibromide	106-93-4	--	--	--	--	Ethylene Dibromide	106-93-4	--	--	--	--	Ethylene Dibromide	106-93-4
Formaldehyde	50-00-0	1.32E-01	3.31E-02	3.31E-02	--	Formaldehyde	50-00-0	--	--	--	--	Formaldehyde	50-00-0	2.21E-05	9.66E-05	9.66E-05	--	Formaldehyde	50-00-0
Hexane	110-54-3	--	--	--	--	Hexane	110-54-3	--	--	--	--	Hexane	110-54-3	--	--	--	--	Hexane	110-54-3
Methanol	67-56-1	1.98E-02	4.94E-03	4.94E-03	--	Methanol	67-56-1	--	--	--	--	Methanol	67-56-1	--	--	--	--	Methanol	67-56-1
Methylene chloride (Dichloromethane)	75-09-2	2.66E-04	6.65E-05	6.65E-05	--	Methylene chloride (Dichloromethane)	75-09-2	--	--	--	--	Methylene chloride (Dichloromethane)	75-09-2	--	--	--	--	Methylene chloride (Dichloromethane)	75-09-2
Naphthalene	91-20-3	6.27E-04	1.57E-04	1.57E-04	--	Naphthalene	91-20-3	--	--	--	--	Naphthalene	91-20-3	1.79E-07	7.86E-07	7.86E-07	--	Naphthalene	91-20-3
PAH	-	--	--	--	--	PAH	-	--	--	--	--	PAH	-	--	--	--	--	PAH	-
POM	-	1.54E-03	3.84E-04	3.84E-04	--	POM	-	--	--	--	--	POM	-	2.05E-07	8.99E-07	8.99E-07	--	POM	-
Propylene oxide	75-56-9	--	--	--	--	Propylene oxide	75-56-9	--	--	--	--	Propylene oxide	75-56-9	--	--	--	--	Propylene oxide	75-56-9
Styrene	100-42-5	7.68E-05	1.92E-05	1.92E-05	--	Styrene	100-42-5	--	--	--	--	Styrene	100-42-5	--	--	--	--	Styrene	100-42-5
Toluene	108-88-3	3.60E-03	9.01E-04	9.01E-04	--	Toluene	108-88-3	--	--	--	--	Toluene	108-88-3	1.00E-06	4.38E-06	4.38E-06	--	Toluene	108-88-3
1,1,2,2-Tetrachloroethane	79-34-5	1.63E-04	4.08E-05	4.08E-05	--	1,1,2,2-Tetrachloroethane	79-34-5	--	--	--	--	1,1,2,2-Tetrachloroethane	79-34-5	--	--	--	--	1,1,2,2-Tetrachloroethane	79-34-5
1,1,2-Trichloroethane	79-00-5	1.63E-04	4.08E-05	4.08E-05	--	1,1,2-Trichloroethane	79-00-5	--	--	--	--	1,1,2-Trichloroethane	79-00-5	--	--	--	--	1,1,2-Trichloroethane	79-00-5
1,1-Dichloroethane	75-34-3	7.29E-05	1.82E-05	1.82E-05	--	1,1-Dichloroethane	75-34-3	--	--	--	--	1,1-Dichloroethane	75-34-3	--	--	--	--	1,1-Dichloroethane	75-34-3
1,2-Dichloropropane	78-87-5	8.39E-05	2.10E-05	2.10E-05	--	1,2-Dichloropropane	78-87-5	--	--	--	--	1,2-Dichloropropane	78-87-5	--	--	--	--	1,2-Dichloropropane	78-87-5
Vinyl chloride	75-01-4	4.64E-05	1.16E-05	1.16E-05	--	Vinyl chloride	75-01-4	--	--	--	--	Vinyl chloride	75-01-4	--	--	--	--	Vinyl chloride	75-01-4
Xylene	1330-20-7	1.26E-03	3.15E-04	3.15E-04	--	Xylene	1330-20-7	--	--	--	--	Xylene	1330-20-7	--	--	--	--	Xylene	1330-20-7
Arsenic	--	--	--	--	--	Arsenic	--	--	--	--	--	Arsenic	--	5.88E-08	2.58E-07	2.58E-07	--	Arsenic	--
Beryllium	--	--	--	--	--	Beryllium	--	--	--	--	--	Beryllium	--	3.53E-09	1.55E-08	1.55E-08	--	Beryllium	--
Cadmium	--	--	--	--	--	Cadmium	--	--	--	--	--	Cadmium	--	3.24E-07	1.42E-06	1.42E-06	--	Cadmium	--
Chromium	--	--	--	--	--	Chromium	--	--	--	--	--	Chromium	--	4.12E-07	1.80E-06	1.80E-06	--	Chromium	--
Cobalt	--	--	--	--	--	Cobalt	--	--	--	--	--	Cobalt	--	2.47E-08	1.08E-07	1.08E-07	--	Cobalt	--
Manganese	--	--	--	--	--	Manganese	--	--	--	--	--	Manganese	--	1.12E-07	4.90E-07	4.90E-07	--	Manganese	--
Mercury	--	--	--	--	--	Mercury	--	--	--	--	--	Mercury	--	7.65E-08	3.35E-07	3.35E-07	--	Mercury	--
Nickel	--	--	--	--	--	Nickel	--	--	--	--	--	Nickel	--	6.18E-07	2.71E-06	2.71E-06	--	Nickel	--
Selenium	--	--	--	--	--	Selenium	--	--	--	--	--	Selenium	--	7.06E-09	3.09E-08	3.09E-08	--	Selenium	--
Total HAPs		2.10E-01	5.24E-02	5.24E-02	--	Total HAPs		--	--	--	--	Total HAPs		5.55E-04	2.43E-03	2.43E-03	--	Total HAPs	

GI-07 Spreadsheet

Facility Emissions Summary
Air Quality Permit Program
DocType: Permit Application

1a) AQ Facility ID number:16300110

1b) Agency Interest ID number:714

2) Facility name:Northern Natural Gas Co - Hugo

3a) Delta ID number:					3a) Delta ID number:					3a) Delta ID number:													
3b) Tempo SI ID No.:					3b) Tempo SI ID No.:					3b) Tempo SI ID No.:													
IA - Space Heaters					IA - Space Heaters					IA - Space Heaters													
3c)		3d)		3e) Potential		3f) Actual		3c)		3d)		3e) Potential		3f) Actual		3c)		3d)		3e) Potential		3f) Actual	
Pollutant Name	CAS #	lbs per Hr	tpy un-restricted	tpy limited	Actual tpy	Pollutant Name	CAS #	lbs per Hr	tpy un-restricted	tpy limited	Actual tpy	Pollutant Name	CAS #	lbs per Hr	tpy un-restricted	tpy limited	Actual tpy	Pollutant Name	CAS #	lbs per Hr	tpy un-restricted	tpy limited	Actual tpy
PM	-	1.12E-03	4.90E-03	4.90E-03	--	PM	-	1.49E-03	6.53E-03	6.53E-03	--	PM	-	3.73E-05	1.63E-04	1.63E-04	--	PM	-	3.73E-05	1.63E-04	1.63E-04	--
PM ₁₀	-	1.12E-03	4.90E-03	4.90E-03	--	PM ₁₀	-	1.49E-03	6.53E-03	6.53E-03	--	PM ₁₀	-	3.73E-05	1.63E-04	1.63E-04	--	PM ₁₀	-	3.73E-05	1.63E-04	1.63E-04	--
PM _{2.5}	-	1.12E-03	4.90E-03	4.90E-03	--	PM _{2.5}	-	1.49E-03	6.53E-03	6.53E-03	--	PM _{2.5}	-	3.73E-05	1.63E-04	1.63E-04	--	PM _{2.5}	-	3.73E-05	1.63E-04	1.63E-04	--
SO ₂	-	8.82E-05	3.86E-04	3.86E-04	--	SO ₂	-	1.96E-02	8.59E-02	8.59E-02	--	SO ₂	-	4.90E-04	2.15E-03	2.15E-03	--	SO ₂	-	4.90E-04	2.15E-03	2.15E-03	--
NO _x	-	1.47E-02	6.44E-02	6.44E-02	--	NO _x	-	1.65E-02	7.21E-02	7.21E-02	--	NO _x	-	4.12E-04	1.80E-03	1.80E-03	--	NO _x	-	4.12E-04	1.80E-03	1.80E-03	--
VOC	-	8.09E-04	3.54E-03	3.54E-03	--	VOC	-	1.18E-04	5.15E-04	5.15E-04	--	VOC	-	2.94E-06	1.29E-05	1.29E-05	--	VOC	-	2.94E-06	1.29E-05	1.29E-05	--
CO	-	1.24E-02	5.41E-02	5.41E-02	--	CO	-	1.08E-03	4.72E-03	4.72E-03	--	CO	-	2.70E-05	1.18E-04	1.18E-04	--	CO	-	2.70E-05	1.18E-04	1.18E-04	--
Lead	-	7.35E-08	3.22E-07	3.22E-07	--	Lead	-	9.80E-08	4.29E-07	4.29E-07	--	Lead	-	2.45E-09	1.07E-08	1.07E-08	--	Lead	-	2.45E-09	1.07E-08	1.07E-08	--
GHGs:	-	--	--	--	--	GHGs:	-	--	--	--	--	GHGs:	-	--	--	--	--	GHGs:	-	--	--	--	--
N ₂ O (mass)	-	3.31E-05	1.45E-04	1.45E-04	--	N ₂ O (mass)	-	4.41E-05	1.93E-04	1.93E-04	--	N ₂ O (mass)	-	1.10E-06	4.83E-06	4.83E-06	--	N ₂ O (mass)	-	1.10E-06	4.83E-06	4.83E-06	--
CH ₄ (mass)	-	3.31E-04	1.45E-03	1.45E-03	--	CH ₄ (mass)	-	4.41E-04	1.93E-03	1.93E-03	--	CH ₄ (mass)	-	1.10E-05	4.83E-05	4.83E-05	--	CH ₄ (mass)	-	1.10E-05	4.83E-05	4.83E-05	--
CO ₂ (mass)	-	17.55	76.85	76.85	--	CO ₂ (mass)	-	23.40	102.47	102.47	--	CO ₂ (mass)	-	0.58	2.56	2.56	--	CO ₂ (mass)	-	0.58	2.56	2.56	--
CO ₂ e	-	17.56	76.93	76.93	--	CO ₂ e	-	23.42	102.58	102.58	--	CO ₂ e	-	0.59	2.56	2.56	--	CO ₂ e	-	0.59	2.56	2.56	--
HAPs:	-	--	--	--	--	HAPs:	-	--	--	--	--	HAPs:	-	--	--	--	--	HAPs:	-	--	--	--	--
Acetaldehyde	75-07-0	--	--	--	--	Acetaldehyde	75-07-0	--	--	--	--	Acetaldehy	75-07-0	--	--	--	--	Acetaldehy	75-07-0	--	--	--	--
Acrolein	107-02-8	--	--	--	--	Acrolein	107-02-8	--	--	--	--	Acrolein	107-02-8	--	--	--	--	Acrolein	107-02-8	--	--	--	--
Benzene	71-43-2	3.09E-07	1.35E-06	1.35E-06	--	Benzene	71-43-2	4.12E-07	1.80E-06	1.80E-06	--	Benzene	71-43-2	1.03E-08	4.51E-08	4.51E-08	--	Benzene	71-43-2	1.03E-08	4.51E-08	4.51E-08	--
1,3-Butadiene	106-99-0	--	--	--	--	1,3-Butadie	106-99-0	--	--	--	--	1,3-Butadie	106-99-0	--	--	--	--	1,3-Butadie	106-99-0	--	--	--	--
Carbon tetrachloride	58-23-5	--	--	--	--	Carbon tetr	58-23-5	--	--	--	--	Carbon tetr	58-23-5	--	--	--	--	Carbon tetr	58-23-5	--	--	--	--
Chlorobenzene	108-90-7	--	--	--	--	Chlorobenz	108-90-7	--	--	--	--	Chlorobenz	108-90-7	--	--	--	--	Chlorobenz	108-90-7	--	--	--	--
Chloroform	67-66-3	--	--	--	--	Chloroform	67-66-3	--	--	--	--	Chloroform	67-66-3	--	--	--	--	Chloroform	67-66-3	--	--	--	--
1,4-Dichlorobenzene	25321-22-6	1.76E-07	7.73E-07	7.73E-07	--	1,4-Dichlor	25321-22-6	2.35E-07	--	--	--	1,4-Dichlor	25321-22-6	5.88E-09	2.58E-08	2.58E-08	--	1,4-Dichlor	25321-22-6	5.88E-09	2.58E-08	2.58E-08	--
1,3-Dichloropropene	542-75-6	--	--	--	--	1,3-Dichlor	542-75-6	--	--	--	--	1,3-Dichlor	542-75-6	--	--	--	--	1,3-Dichlor	542-75-6	--	--	--	--
Ethylbenzene	100-41-4	--	--	--	--	Ethylbenze	100-41-4	--	--	--	--	Ethylbenze	100-41-4	--	--	--	--	Ethylbenze	100-41-4	--	--	--	--
Ethylene Dibromide	106-93-4	--	--	--	--	Ethylene Di	106-93-4	--	--	--	--	Ethylene Di	106-93-4	--	--	--	--	Ethylene Di	106-93-4	--	--	--	--
Formaldehyde	50-00-0	1.10E-05	4.83E-05	4.83E-05	--	Formaldehy	50-00-0	1.47E-05	6.44E-05	6.44E-05	--	Formaldehy	50-00-0	3.68E-07	1.61E-06	1.61E-06	--	Formaldehy	50-00-0	3.68E-07	1.61E-06	1.61E-06	--
Hexane	110-54-3	5.59E-08	2.45E-07	2.45E-07	--	Hexane	110-54-3	3.53E-04	1.55E-03	1.55E-03	--	Hexane	110-54-3	8.82E-06	3.86E-05	3.86E-05	--	Hexane	110-54-3	8.82E-06	3.86E-05	3.86E-05	--
Methanol	67-56-1	--	--	--	--	Methanol	67-56-1	--	--	--	--	Methanol	67-56-1	--	--	--	--	Methanol	67-56-1	--	--	--	--
Methylene chloride (Dichloromethane)	75-09-2	--	--	--	--	Methylene	75-09-2	--	--	--	--	Methylene	75-09-2	--	--	--	--	Methylene	75-09-2	--	--	--	--
Naphthalene	91-20-3	8.97E-08	3.93E-07	3.93E-07	--	Naphthaler	91-20-3	1.20E-07	5.24E-07	5.24E-07	--	Naphthaler	91-20-3	2.99E-09	1.31E-08	1.31E-08	--	Naphthaler	91-20-3	2.99E-09	1.31E-08	1.31E-08	--
PAH	-	--	--	--	--	PAH	-	--	--	--	--	PAH	-	--	--	--	--	PAH	-	--	--	--	--
POM	-	1.03E-07	4.50E-07	4.50E-07	--	POM	-	1.37E-07	6.00E-07	6.00E-07	--	POM	-	3.42E-09	1.50E-08	1.50E-08	--	POM	-	3.42E-09	1.50E-08	1.50E-08	--
Propylene oxide	75-56-9	--	--	--	--	Propylene o	75-56-9	--	--	--	--	Propylene o	75-56-9	--	--	--	--	Propylene o	75-56-9	--	--	--	--
Styrene	100-42-5	--	--	--	--	Styrene	100-42-5	--	--	--	--	Styrene	100-42-5	--	--	--	--	Styrene	100-42-5	--	--	--	--
Toluene	108-88-3	5.00E-07	2.19E-06	2.19E-06	--	Toluene	108-88-3	6.67E-07	2.92E-06	2.92E-06	--	Toluene	108-88-3	1.67E-08	7.30E-08	7.30E-08	--	Toluene	108-88-3	1.67E-08	7.30E-08	7.30E-08	--
1,1,2,2-Tetrachloroethane	79-34-5	--	--	--	--	1,1,2,2-Tet	79-34-5	--	--	--	--	1,1,2,2-Tet	79-34-5	--	--	--	--	1,1,2,2-Tet	79-34-5	--	--	--	--
1,1,2-Trichloroethane	79-00-5	--	--	--	--	1,1,2-Trichl	79-00-5	--	--	--	--	1,1,2-Trichl	79-00-5	--	--	--	--	1,1,2-Trichl	79-00-5	--	--	--	--
1,1-Dichloroethane	75-34-3	--	--	--	--	1,1-Dichlor	75-34-3	--	--	--	--	1,1-Dichlor	75-34-3	--	--	--	--	1,1-Dichlor	75-34-3	--	--	--	--
1,2-Dichloropropane	78-87-5	--	--	--	--	1,2-Dichlor	78-87-5	--	--	--	--	1,2-Dichlor	78-87-5	--	--	--	--	1,2-Dichlor	78-87-5	--	--	--	--
Vinyl chloride	75-01-4	--	--	--	--	Vinyl chlori	75-01-4	--	--	--	--	Vinyl chlori	75-01-4	--	--	--	--	Vinyl chlori	75-01-4	--	--	--	--
Xylene	1330-20-7	--	--	--	--	Xylene	1330-20-7	--	--	--	--	Xylene	1330-20-7	--	--	--	--	Xylene	1330-20-7	--	--	--	--
Arsenic	--	2.94E-08	1.29E-07	1.29E-07	--	Arsenic	--	3.92E-08	1.72E-07	1.72E-07	--	Arsenic	--	9.80E-10	4.29E-09	4.29E-09	--	Arsenic	--	9.80E-10	4.29E-09	4.29E-09	--
Beryllium	--	1.76E-09	7.73E-09	7.73E-09	--	Beryllium	--	2.35E-09	1.03E-08	1.03E-08	--	Beryllium	--	5.88E-11	2.58E-10	2.58E-10	--	Beryllium	--	5.88E-11	2.58E-10	2.58E-10	--
Cadmium	--	1.62E-07	7.09E-07	7.09E-07	--	Cadmium	--	2.16E-07	9.45E-07	9.45E-07	--	Cadmium	--	5.39E-09	2.36E-08	2.36E-08	--	Cadmium	--	5.39E-09	2.36E-08	2.36E-08	--
Chromium	--	2.06E-07	9.02E-07	9.02E-07	--	Chromium	--	2.75E-07	1.20E-06	1.20E-06	--	Chromium	--	6.86E-09	3.01E-08	3.01E-08	--	Chromium	--	6.86E-09	3.01E-08	3.01E-08	--
Cobalt	--	1.24E-08	5.41E-08	5.41E-08	--	Cobalt	--	1.65E-08	7.21E-08	7.21E-08	--	Cobalt	--	4.12E-10	1.80E-09	1.80E-09	--	Cobalt	--	4.12E-10	1.80E-09	1.80E-09	--
Manganese	--	5.59E-08	2.45E-07	2.45E-07	--	Manganese	--	7.45E-08	3.26E-07	3.26E-07	--	Manganese	--	1.86E-09	8.16E-09	8.16E-09	--	Manganese	--	1.86E-09	8.16E-09	8.16E-09	--
Mercury	--	3.82E-08	1.67E-07	1.67E-07	--	Mercury	--	5.10E-08	2.23E-07	2.23E-07	--	Mercury	--	1.27E-09	5.58E-09	5.58E-09	--	Mercury	--	1.27E-09	5.58E-09	5.58E-09	--
Nickel	--	3.09E-07	1.35E-06	1.35E-06	--	Nickel	--	4.12E-07	1.80E-06	1.80E-06	--	Nickel	--	1.03E-08	4.51E-08	4.51E-08	--	Nickel	--	1.03E-08	4.51E-08	4.51E-08	--
Selenium	--	3.53E-09	1.55E-08	1.55E-08	--	Selenium	--	4.71E-09	2.06E-08	2.06E-08	--	Selenium	--	1.18E-10	5.15E-10	5.15E-10	--	Selenium	--	1.18E-10	5.15E-10	5.15E-10	--
Total HAPs		2.78E-04	1.22E-03	1.22E-03	--	Total HAPs		3.70E-04	1.62E-03	1.62E-03	--	Total HAPs		9.25E-06	4.05E-05	4.05E-05	--	Total HAPs		9.25E-06	4.05E-05	4.05E-05	--

GI-07 Spreadsheet

Facility Emissions Summary
Air Quality Permit Program
DocType: Permit Application

1b) Agency Interest ID number: 714 1b) Agency Interest ID number: 714

Emissions Summary Table

3a) Delta ID number:		IA - Catalytic Heater				For all EQUs and FUGIs					At the time of Permit issuance					After the project completion w/out FUGIs					After project completion with FUGIs					After project completion with IA and FUGI				
3c) Pollutant Name	3d) CAS #	3e) Potential lbs per Hr	3f) Potential tpy un-restricted	3g) Potential tpy limited	3h) Actual tpy	4a) Pollutant Name	4b) Potential (lbs/hr)	4c) Potential (tpy) Unrestricted	4d) Potential (tpy) Limited	4e) Actual tons/year	4a) Pollutant Name	4b) Potential (lbs/hr)	4c) Potential (tpy) Unrestricted	4d) Potential (tpy) Limited	4e) Actual tons/year	4a) Pollutant Name	4b) Potential (lbs/hr)	4c) Potential (tpy) Unrestricted	4d) Potential (tpy) Limited	4e) Actual tons/year	4a) Pollutant Name	4b) Potential (lbs/hr)	4c) Potential (tpy) Unrestricted	4d) Potential (tpy) Limited	4e) Actual tons/year	4a) Pollutant Name	4b) Potential (lbs/hr)	4c) Potential (tpy) Unrestricted	4d) Potential (tpy) Limited	4e) Actual tons/year
PM	-	1.99E-05	8.70E-05	8.70E-05	--	PM	1.08	4.09	4.09		PM	0.42	1.68	1.68		PM	0.67	2.41	2.41		PM	0.67	2.41	2.41		PM	0.67	2.43	2.43	
PM ₁₀	-	1.99E-05	8.70E-05	8.70E-05	--	PM ₁₀	1.08	4.09	4.09		PM ₁₀	0.42	1.68	1.68		PM ₁₀	0.67	2.41	2.41		PM ₁₀	0.67	2.41	2.41		PM ₁₀	0.67	2.43	2.43	
PM _{2.5}	-	1.99E-05	8.70E-05	8.70E-05	--	PM _{2.5}	1.08	4.09	4.09		PM _{2.5}	0.42	1.68	1.68		PM _{2.5}	0.67	2.41	2.41		PM _{2.5}	0.67	2.41	2.41		PM _{2.5}	0.67	2.43	2.43	
SO ₂	-	2.61E-04	1.15E-03	1.15E-03	--	SO ₂	0.20	0.62	0.62		SO ₂	0.083	0.357	0.357		SO ₂	0.12	0.26	0.26		SO ₂	0.12	0.26	0.26		SO ₂	0.14	0.35	0.35	
NO _x	-	2.20E-04	9.62E-04	9.62E-04	--	NO _x	14.68	49.07	49.07		NO _x	6.85	25.60	25.60		NO _x	7.83	23.48	23.48		NO _x	7.83	23.48	23.48		NO _x	7.90	23.74	23.74	
VOC	-	1.57E-06	6.87E-06	6.87E-06	--	VOC	4.87	17.98	17.98		VOC	2.55	8.97	8.97		VOC	2.22	8.54	8.54		VOC	2.32	9.01	9.01		VOC	2.33	9.02	9.02	
CO	-	1.44E-05	6.30E-05	6.30E-05	--	CO	30.32	160.41	160.41		CO	19.01	74.50	74.50		CO	11.30	85.91	85.91		CO	11.30	85.91	85.91		CO	11.34	86.08	86.08	
Lead	-	1.31E-09	5.73E-09	5.73E-09	--	Lead	0.00	0.00	0.00		Lead	0.00	0.00	0.00		Lead	0.00	0.00	0.00		Lead	0.00	0.00	0.00		Lead	0.00	0.00	0.00	
GHGs:	-				--	GHGs:					GHGs:					GHGs:					GHGs:					GHGs:				
N ₂ O (mass)	-	5.88E-07	2.58E-06	2.58E-06	--	N ₂ O (mass)	0.03	0.14	0.14		N ₂ O (mass)	0.01	0.06	0.06		N ₂ O (mass)	1.95E-02	7.97E-02	7.97E-02		N ₂ O (mass)	0.02	0.08	0.08		N ₂ O (mass)	0.02	0.08	0.08	
CH ₄ (mass)	-	5.88E-06	2.58E-05	2.58E-05	--	CH ₄ (mass)	13.25	57.96	57.96		CH ₄ (mass)	0.13	0.56	0.56		CH ₄ (mass)	1.95E-01	7.97E-01	7.97E-01		CH ₄ (mass)	13.12	57.40	57.40		CH ₄ (mass)	13.12	57.41	57.41	
CO ₂ (mass)	-	0.31	1.37	1.37	--	CO ₂ (mass)	17284.97	71935.39	71935.39		CO ₂ (mass)	6,969	29,683	29,683		CO ₂ (mass)	10315.97	42251.11	42251.11		CO ₂ (mass)	10,316	42,253	42,253		CO ₂ (mass)	10,393	42,590	42,590	
CO ₂ e	-	0.31	1.37	1.37	--	CO ₂ e	17664.65	73594.27	73594.27		CO ₂ e	6,976	29,713	29,713		CO ₂ e	10326.61	42294.52	42294.52		CO ₂ e	10,689	43,881	43,881		CO ₂ e	10,766	44,218	44,218	
HAPs:					--	HAPs:					HAPs:					HAPs:					HAPs:					HAPs:				
Acetaldehy	75-07-0	--	--	--	--	Acetaldehy	2.88E-02	3.03E-02	3.03E-02		Acetaldehy	7.47E-03	1.14E-02	1.14E-02		Acetaldehy	2.13E-02	1.89E-02	1.89E-02		Acetaldehy	2.13E-02	1.89E-02	1.89E-02		Acetaldehy	2.13E-02	1.89E-02	1.89E-02	
Acrolein	107-02-8	--	--	--	--	Acrolein	2.27E-02	9.38E-03	9.38E-03		Acrolein	5.23E-03	2.84E-03	2.84E-03		Acrolein	1.75E-02	6.55E-03	6.55E-03		Acrolein	1.75E-02	6.55E-03	6.55E-03		Acrolein	1.75E-02	6.55E-03	6.55E-03	
Benzene	71-43-2	5.49E-09	2.41E-08	2.41E-08	--	Benzene	1.48E-02	1.06E-02	1.06E-02		Benzene	3.62E-03	3.77E-03	3.77E-03		Benzene	1.12E-02	6.87E-03	6.87E-03		Benzene	1.12E-02	6.87E-03	6.87E-03		Benzene	1.12E-02	6.87E-03	6.87E-03	
1,3-Butadie	106-99-0	--	--	--	--	1,3-Butadie	5.57E-03	1.64E-03	1.64E-03		1,3-Butadie	1.25E-03	4.15E-04	4.15E-04		1,3-Butadie	4.32E-03	1.22E-03	1.22E-03		1,3-Butadie	4.32E-03	1.22E-03	1.22E-03		1,3-Butadie	4.32E-03	1.22E-03	1.22E-03	
Carbon tetr	58-23-5	--	--	--	--	Carbon tetr	1.47E-04	3.67E-05	3.67E-05		Carbon tetr	3.27E-05	8.18E-06	8.18E-06		Carbon tetr	1.14E-04	2.86E-05	2.86E-05		Carbon tetr	1.14E-04	2.86E-05	2.86E-05		Carbon tetr	1.14E-04	2.86E-05	2.86E-05	
Chlorobenz	108-90-7	--	--	--	--	Chlorobenz	1.14E-04	2.84E-05	2.84E-05		Chlorobenz	2.53E-05	6.33E-06	6.33E-06		Chlorobenz	8.84E-05	2.21E-05	2.21E-05		Chlorobenz	8.84E-05	2.21E-05	2.21E-05		Chlorobenz	8.84E-05	2.21E-05	2.21E-05	
Chloroform	67-66-3	--	--	--	--	Chloroform	3.42E-04	8.55E-05	8.55E-05		Chloroform	7.62E-05	1.90E-05	1.90E-05		Chloroform	2.66E-04	6.65E-05	6.65E-05		Chloroform	2.66E-04	6.65E-05	6.65E-05		Chloroform	2.66E-04	6.65E-05	6.65E-05	
1,4-Dichlor	25321-22-6	3.14E-09	1.37E-08	1.37E-08	--	1,4-Dichlor	0.00E+00	0.00E+00	0.00E+00		1,4-Dichlor	0.00E+00	0.00E+00	0.00E+00		1,4-Dichlor	0.00E+00	0.00E+00	0.00E+00		1,4-Dichlor	0.00E+00	0.00E+00	0.00E+00		1,4-Dichlor	7.74E-07	2.36E-06	2.36E-06	
1,3-Dichlor	542-75-6	--	--	--	--	1,3-Dichlor	1.08E-04	2.70E-05	2.70E-05		1,3-Dichlor	2.40E-05	6.01E-06	6.01E-06		1,3-Dichlor	8.39E-05	2.10E-05	2.10E-05		1,3-Dichlor	8.39E-05	2.10E-05	2.10E-05		1,3-Dichlor	8.39E-05	2.10E-05	2.10E-05	
Ethylbenze	100-41-4	--	--	--	--	Ethylbenze	4.68E-03	1.97E-02	1.97E-02		Ethylbenze	1.90E-03	8.12E-03	8.12E-03		Ethylbenze	2.79E-03	1.15E-02	1.15E-02		Ethylbenze	2.79E-03	1.15E-02	1.15E-02		Ethylbenze	2.79E-03	1.15E-02	1.15E-02	
Ethylene Di	106-93-4	--	--	--	--	Ethylene Di	1.77E-04	4.42E-05	4.42E-05		Ethylene Di	3.94E-05	9.85E-06	9.85E-06		Ethylene Di	1.38E-04	3.44E-05	3.44E-05		Ethylene Di	1.38E-04	3.44E-05	3.44E-05		Ethylene Di	1.38E-04	3.44E-05	3.44E-05	
Formaldehy	50-00-0	1.96E-07	8.59E-07	8.59E-07	--	Formaldehy	2.70E-01	4.78E-01	4.78E-01		Formaldehy	7.90E-02	1.89E-01	1.89E-01		Formaldehy	1.91E-01	2.88E-01	2.88E-01		Formaldehy	1.91E-01	2.88E-01	2.88E-01		Formaldehy	1.91E-01	2.89E-01	2.89E-01	
Hexane	110-54-3	4.71E-06	2.06E-05	2.06E-05	--	Hexane	0.00E+00	0.00E+00	0.00E+00		Hexane	0.00E+00	0.00E+00	0.00E+00		Hexane	0.00E+00	0.00E+00	0.00E+00		Hexane	0.00E+00	0.00E+00	0.00E+00		Hexane	3.67E-04	1.61E-03	1.61E-03	
Methanol	67-56-1	--	--	--	--	Methanol	2.54E-02	6.35E-03	6.35E-03		Methanol	5.66E-03	1.41E-03	1.41E-03		Methanol	1.98E-02	4.94E-03	4.94E-03		Methanol	1.98E-02	4.94E-03	4.94E-03		Methanol	1.98E-02	4.94E-03	4.94E-03	
Methylene	75-09-2	--	--	--	--	Methylene	3.42E-04	8.55E-05	8.55E-05		Methylene	7.62E-05	1.90E-05	1.90E-05		Methylene	2.66E-04	6.65E-05	6.65E-05		Methylene	2.66E-04	6.65E-05	6.65E-05		Methylene	2.66E-04	6.65E-05	6.65E-05	
Naphthaler	91-20-3	1.59E-09	6.99E-09	6.99E-09	--	Naphthaler	9.88E-04	9.98E-04	9.98E-04		Naphthaler	2.55E-04	3.74E-04	3.74E-04		Naphthaler	7.34E-04	6.24E-04	6.24E-04		Naphthaler	7.34E-04	6.24E-04	6.24E-04		Naphthaler	7.34E-04	6.26E-04	6.26E-04	
PAH	-	--	--	--	--	PAH	3.08E-04	1.35E-03	1.35E-03		PAH	1.27E-04	5.57E-04	5.57E-04		PAH	1.81E-04	7.91E-04	7.91E-04		PAH	1.81E-04	7.91E-04	7.91E-04		PAH	1.81E-04	7.91E-04	7.91E-04	
POM	-	1.83E-09	8.00E-09	8.00E-09	--	POM	1.98E-03	4.94E-04	4.94E-04		POM	4.40E-04	1.10E-04	1.10E-04		POM	1.54E-03	3.84E-04	3.84E-04		POM	1.54E-03	3.84E-04	3.84E-04		POM	1.54E-03	3.86E-04	3.86E-04	
Propylene c	75-56-9	--	--	--	--	Propylene c	4.06E-03	1.78E-02	1.78E-02		Propylene c	1.68E-03	7.35E-03	7.35E-03		Propylene c	2.38E-03	1.04E-02	1.04E-02		Propylene c	2.38E-03	1.04E-02	1.04E-02		Propylene c	2.38E-03	1.04E-02	1.04E-02	
Styrene	100-42-5	--	--	--	--	Styrene	9.88E-05	2.47E-05	2.47E-05		Styrene	2.20E-05	5.50E-06	5.50E-06		Styrene	7.68E-05	1												

Northern Natural Gas Company - Hugo Compressor Station
AQ Facility ID# 16300110
Major Amendment

MPCA Form CH-04b Editable Calculations

Use Table 1 to document the potential emissions of the individual units, tanks, or fugitive sources affected by the proposed modification. See instructions for calculating emissions increases. Make additional copies of Table 1 if more than four units are affected. Transfer the total increases (total potential emissions) for each pollutant from the "Total" column in Table 1 to column B in Table 2. Refer to the Minnesota Pollution Control Agency (MPCA) Greenhouse Gas (GHG) Emissions website at <https://www.pca.state.mn.us/air/greenhouse-gas-emissions-calculations> for guidance in calculating carbon dioxide equivalents (CO₂e) emissions. Attach your calculations in both an editable spreadsheet format and a hardcopy printout.

Table 1

Pollutant	SI IDs: EQUI4		EQUI5		IA - Fuel Gas Heater		IA - Space Heaters		Total (tpy)
	Potential emissions (tpy)		Potential emissions (tpy)		Potential emissions (tpy)		Potential emissions (tpy)		
PM	2.37		0.03		0.01		0.005		2.42
PM ₁₀	2.37		0.03		0.01		0.005		2.42
PM _{2.5}	2.37		0.03		0.01		0.005		2.42
NO _x	22.63		0.85		0.13		0.06		23.7
SO ₂	0.26		0.0009		0.0008		0.0004		0.259
CO	84.22		1.70		0.11		0.05		86.1
VOCs	8.11		0.42		0.01		0.004		8.55
Lead	0.00E+00		0.00E+00		6.44E-07		3.22E-07		9.66E-07
Fluorides	0		0		0		0		0
Sulfuric acid mist	0		0		0		0		0
H ₂ S	0		0		0		0		0
Total reduced sulfur including H ₂ S	0		0		0		0		0
Total reduced sulfur compounds including H ₂ S	0		0		0		0		0
MWC organics	0		0		0		0		0
MWC acid gas	0		0		0		0		0
MSW landfill gas	0		0		0		0		0
CO ₂ e	42,117		177.73		153.86		76.93		42,525

Table 2 - Summary

Pollutant	Emissions from all units affected by the modification (from Table 1) (tpy)	Thresholds for minor sources ("No" to CH 04 question 5 or 6 or "No" to GI-09C question C4 or C5 (tpy)		Thresholds for major sources
		Answered "Yes" to CH-04 question 3 or GI-09C Section A	Answered "No" to CH-04 question 3 or GI-09C Section A	Significant emission rates for major sources (tpy)
PM	2.41	100	250	25
PM ₁₀	2.41	100	250	15
PM _{2.5}	2.41	100	250	10
NO _x	23.48	100	250	40
SO ₂	0.26	100	250	40
CO	85.91	100	250	100
VOCs	8.54	100	250	40
Lead	0.00	100	250	0.6
Fluorides	0	100	250	3
Sulfuric acid mist	0	100	250	7
H ₂ S	0	100	250	10
Total reduced sulfur including H ₂ S	0	100	250	10
Total reduced sulfur compounds including H ₂ S	0	100	250	10
MWC organics	0	100	250	10
MWC acid gas	0	100	250	0.0000035
MWC metals	0	100	250	40
MSW landfill gas	0	100	250	15
CO ₂ e	42,295	NA	NA	75,000

MPCA Form CH-04c Editable Calculations

Calculate the potential to emit (PTE) of greenhouse gases (GHG) emissions for your existing facility, before your proposed change, including the mass emissions of individual GHGs (columns a – f), the sum of the mass emissions of individual GHGs (column g), and the carbon dioxide equivalent (CO2e, column h). Refer to the Minnesota Pollution Control Agency (MPCA) GHG Emissions website at <https://www.pca.state.mn.us/air/greenhouse-gas-emissions-calculations> for guidance in calculating the individual mass emissions and the CO2e. Complete your calculations on a spreadsheet; transfer the current PTE to Table 1 below, and include the editable calculation spreadsheet in your application package.

Table 1

Carbon dioxide (CO ₂) (tpy)	Methane (CH ₄) (tpy)	Nitrous oxide (N ₂ O) (tpy)	Hydrofluorocarbons (HFC) (tpy)	Perfluorocarbons (PFC) (tpy)	Sulfur hexafluoride (tpy)	Mass sum of GHGs (tpy)	Carbon dioxide equivalent (CO ₂ e) (tpy)
	29,684	57.17	0.06	0	0	0	29,741
							31,300

Use Table 2 to document the emissions increase for individual units, tanks, or fugitive sources affected by the proposed modification. See instructions for calculating emissions increases. Make additional copies of Table 2 if more than four units are affected. Summarize the total increases for each pollutant in Table 3. Attach your calculations (in both an editable spreadsheet format and a hard copy printout). Answer the question following Table 3.

Table 2

SI IDs: EQUI4		EQUI5		IA - Fuel Gas Heater		IA - Space Heaters	
Pollutant	Potential emissions (tpy)	Potential emissions (tpy)	Potential emissions (tpy)	Potential emissions (tpy)	Potential emissions (tpy)	Total (tpy)	
CO ₂	42,074	177.531	153.707	76.853		42,482	
CH ₄	0.793	0.004	0.003	0.001		0.801	
N ₂ O	0.079	0.0004	0.0003	0.0001		0.080	
HFC	0	0	0	0		0	
PFC	0	0	0	0		0	
SF ₆	0	0	0	0		0	
CO ₂ e	42,117	177.725	153.864	76.932		42,525	

Table 3 - Summary

Pollutant	Potential emissions ("Total" from Table 2) (tpy)
CO ₂	42,482
CH ₄	0.80
N ₂ O	0.08
HFC	0
PFC	0
SF ₆	0
Total mass GHG	42,483
CO ₂ e	42,525

* End of MPCA Form CH-04c Editable Calculations

Greenhouse Gas PTE by Source

	Unit ID	Capacity	Greenhouse Gas (tpy)			
			CO ₂	CH ₄	N ₂ O	CO ₂ e
Proposed Emission Sources			42,482	0.80	0.08	42,525
Compressor Turbine - Taurus 60-7	EQUI4	7,782.0 hp (0 °F)	42,074	0.793	0.079	42,117
Emergency Generator	EQUI5	6.46 MMBtu/hr	177.531	0.004	0.000	177.725
Fuel Gas Heater	IA	0.30 MMBtu/hr	153.71	0.003	0.000	153.86
Space Heaters	IA	0.15 MMBtu/hr	76.85	0.001	0.000	76.93
Existing Emission Sources			1.61	56.61	0.00	1,586.59
Equipment Leaks	0.00	-- --	0.023	2.150	0.000	60.235
Blowdowns	FUGI4	-- --	1.587	54.456	0.000	1,526.354
Proposed Facility PTE			42,483	57.41	0.08	44,112

Existing Equipment Being Removed PTE			29,683	0.56	0.06	29,713
Existing Turbine	EQUI1	57.83 MMBtu/hr	29,632	0.558	0.056	29,662
Emergency Generator	EQUI3	1.85 MMBtu/hr	50.85	1.02E-03	1.02E-04	50.90
Existing Facility PTE			29,684	57.17	0.06	31,300

Significant Emission Sources	Unit ID	Maximum Hourly Emissions														
		lb/hr			lb/day			lb/day			lb/hr			lb/hr		
		NO _x			PM ₁₀			PM _{2.5}			SO ₂			Lead		
		After Change	Before Change	Net Change	After Change	Before Change	Net Change	After Change	Before Change	Net Change	After Change	Before Change	Net Change	After Change	Before Change	Net Change
Proposed Equipment		--	--	7.88	--	--	16.10	--	--	16.10	--	--	0.12	--	--	2.21E-07
Compressor Turbine - Taurus 60-7800S	EQUI4	4.44	0	4.44	13.01	0	13.01	13.01	0	13.01	0.12	0	0.12	0.00	0	0.00
Emergency Generator	EQUI5	3.40	0	3.40	3.01	0	3.01	3.01	0	3.01	0.00	0	0.00	0.00	0	0.00
Fuel Gas Heater	IA	2.94E-02	0	2.94E-02	5.36E-02	0	5.36E-02	5.36E-02	0	5.36E-02	1.76E-04	0	1.76E-04	1.47E-07	0	1.47E-07
Space Heaters	IA	1.47E-02	0	1.47E-02	2.68E-02	0	2.68E-02	2.68E-02	0	2.68E-02	8.82E-05	0	8.82E-05	7.35E-08	0	7.35E-08
Existing Equipment Being Removed		--	--	-6.85	--	--	-10.02	--	--	-10.02	--	--	-0.08	--	--	0.00E+00
Natural Gas Compressor Turbine	EQUI1	0	5.78	-5.78	0	9.16	-9.16	0	9.16	-9.16	0	0.08	-0.08	0	0.00	0.00
Emergency Generator	EQUI3	0	1.06	-1.06	0	0.86	-0.86	0	0.86	-0.86	0	1.09E-03	-1.09E-03	0	0.00	0.00
Total Project Net Increase				1.03			6.07			6.07			0.04			2.21E-07
CH-19 Modeling Thresholds		--	--	9.13	--	--	82.10	--	--	54.70	--	--	9.13	--	--	0.11
Exceed Modeling Thresholds				no			no			no			no			no

Table 1: Pollutant thresholds

Pollutant	Threshold
PM ₁₀	82.1 lb/day
PM _{2.5}	54.7 lb/day
NO _x	9.13 lb/hr
SO ₂	9.13 lb/hr
Lead	0.11 lb/hr

Northern Natural Gas Company - Hugo Compressor Station
AQ Facility ID# 16300110
Major Amendment

Emission Unit ID:

EQUI1

Hugo Turbine (natural gas)
@8760 hrs per year

"Capacity" =

57.83 MMBtu/hr

Engine maximum gross output (hp) is:

7229

	lb/MMBTU	lb/hr	tons/yr
PM2.5 (total)	6.60E-03	0.38	1.67
PM10 (total)	6.60E-03	0.38	1.67
PM (total)	6.60E-03	0.38	1.67
Total PM assumed = PM10 and PM2.5	6.60E-03	0.38	1.67
SO ₂	0.001410	0.08	0.36
NO _x	<i>1.00E-01</i>	5.78	25.33
VOC	<i>3.49E-02</i>	2.02	8.84
CO	<i>2.92E-01</i>	16.89	73.97
CO ₂	1.17E+02	6765.26	29631.82
CH ₄	2.20E-03	0.13	0.56
N ₂ O	2.20E-04	0.01	0.06
CO ₂ e	1.17E+02	6772.20	29662.26
Lead		0.00E+00	0.00E+00
Ammonia		0.00E+00	0.00E+00
1,1,2,2-Tetrachloroethane		0.00E+00	0.00E+00
1,1,2-Trichloroethane		0.00E+00	0.00E+00
1,3-Butadiene	4.30E-07	2.49E-05	1.09E-04
1,3-Dichloropropene		0.00E+00	0.00E+00
Acetaldehyde	4.00E-05	2.31E-03	1.01E-02
Acrolein	6.40E-06	3.70E-04	1.62E-03
Benzene	1.20E-05	6.94E-04	3.04E-03
Carbon Tetrachloride		0.00E+00	0.00E+00
Chlorobenzene		0.00E+00	0.00E+00
Chloroform		0.00E+00	0.00E+00
Ethylbenzene	3.20E-05	1.85E-03	8.11E-03
Ethylene Dibromide		0.00E+00	0.00E+00
Formaldehyde	7.10E-04	4.11E-02	1.80E-01
Methanol		0.00E+00	0.00E+00
Methylene Chloride		0.00E+00	0.00E+00
Naphthalene	1.30E-06	7.52E-05	3.29E-04
PAH	2.20E-06	1.27E-04	5.57E-04
Propylene Oxide	2.90E-05	1.68E-03	7.35E-03
Styrene		0.00E+00	0.00E+00
Toluene	1.30E-04	7.52E-03	3.29E-02
Vinyl Chloride		0.00E+00	0.00E+00
Xylene	6.40E-05	3.70E-03	1.62E-02
Total HAPs		5.94E-02	2.60E-01

Emission factors are from USEPA, AP-42.

SO₂ emission factor based on 0.25 grains S / 100 scf.

Italicized text = values from manufacturer's data.

GHG Emission factors based on 40 CFR 98 Subpart C. Updated January 2025.

Single Fuel Emission Units

	EQUI ID	EQUI 03					
	Heat Input (MMBTU/hr)	1.848915					
	Unlimited Hours (hr/yr)	500					
	Limited Hours (hr/yr)	500					
	Firing Type	4SRB 90-105% Load					
Pollutant	AP-42 Emission Factor (lb/MMBtu)	Other Emission Factor (lb/MMBtu)	Control Efficiency (%)	Unrestricted Emission Rate (lb/hr)	Controlled Emission Rate (lb/hr)	Unrestricted Emissions (tpy)	Limited Emissions (tpy)
Particulate Matter	1.94E-02			3.59E-02	3.59E-02	8.97E-03	8.97E-03
PM < 10 micron	1.94E-02			3.59E-02	3.59E-02	8.97E-03	8.97E-03
PM < 2.5 micron	1.94E-02			3.59E-02	3.59E-02	8.97E-03	8.97E-03
Nitrogen Oxides	2.21E+00	5.75E-01		1.06E+00	1.06E+00	2.66E-01	2.66E-01
Carbon Monoxide	3.72E+00	1.15E+00		2.13E+00	2.13E+00	5.31E-01	5.31E-01
Sulfur Dioxide	5.88E-04			1.09E-03	1.09E-03	2.72E-04	2.72E-04
Volatile Organic Compounds	2.96E-02	2.87E-01		5.31E-01	5.31E-01	1.33E-01	1.33E-01
HAPs - Total	3.25E-02			6.00E-02	6.00E-02	1.50E-02	1.50E-02
Carbon Dioxide	1.10E+02			2.03E+02	2.03E+02	5.08E+01	5.08E+01
Methane	2.20E-03			4.08E-03	4.08E-03	1.02E-03	1.02E-03
Nitrous Oxide	2.20E-04			4.08E-04	4.08E-04	1.02E-04	1.02E-04
Carbon Dioxide Equivalent	1.10E+02	1.10E+02		2.04E+02	2.04E+02	5.09E+01	5.09E+01
1,1,2,2-Tetrachloroethane	2.53E-05			4.68E-05	4.68E-05	1.17E-05	1.17E-05
1,1,2-Trichloroethane	2.53E-05			4.68E-05	4.68E-05	1.17E-05	1.17E-05
1,1-Dichloroethane	1.13E-05			2.09E-05	2.09E-05	5.22E-06	5.22E-06
1,2-Dibromoethane (Ethylene dibromide); EDB	2.13E-05			3.94E-05	3.94E-05	9.85E-06	9.85E-06
1,2-Dichloropropane	1.30E-05			2.40E-05	2.40E-05	6.01E-06	6.01E-06
1,3-Butadiene	6.63E-04			1.23E-03	1.23E-03	3.06E-04	3.06E-04
1,3-Dichloropropene	1.30E-05			2.40E-05	2.40E-05	6.01E-06	6.01E-06
2,2,4-trimethylpentane	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acetaldehyde	2.79E-03			5.16E-03	5.16E-03	1.29E-03	1.29E-03
Acrolein	2.63E-03			4.86E-03	4.86E-03	1.22E-03	1.22E-03
Benzene	1.58E-03			2.92E-03	2.92E-03	7.30E-04	7.30E-04
Benzo(e)pyrene	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biphenyl	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Carbon tetrachloride	1.77E-05			3.27E-05	3.27E-05	8.18E-06	8.18E-06
Chlorobenzene (Monochlorobenzene)	1.29E-05			2.39E-05	2.39E-05	5.96E-06	5.96E-06
Chloroform	1.37E-05			2.53E-05	2.53E-05	6.33E-06	6.33E-06
Dichloromethane (Methylene chloride)	4.12E-05			7.62E-05	7.62E-05	1.90E-05	1.90E-05
Ethylbenzene	2.48E-05			4.59E-05	4.59E-05	1.15E-05	1.15E-05
Formaldehyde	2.05E-02			3.79E-02	3.79E-02	9.48E-03	9.48E-03
Hexane	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Methanol	3.06E-03			5.66E-03	5.66E-03	1.41E-03	1.41E-03
Naphthalene	9.71E-05			1.80E-04	1.80E-04	4.49E-05	4.49E-05
Phenol	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Polycyclic organic matter	2.38E-04			4.40E-04	4.40E-04	1.10E-04	1.10E-04
Styrene	1.19E-05			2.20E-05	2.20E-05	5.50E-06	5.50E-06
Toluene	5.58E-04			1.03E-03	1.03E-03	2.58E-04	2.58E-04
Vinyl chloride (chloroethene)	7.18E-06			1.33E-05	1.33E-05	3.32E-06	3.32E-06
Xylenes, Total	1.95E-04			3.61E-04	3.61E-04	9.01E-05	9.01E-05

Other Emission Factor and/or Control Efficiency Factor Notes:

Single Fuel Emission Units

	EQUI ID	EQUI 05					
	Heat Input (BTU/hr)	6.45568					
	Unlimited Hours (hr/yr)	500					
	Limited Hours (hr/yr)	500					
	Firing Type	4SRB 90-105% Load					
Pollutant	Emission Factor (lb/MMSCF)	Other Emission Factor (lb/MMBtu)	Control Efficiency (%)	Unrestricted Emission Rate (lb/hr)	Controlled Emission Rate (lb/hr)	Unrestricted Emissions (tpy)	Limited Emissions (tpy)
Particulate Matter	1.94E-02			1.25E-01	1.25E-01	3.13E-02	3.13E-02
PM < 10 micron	1.94E-02			1.25E-01	1.25E-01	3.13E-02	3.13E-02
PM < 2.5 micron	1.94E-02			1.25E-01	1.25E-01	3.13E-02	3.13E-02
Nitrogen Oxides	2.21E+00	5.26E-01		3.40E+00	3.40E+00	8.49E-01	8.49E-01
Carbon Monoxide	3.72E+00	1.05E+00		6.79E+00	6.79E+00	1.70E+00	1.70E+00
Sulfur Dioxide	5.88E-04			3.80E-03	3.80E-03	9.49E-04	9.49E-04
Volatile Organic Compounds	2.96E-02	2.63E-01		1.70E+00	1.70E+00	4.24E-01	4.24E-01
HAPs - Total	3.25E-02			2.10E-01	2.10E-01	5.24E-02	5.24E-02
Carbon Dioxide	1.10E+02			7.10E+02	7.10E+02	1.78E+02	1.78E+02
Methane	2.20E-03			1.42E-02	1.42E-02	3.56E-03	3.56E-03
Nitrous Oxide	2.20E-04			1.42E-03	1.42E-03	3.56E-04	3.56E-04
Carbon Dioxide Equivalent	1.10E+02	1.10E+02		7.11E+02	7.11E+02	1.78E+02	1.78E+02
1,1,2,2-Tetrachloroethane	2.53E-05			1.63E-04	1.63E-04	4.08E-05	4.08E-05
1,1,2-Trichloroethane	2.53E-05			1.63E-04	1.63E-04	4.08E-05	4.08E-05
1,1-Dichloroethane	1.13E-05			7.29E-05	7.29E-05	1.82E-05	1.82E-05
1,2-Dibromoethane (Ethylene dibromide); EDB	2.13E-05			1.38E-04	1.38E-04	3.44E-05	3.44E-05
1,2-Dichloropropane	1.30E-05			8.39E-05	8.39E-05	2.10E-05	2.10E-05
1,3-Butadiene	6.63E-04			4.28E-03	4.28E-03	1.07E-03	1.07E-03
1,3-Dichloropropene	1.30E-05			8.39E-05	8.39E-05	2.10E-05	2.10E-05
2,2,4-trimethylpentane	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acetaldehyde	2.79E-03			1.80E-02	1.80E-02	4.50E-03	4.50E-03
Acrolein	2.63E-03			1.70E-02	1.70E-02	4.24E-03	4.24E-03
Benzene	1.58E-03			1.02E-02	1.02E-02	2.55E-03	2.55E-03
Benzo(e)pyrene	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biphenyl	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Carbon tetrachloride	1.77E-05			1.14E-04	1.14E-04	2.86E-05	2.86E-05
Chlorobenzene (Monochlorobenzene)	1.29E-05			8.33E-05	8.33E-05	2.08E-05	2.08E-05
Chloroform	1.37E-05			8.84E-05	8.84E-05	2.21E-05	2.21E-05
Dichloromethane (Methylene chloride)	4.12E-05			2.66E-04	2.66E-04	6.65E-05	6.65E-05
Ethylbenzene	2.48E-05			1.60E-04	1.60E-04	4.00E-05	4.00E-05
Formaldehyde	2.05E-02			1.32E-01	1.32E-01	3.31E-02	3.31E-02
Hexane	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Methanol	3.06E-03			1.98E-02	1.98E-02	4.94E-03	4.94E-03
Naphthalene	9.71E-05			6.27E-04	6.27E-04	1.57E-04	1.57E-04
Phenol	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Polycyclic organic matter	2.38E-04			1.54E-03	1.54E-03	3.84E-04	3.84E-04
Styrene	1.19E-05			7.68E-05	7.68E-05	1.92E-05	1.92E-05
Toluene	5.58E-04			3.60E-03	3.60E-03	9.01E-04	9.01E-04
Vinyl chloride (chloroethene)	7.18E-06			4.64E-05	4.64E-05	1.16E-05	1.16E-05
Xylenes, Total	1.95E-04			1.26E-03	1.26E-03	3.15E-04	3.15E-04

Other Emission Factor and/or Control Efficiency Factor Notes:

Northern Natural Gas Company - Hugo Compressor Station
AQ Facility ID# 16300110
Major Amendment
Compressor Turbine - Taurus 60-7800S

Emission Unit ID: EQUI4

Horsepower 7,782 hp (0 °F)
 Brake Specific Fuel Consumption 8267 Btu/Bhp-hr (LHV, 0 °F)
 Total Heat Input 73.98 MMBtu/hr (LHV, 0 °F)
 82.12 MMBtu/hr (HHV, 30 °F)
 Operating Hours 8760 hr/yr
 Natural Gas Heat Content 1020 Btu/scf
 Fuel Consumption 705.24 MMscf/yr (based on 0 °F)
 80,507.1 scf/hr (based on 0 °F)
 Quantity 1

Pollutant	Emission Factor ^{1,2,3}			Emission Rate		Emission Factor Reference
	ppmvd@15%O ₂	lb/MMBtu		lb/hr ⁶	ton/yr ⁷	
NO _x	15.00	0.060	LHV	4.44	22.63	Vendor Data
CO	25.00	0.061	LHV	4.51	84.22	Vendor Data
CO ₂ ⁴		117.0	HHV	9,606	42,074	40 CFR 98 Subpart C
CH ₄ ⁴		0.002	HHV	0.1810	0.7929	40 CFR 98 Subpart C
N ₂ O ⁴		0.0002	HHV	0.0181	0.0793	40 CFR 98 Subpart C
CO ₂ e ⁴		117.1	HHV	9,616	42,117	40 CFR 98 Subpart C
PM		0.0066		0.54	2.37	AP-42 Table 3.1-2a (4/00)
PM ₁₀		0.0066	HHV	0.54	2.37	AP-42 Table 3.1-2a (4/00)
PM _{2.5}		0.0066	HHV	0.54	2.37	AP-42 Table 3.1-2a (4/00)
VOC	0.00	0.000	LHV	0.52	8.11	Vendor Data (20% of UHC)
SO ₂ (Maximum Hourly)		0.0014	HHV	0.12		Minn. R. 7011.2300, Subp. 2(B), AP-42 Table 3.1-2a (4/00)
SO ₂ (Average Annual)		0.000714	HHV		0.26	0.25 grains S / 100 scf
Formaldehyde		7.10E-04	HHV	0.06	0.26	AP-42 Table 3.1-3 (4/00)
1,3-Butadiene		4.30E-07	HHV	3.53E-05	1.55E-04	AP-42 Table 3.1-3 (4/00)
Acetaldehyde		4.00E-05	HHV	3.28E-03	1.44E-02	AP-42 Table 3.1-3 (4/00)
Acrolein		6.40E-06	HHV	5.26E-04	2.30E-03	AP-42 Table 3.1-3 (4/00)
Benzene		1.20E-05	HHV	9.85E-04	4.32E-03	AP-42 Table 3.1-3 (4/00)
Ethylbenzene		3.20E-05	HHV	2.63E-03	1.15E-02	AP-42 Table 3.1-3 (4/00)
Naphthalene		1.30E-06	HHV	1.07E-04	4.68E-04	AP-42 Table 3.1-3 (4/00)
PAH		2.20E-06	HHV	1.81E-04	7.91E-04	AP-42 Table 3.1-3 (4/00)
Propylene Oxide		2.90E-05	HHV	2.38E-03	1.04E-02	AP-42 Table 3.1-3 (4/00)
Toluene		1.30E-04	HHV	1.07E-02	4.68E-02	AP-42 Table 3.1-3 (4/00)
Xylene		6.40E-05	HHV	5.26E-03	2.30E-02	AP-42 Table 3.1-3 (4/00)
Total		1.03E-03		8.44E-02	0.37	

Notes:

1. Emission factors for NOX, CO, and VOC obtained from manufacturer data. Vendor Data (20% of UHC). VOC based on 20% of vendor data for unburned hydrocarbon.
2. Emission factors for PM and SO2 based on AP-42 (AP-42 Section 3.1 - Stationary Gas Turbines, Table 3.1-2a). PM = PM10 = PM2.5 is assumed
3. Emission factors for HAPs based on AP-42 factors (AP-42 Section 3.1 - Stationary Gas Turbines, Table 3.1-3).
4. Emission factors based on 40 CFR 98 Subpart C. Updated January 2025.
5. HHV heat input based on HHV=1.11*LHV
6. Annual emission rate based on combination of potential operating modes as provided on following page for NOx, CO, and VOC. The operating modes are 720 hours at low temp (-20 to 0 °F) and 100 startups and shutdowns per year. The remainder of the hours per year are based on emissions at normal load (0 °F). Normal operation is considered to be 40%-100% load. All other pollutants are based on horsepower and brake specific fuel consumption at 0 °F.

Northern Natural Gas Company - Hugo Compressor Station
AQ Facility ID# 16300110
Major Amendment

Emission Rates per Operating Mode

Operating Mode	Units	NO _x	CO	VOC
Normal Load @ 0°F ¹	lb/hr	4.44	4.51	0.52
Low-Temp @ -20 F	lb/hr	12.88	18.63	1.06
Low-Load (<40%) ³	lb/hr	8.50	344.95	3.94
Startup/ Shutdown ⁴	lb/event	1.40	62.00	8.00

1. Based on data from Solar Taurus 60 Compressor Set Predicted Emission Performance data sheet and the following concentrations:
15 ppm NO_x; 25 ppm CO; 5 ppm VOC
2. Based on data from Solar PIL 167 Revision 8.1 (5-16-2022), Table 2 for Taurus 60 7802S.
3. For the purpose of calculating potential annual emissions, non-startup/shutdown operation is based on emissions data provided by Solar for 40% load.
4. Based on data from Solar PIL 167 Revision 6 (12-1-2016), Table 2 for Taurus 60 7802S.

Potential Annual Emissions Per Turbine

Operating Mode	Operating Time		NO _x	CO	VOC
	Cycles	hr/yr	ton/yr	ton/yr	ton/yr
Normal Load @ 0 °F		7473	16.59	16.86	1.94
Low-Temp @ -20 F		720	4.64	6.71	0.38
Low-Load (<40%)		100	0.43	17.25	0.20
Startup/ Shutdown	1400	467	0.98	43.40	5.60
Total		8,760	22.63	84.22	8.11

Northern Natural Gas Company - Hugo Compressor Station
AQ Facility ID# 16300110
Major Amendment
Fugitive components emissions

Component Type	FUGI #	Type of Service ¹	Number of Components ¹	Emission Factors (lb/hr-component) ²	Percent VOC ³	Percent CH4 ³	Percent CO2 ³	Potential VOC Emission Rates ⁴		Potential CH4 Emission Rates ⁴		Potential CO2 Emission Rates ⁴		Potential CO2e Emission Rates ⁴	
								(lb/hr)	(ton/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)
Valves		Gas/Vapor	46	0.00992	0.73%	85.82%	0.91%	0.003	0.01	0.39	1.72	0.004	0.02	10.97	48.05
Flanges		Gas/Vapor	112	0.00086	0.73%	85.82%	0.91%	0.001	0.003	0.08	0.36	0.001	0.004	2.31	10.14
Compressor Seals	FUGI 1	Gas/Vapor	1	0.01940	0.73%	85.82%	0.91%	0.0001	0.001	0.02	0.07	0.0002	0.001	0.47	2.04
Totals:		---	159	---	---	---	---	0.0041	0.010	0.49	2.15	0.01	0.02	13.75	60.24

Conversion kg to lb: 2.204623

- Notes:
1. Number of each component and type of service estimated based on preliminary design documents.
 2. Emission factors based on Table 2-4 'Oil and Gas Production Operations Average Emission Factors' from 'Protocol for Equipment Leak Emission Estimates' (EPA-453/R-95-017 - November 1995).
 3. Percent VOC for Gas/Vapor service based on gas analysis from representative facility (refer to Attachment 4, Table 2).
 4. Emission rates based on 8,760 hours of operation per year.

			Total Fugitive VOC/HAP Uncontrolled Emissions	
Pollutant		Wt% ¹	(lb/hr)	(T/yr)
Benzene		0.00%	0.0000	0.0000
Toluene		0.00%	0.0000	0.0000
Ethylbenzene		0.00%	0.0000	0.0000
Xylenes		0.00%	0.0000	0.0000
n-Hexane		0.00%	0.0000	0.0000
Total HAPs		0.00%	0.0000	0.0000
Total VOCs		0.726%	0.004	0.01

**Based on Gas Analyses, which shows other hexanes to be 0%.

Northern Natural Gas Company - Hugo Compressor Station
AQ Facility ID# 16300110
Major Amendment
Fugitive Emissions from Venting

Facility	Volume (scf/yr)	Emissions						
		CH4		CO2		CO2e	VOC	HAP
		scf/year	ton/year	scf/year	ton/year	ton/year	ton/year	ton/year
Hugo Compressor Station Blowdown - FUGI4	198,000	169,932	3.60	1,808	0.10	100.81	0.03	0.00
Hugo Compressor Unit Blowdown - FUGI4	2,800,000	2,403,072	50.86	25,564	1.48	1425.55	0.43	0.00
Total		--	54.46	--	1.59	1526.35	0.46	0.00

Note: FUGI4 is an existing activity at the Hugo CS but was not accounted for in the past. It is included in the application at this time but is not a new source proposed with the project.

Gas Composition:	85.82% CH ₄	
	0.91% CO ₂ [1]	
Density from 40 CFR 98.233(v)	0.0192 kg/scf	CH ₄
	0.0526 kg/scf	CO ₂
Conversion Factor	2.20462 lb/kg	
	2000 lb/ton	
GWP per 40 CFR 98 Subpart A	28 lb CO ₂ e/lb CH ₄	
Ratio of VOC to CH4	0.008 (by mass) ¹	
Ratio of HAP to CH4	0.000 (by mass) ¹	

[1] Data From Hugo CS

Natural Gas

EQUI ID	IA Fuel Gas Heater (New) under Minn. R. 7007.1300, subp. 3(F)
Heat Input (MMBtu/hr)	0.3
Fuel Usage (MMSCF/hr)	0.000294118
Unlimited Operating Hours	8760
Limited Operating Hours	8760
Firing Type	Small, Uncontrolled

Pollutant	AP-42 Emission Factor (lb/MMSCF)	Other Emission Factor (lb/MMscf)	Control Efficiency (%)	Unrestricted Emission Rate (lb/hr)	Controlled Emission Rate (lb/hr)	Unrestricted Emissions (tpy)	Limited Emissions (tpy)
Particulate Matter	7.60E+00			2.24E-03	2.24E-03	9.79E-03	9.79E-03
PM < 10 micron	7.60E+00			2.24E-03	2.24E-03	9.79E-03	9.79E-03
PM < 2.5 micron	7.60E+00			2.24E-03	2.24E-03	9.79E-03	9.79E-03
Nitrogen Oxides	1.00E+02			2.94E-02	2.94E-02	1.29E-01	1.29E-01
Carbon Monoxide	8.40E+01			2.47E-02	2.47E-02	1.08E-01	1.08E-01
Sulfur Dioxide	6.00E-01			1.76E-04	1.76E-04	7.73E-04	7.73E-04
Volatile Organic Compounds	5.50E+00			1.62E-03	1.62E-03	7.09E-03	7.09E-03
Lead Compounds	5.00E-04			1.47E-07	1.47E-07	6.44E-07	6.44E-07
HAPs - Total	1.89E+00			5.55E-04	5.55E-04	2.43E-03	2.43E-03
Carbon Dioxide	1.17E+02			3.51E+01	3.51E+01	1.54E+02	1.54E+02
Methane	2.20E-03			6.61E-04	6.61E-04	2.90E-03	2.90E-03
Nitrous Oxide	2.20E-04			6.61E-05	6.61E-05	2.90E-04	2.90E-04
Carbon Dioxide Equivalent	1.17E+02	1.17E+02		3.51E+01	3.51E+01	1.54E+02	1.54E+02
1,4-Dichlorobenzene (para-)	1.20E-03			3.53E-07	3.53E-07	1.55E-06	1.55E-06
Arsenic compounds	2.00E-04			5.88E-08	5.88E-08	2.58E-07	2.58E-07
Benzene	2.10E-03			6.18E-07	6.18E-07	2.71E-06	2.71E-06
Beryllium compounds	1.20E-05			3.53E-09	3.53E-09	1.55E-08	1.55E-08
Cadmium compounds	1.10E-03			3.24E-07	3.24E-07	1.42E-06	1.42E-06
Chromium compounds	1.40E-03			4.12E-07	4.12E-07	1.80E-06	1.80E-06
Cobalt compounds	8.40E-05			2.47E-08	2.47E-08	1.08E-07	1.08E-07
Formaldehyde	7.50E-02			2.21E-05	2.21E-05	9.66E-05	9.66E-05
Hexane	1.80E+00			5.29E-04	5.29E-04	2.32E-03	2.32E-03
Manganese compounds	3.80E-04			1.12E-07	1.12E-07	4.90E-07	4.90E-07
Mercury	2.60E-04			7.65E-08	7.65E-08	3.35E-07	3.35E-07
Naphthalene	6.10E-04			1.79E-07	1.79E-07	7.86E-07	7.86E-07
Nickel compounds	2.10E-03			6.18E-07	6.18E-07	2.71E-06	2.71E-06
Polycyclic organic matter (POM)	6.98E-04			2.05E-07	2.05E-07	8.99E-07	8.99E-07
Selenium compounds	2.40E-05			7.06E-09	7.06E-09	3.09E-08	3.09E-08
Toluene	3.40E-03			1.00E-06	1.00E-06	4.38E-06	4.38E-06

Other Emission Factor and/or Control Efficiency Factor Notes:

Revised CO2e to updated January 2025 Global Warming Potentials

Notes for AP-42, Section 1.4 Calculations:

Emission factors for CO2, CH4, and N2O are from 40 CFR Part 98, Subpart C, Table C-1 and C-2 (November 29, 2013). CO2e emissions are based on global warming potentials from 40 CFR Part 98, Subpart A, Table A-1 (CO2 = 1, CH4 = 25, and N2O = 298) (November 29, 2013).

Firing Options

Large, Uncontrolled,
Pre-NSPS
Large, Uncontrolled,
Post-NSPS
Large, Controlled,
Low Nox
Large, Controlled, Flue Gas Recirculation
Small, Uncontrolled
Small, Controlled,
Low NOx burners
Small, Controlled, Flue Gas Recirculation
Tangential Fired, Uncontrolled
Tangential Fired, Controlled, Flue Gas
Recirculation
Residential, Uncontrolled

Natural Gas

EQUI ID		JA Space Heater (New) under Minn. R. 7007.1300, subp. 3(F)					
Heat Input (MMBTU/hr)		0.15					
Fuel Usage (MMSCF/hr)		0.000147059					
Unlimited Operating Hours		8760					
Limited Operating Hours		8760					
Firing Type		Small, Uncontrolled					
	AP-42 Emission Factor (lb/MMSCF)	Other Emission Factor (lb/MMscf)	Control Efficiency (%)	Unrestricted Emission Rate (lb/hr)	Controlled Emission Rate (lb/hr)	Unrestricted Emissions (tpy)	Limited Emissions (tpy)
Particulate Matter	7.60E+00			1.12E-03	1.12E-03	4.90E-03	4.90E-03
PM < 10 micron	7.60E+00			1.12E-03	1.12E-03	4.90E-03	4.90E-03
PM < 2.5 micron	7.60E+00			1.12E-03	1.12E-03	4.90E-03	4.90E-03
Nitrogen Oxides	1.00E+02			1.47E-02	1.47E-02	6.44E-02	6.44E-02
Carbon Monoxide	8.40E+01			1.24E-02	1.24E-02	5.41E-02	5.41E-02
Sulfur Dioxide	6.00E-01			8.82E-05	8.82E-05	3.86E-04	3.86E-04
Volatile Organic Compounds	5.50E+00			8.09E-04	8.09E-04	3.54E-03	3.54E-03
Lead Compounds	5.00E-04			7.35E-08	7.35E-08	3.22E-07	3.22E-07
HAPs - Total	1.89E+00			2.78E-04	2.78E-04	1.22E-03	1.22E-03
Carbon Dioxide	1.17E+02			1.75E+01	1.75E+01	7.69E+01	7.69E+01
Methane	2.20E-03			3.31E-04	3.31E-04	1.45E-03	1.45E-03
Nitrous Oxide	2.20E-04			3.31E-05	3.31E-05	1.45E-04	1.45E-04
Carbon Dioxide Equivalent	1.17E+02	1.17E+02		1.76E+01	1.76E+01	7.69E+01	7.69E+01
1,4-Dichlorobenzene (para-)	1.20E-03			1.76E-07	1.76E-07	7.73E-07	7.73E-07
Arsenic compounds	2.00E-04			2.94E-08	2.94E-08	1.29E-07	1.29E-07
Benzene	2.10E-03			3.09E-07	3.09E-07	1.35E-06	1.35E-06
Beryllium compounds	1.20E-05			1.76E-09	1.76E-09	7.73E-09	7.73E-09
Cadmium compounds	1.10E-03			1.62E-07	1.62E-07	7.09E-07	7.09E-07
Chromium compounds	1.40E-03			2.06E-07	2.06E-07	9.02E-07	9.02E-07
Cobalt compounds	8.40E-05			1.24E-08	1.24E-08	5.41E-08	5.41E-08
Formaldehyde	7.50E-02			1.10E-05	1.10E-05	4.83E-05	4.83E-05
Hexane	1.80E+00			2.65E-04	2.65E-04	1.16E-03	1.16E-03
Manganese compounds	3.80E-04			5.59E-08	5.59E-08	2.45E-07	2.45E-07
Mercury	2.60E-04			3.82E-08	3.82E-08	1.67E-07	1.67E-07
Naphthalene	6.10E-04			8.97E-08	8.97E-08	3.93E-07	3.93E-07
Nickel compounds	2.10E-03			3.09E-07	3.09E-07	1.35E-06	1.35E-06
Polycyclic organic matter (POM)	6.98E-04			1.03E-07	1.03E-07	4.50E-07	4.50E-07
Selenium compounds	2.40E-05			3.53E-09	3.53E-09	1.55E-08	1.55E-08
Toluene	3.40E-03			5.00E-07	5.00E-07	2.19E-06	2.19E-06
Other Emission Factor and/or Control Efficiency Factor Notes:							
Revised CO2e to updated January 2025 Global Warming Potentials							

Firing Options

- Large, Uncontrolled,
- Pre-NSPS
- Large, Uncontrolled,
- Post-NSPS
- Large, Controlled,
- Low Nox
- Large, Controlled, Flue Gas Recirculation
- Small, Uncontrolled
- Small, Controlled,
- Low NOx burners
- Small, Controlled, Flue Gas Recirculation
- Tangential Fired, Uncontrolled
- Tangential Fired, Controlled, Flue Gas
- Recirculation
- Residential, Uncontrolled

Natural Gas

EQUI ID		5 Catalytic Heaters (40,000 BTU/each)					
Heat Input (MMBtu/hr)		0.2					
Fuel Usage (MMSCF/hr)		0.000196078					
Unlimited Operating Hours		8760					
Limited Operating Hours		8760					
Firing Type		Small, Uncontrolled					
Pollutant	AP-42 Emission Factor (lb/MMSCF)	Other Emission Factor (lb/MMscf)	Control Efficiency (%)	Unrestricted Emission Rate (lb/hr)	Controlled Emission Rate (lb/hr)	Unrestricted Emissions (tpy)	Limited Emissions (tpy)
Particulate Matter	7.60E+00			1.49E-03	1.49E-03	6.53E-03	6.53E-03
PM < 10 micron	7.60E+00			1.49E-03	1.49E-03	6.53E-03	6.53E-03
PM < 2.5 micron	7.60E+00			1.49E-03	1.49E-03	6.53E-03	6.53E-03
Nitrogen Oxides	1.00E+02			1.96E-02	1.96E-02	8.59E-02	8.59E-02
Carbon Monoxide	8.40E+01			1.65E-02	1.65E-02	7.21E-02	7.21E-02
Sulfur Dioxide	6.00E-01			1.18E-04	1.18E-04	5.15E-04	5.15E-04
Volatile Organic Compounds	5.50E+00			1.08E-03	1.08E-03	4.72E-03	4.72E-03
Lead Compounds	5.00E-04			9.80E-08	9.80E-08	4.29E-07	4.29E-07
HAPs - Total	1.89E+00			3.70E-04	3.70E-04	1.62E-03	1.62E-03
Carbon Dioxide	1.17E+02			2.34E+01	2.34E+01	1.02E+02	1.02E+02
Methane	2.20E-03			4.41E-04	4.41E-04	1.93E-03	1.93E-03
Nitrous Oxide	2.20E-04			4.41E-05	4.41E-05	1.93E-04	1.93E-04
Carbon Dioxide Equivalent	1.17E+02	1.17E+02		2.34E+01	2.34E+01	1.03E+02	1.03E+02
1,4-Dichlorobenzene (para-)	1.20E-03			2.35E-07	2.35E-07	1.03E-06	1.03E-06
Arsenic compounds	2.00E-04			3.92E-08	3.92E-08	1.72E-07	1.72E-07
Benzene	2.10E-03			4.12E-07	4.12E-07	1.80E-06	1.80E-06
Beryllium compounds	1.20E-05			2.35E-09	2.35E-09	1.03E-08	1.03E-08
Cadmium compounds	1.10E-03			2.16E-07	2.16E-07	9.45E-07	9.45E-07
Chromium compounds	1.40E-03			2.75E-07	2.75E-07	1.20E-06	1.20E-06
Cobalt compounds	8.40E-05			1.65E-08	1.65E-08	7.21E-08	7.21E-08
Formaldehyde	7.50E-02			1.47E-05	1.47E-05	6.44E-05	6.44E-05
Hexane	1.80E+00			3.53E-04	3.53E-04	1.55E-03	1.55E-03
Manganese compounds	3.80E-04			7.45E-08	7.45E-08	3.26E-07	3.26E-07
Mercury	2.60E-04			5.10E-08	5.10E-08	2.23E-07	2.23E-07
Naphthalene	6.10E-04			1.20E-07	1.20E-07	5.24E-07	5.24E-07
Nickel compounds	2.10E-03			4.12E-07	4.12E-07	1.80E-06	1.80E-06
Polycyclic organic matter (POM)	6.98E-04			1.37E-07	1.37E-07	6.00E-07	6.00E-07
Selenium compounds	2.40E-05			4.71E-09	4.71E-09	2.06E-08	2.06E-08
Toluene	3.40E-03			6.67E-07	6.67E-07	2.92E-06	2.92E-06

Other Emission Factor and/or Control Efficiency Factor Notes:

Revised CO2e to updated January 2025 Global Warming Potentials

Notes for AP-42, Section 1.4 Calculations:

Emission factors for CO2, CH4, and N2O are from 40 CFR Part 98, Subpart C, Table C-1 and C-2 (November 29, 2013). CO2e emissions are based on global warming potentials from 40 CFR Part 98, Subpart A, Table A-1 (CO2 = 1, CH4 = 25, and N2O = 298) (November 29, 2013).

Firing Options

- Large, Uncontrolled, Pre-NSPS
- Large, Uncontrolled, Post-NSPS
- Large, Controlled, Low Nox
- Large, Controlled, Flue Gas Recirculation
- Small, Uncontrolled
- Small, Controlled, Low NOx burners
- Small, Controlled, Flue Gas Recirculation
- Tangential Fired, Uncontrolled
- Tangential Fired, Controlled, Flue Gas Recirculation
- Residential, Uncontrolled

Natural Gas

EQUI ID		Catalytic Heater (5,000 BTU)					
Heat Input (MMBTU/hr)		0.005					
Fuel Usage (MMSCF/hr)		4.90196E-06					
Unlimited Operating Hours		8760					
Limited Operating Hours		8760					
Firing Type		Small, Uncontrolled					
Pollutant	AP-42 Emission Factor (lb/MMSCF)	Other Emission Factor (lb/MMscf)	Control Efficiency (%)	Unrestricted Emission Rate (lb/hr)	Controlled Emission Rate (lb/hr)	Unrestricted Emissions (tpy)	Limited Emissions (tpy)
Particulate Matter	7.60E+00			3.73E-05	3.73E-05	1.63E-04	1.63E-04
PM < 10 micron	7.60E+00			3.73E-05	3.73E-05	1.63E-04	1.63E-04
PM < 2.5 micron	7.60E+00			3.73E-05	3.73E-05	1.63E-04	1.63E-04
Nitrogen Oxides	1.00E+02			4.90E-04	4.90E-04	2.15E-03	2.15E-03
Carbon Monoxide	8.40E+01			4.12E-04	4.12E-04	1.80E-03	1.80E-03
Sulfur Dioxide	6.00E-01			2.94E-06	2.94E-06	1.29E-05	1.29E-05
Volatile Organic Compounds	5.50E+00			2.70E-05	2.70E-05	1.18E-04	1.18E-04
Lead Compounds	5.00E-04			2.45E-09	2.45E-09	1.07E-08	1.07E-08
HAPs - Total	1.89E+00			9.25E-06	9.25E-06	4.05E-05	4.05E-05
Carbon Dioxide	1.17E+02			5.85E-01	5.85E-01	2.56E+00	2.56E+00
Methane	2.20E-03			1.10E-05	1.10E-05	4.83E-05	4.83E-05
Nitrous Oxide	2.20E-04			1.10E-06	1.10E-06	4.83E-06	4.83E-06
Carbon Dioxide Equivalent	1.17E+02	1.17E+02		5.85E-01	5.85E-01	2.56E+00	2.56E+00
1,4-Dichlorobenzene (para-)	1.20E-03			5.88E-09	5.88E-09	2.58E-08	2.58E-08
Arsenic compounds	2.00E-04			9.80E-10	9.80E-10	4.29E-09	4.29E-09
Benzene	2.10E-03			1.03E-08	1.03E-08	4.51E-08	4.51E-08
Beryllium compounds	1.20E-05			5.88E-11	5.88E-11	2.58E-10	2.58E-10
Cadmium compounds	1.10E-03			5.39E-09	5.39E-09	2.36E-08	2.36E-08
Chromium compounds	1.40E-03			6.86E-09	6.86E-09	3.01E-08	3.01E-08
Cobalt compounds	8.40E-05			4.12E-10	4.12E-10	1.80E-09	1.80E-09
Formaldehyde	7.50E-02			3.68E-07	3.68E-07	1.61E-06	1.61E-06
Hexane	1.80E+00			8.82E-06	8.82E-06	3.86E-05	3.86E-05
Manganese compounds	3.80E-04			1.86E-09	1.86E-09	8.16E-09	8.16E-09
Mercury	2.60E-04			1.27E-09	1.27E-09	5.58E-09	5.58E-09
Naphthalene	6.10E-04			2.99E-09	2.99E-09	1.31E-08	1.31E-08
Nickel compounds	2.10E-03			1.03E-08	1.03E-08	4.51E-08	4.51E-08
Polycyclic organic matter (POM)	6.98E-04			3.42E-09	3.42E-09	1.50E-08	1.50E-08
Selenium compounds	2.40E-05			1.18E-10	1.18E-10	5.15E-10	5.15E-10
Toluene	3.40E-03			1.67E-08	1.67E-08	7.30E-08	7.30E-08
Other Emission Factor and/or Control Efficiency Factor Notes:							
Revised CO2e to updated January 2025 Global Warming Potentials							

Firing Options

- Large, Uncontrolled,
- Pre-NSPS
- Large, Uncontrolled,
- Post-NSPS
- Large, Controlled,
- Low Nox
- Large, Controlled, Flue Gas Recirculation
- Small, Uncontrolled
- Small, Controlled,
- Low NOx burners
- Small, Controlled, Flue Gas Recirculation
- Tangential Fired, Uncontrolled
- Tangential Fired, Controlled, Flue Gas Recirculation
- Residential, Uncontrolled

Natural Gas

EQUI ID		Catalytic Heater (2667 BTU)					
Heat Input (MMBtu/hr)		0.002667					
Fuel Usage (MMSCF/hr)		2.61471E-06					
Unlimited Operating Hours		8760					
Limited Operating Hours		8760					
Firing Type		Small, Uncontrolled					
Pollutant	AP-42 Emission Factor (lb/MMSCF)	Other Emission Factor (lb/MMscf)	Control Efficiency (%)	Unrestricted Emission Rate (lb/hr)	Controlled Emission Rate (lb/hr)	Unrestricted Emissions (tpy)	Limited Emissions (tpy)
Particulate Matter	7.60E+00			1.99E-05	1.99E-05	8.70E-05	8.70E-05
PM < 10 micron	7.60E+00			1.99E-05	1.99E-05	8.70E-05	8.70E-05
PM < 2.5 micron	7.60E+00			1.99E-05	1.99E-05	8.70E-05	8.70E-05
Nitrogen Oxides	1.00E+02			2.61E-04	2.61E-04	1.15E-03	1.15E-03
Carbon Monoxide	8.40E+01			2.20E-04	2.20E-04	9.62E-04	9.62E-04
Sulfur Dioxide	6.00E-01			1.57E-06	1.57E-06	6.87E-06	6.87E-06
Volatile Organic Compounds	5.50E+00			1.44E-05	1.44E-05	6.30E-05	6.30E-05
Lead Compounds	5.00E-04			1.31E-09	1.31E-09	5.73E-09	5.73E-09
HAPs - Total	1.89E+00			4.94E-06	4.94E-06	2.16E-05	2.16E-05
Carbon Dioxide	1.17E+02			3.12E-01	3.12E-01	1.37E+00	1.37E+00
Methane	2.20E-03			5.88E-06	5.88E-06	2.58E-05	2.58E-05
Nitrous Oxide	2.20E-04			5.88E-07	5.88E-07	2.58E-06	2.58E-06
Carbon Dioxide Equivalent	1.17E+02	1.17E+02		3.12E-01	3.12E-01	1.37E+00	1.37E+00
1,4-Dichlorobenzene (para-)	1.20E-03			3.14E-09	3.14E-09	1.37E-08	1.37E-08
Arsenic compounds	2.00E-04			5.23E-10	5.23E-10	2.29E-09	2.29E-09
Benzene	2.10E-03			5.49E-09	5.49E-09	2.41E-08	2.41E-08
Beryllium compounds	1.20E-05			3.14E-11	3.14E-11	1.37E-10	1.37E-10
Cadmium compounds	1.10E-03			2.88E-09	2.88E-09	1.26E-08	1.26E-08
Chromium compounds	1.40E-03			3.66E-09	3.66E-09	1.60E-08	1.60E-08
Cobalt compounds	8.40E-05			2.20E-10	2.20E-10	9.62E-10	9.62E-10
Formaldehyde	7.50E-02			1.96E-07	1.96E-07	8.59E-07	8.59E-07
Hexane	1.80E+00			4.71E-06	4.71E-06	2.06E-05	2.06E-05
Manganese compounds	3.80E-04			9.94E-10	9.94E-10	4.35E-09	4.35E-09
Mercury	2.60E-04			6.80E-10	6.80E-10	2.98E-09	2.98E-09
Naphthalene	6.10E-04			1.59E-09	1.59E-09	6.99E-09	6.99E-09
Nickel compounds	2.10E-03			5.49E-09	5.49E-09	2.41E-08	2.41E-08
Polycyclic organic matter (POM)	6.98E-04			1.83E-09	1.83E-09	8.00E-09	8.00E-09
Selenium compounds	2.40E-05			6.28E-11	6.28E-11	2.75E-10	2.75E-10
Toluene	3.40E-03			8.89E-09	8.89E-09	3.89E-08	3.89E-08

Other Emission Factor and/or Control Efficiency Factor Notes:

Revised CO2e to updated January 2025 Global Warming Potentials

Notes for AP-42, Section 1.4 Calculations:

Emission factors for CO2, CH4, and N2O are from 40 CFR Part 98, Subpart C, Table C-1 and C-2 (November 29, 2013). CO2e emissions are based on global warming potentials from 40 CFR Part 98, Subpart A, Table A-1 (CO2 = 1, CH4 = 25, and N2O = 298) (November 29, 2013).

Firing Options

- Large, Uncontrolled, Pre-NSPS
- Large, Uncontrolled, Post-NSPS
- Large, Controlled, Low Nox
- Large, Controlled, Flue Gas Recirculation
- Small, Uncontrolled
- Small, Controlled, Low NOx burners
- Small, Controlled, Flue Gas Recirculation
- Tangential Fired, Uncontrolled
- Tangential Fired, Controlled, Flue Gas Recirculation
- Residential, Uncontrolled

PREDICTED EMISSION PERFORMANCE

Customer NNG - Hugo, MN		Engine Model TAURUS 60-7800S CS/MD 59F MATCH	
Job ID			
Inquiry Number CH25-07775		Fuel Type SD NATURAL GAS	
Run By Gordon Yale J		Water Injection NO	
Date Run 25-Nov-25		Engine Emissions Data REV. 0.1	

				NOx EMISSIONS		CO EMISSIONS		UHC EMISSIONS	
1	7782 HP	100.0% Load	Elev. 929 ft	Rel. Humidity 60.0%	Temperature 0 Deg. F				
PPMvd at 15% O2				15.00	25.00	25.00			
ton/yr				16.94	17.19	9.85			
lbm/MMBtu (Fuel LHV)				0.060	0.061	0.035			
lbm/(MW-hr)				0.67	0.68	0.39			
(gas turbine shaft pwr)									
lbm/hr				3.87	3.93	2.25			
2	7518 HP	100.0% Load	Elev. 929 ft	Rel. Humidity 60.0%	Temperature 30.0 Deg. F				
PPMvd at 15% O2				15.00	25.00	25.00			
ton/yr				16.18	16.42	9.40			
lbm/MMBtu (Fuel LHV)				0.060	0.061	0.035			
lbm/(MW-hr)				0.66	0.67	0.38			
(gas turbine shaft pwr)									
lbm/hr				3.69	3.75	2.15			
3	7004 HP	100.0% Load	Elev. 929 ft	Rel. Humidity 60.0%	Temperature 60.0 Deg. F				
PPMvd at 15% O2				15.00	25.00	25.00			
ton/yr				15.29	15.52	8.89			
lbm/MMBtu (Fuel LHV)				0.060	0.061	0.035			
lbm/(MW-hr)				0.67	0.68	0.39			
(gas turbine shaft pwr)									
lbm/hr				3.49	3.54	2.03			

DATA FOR MINIMUM PERFORMANCE

Elevation	feet	929			
Inlet Loss	in H2O	4.0			
Exhaust Loss	in H2O	4.0			
Accessory on GP Shaft	HP	15.5			
		1	2	3	4
Engine Inlet Temperature	deg F	0	30.0	60.0	90.0
Relative Humidity	%	60.0	60.0	60.0	60.0
Driven Equipment Speed	RPM	13769	13802	13854	13767
Specified Load	HP	FULL	FULL	FULL	FULL
Net Output Power	HP	7782	7518	7004	6152
Fuel Flow	mmBtu/hr	64.33	61.53	58.42	53.62
Heat Rate	Btu/HP-hr	8267	8184	8341	8716
Therm Eff	%	30.777	31.089	30.507	29.193
Engine Exhaust Flow	lbm/hr	180665	172914	163910	151183
PT Exit Temperature	deg F	911	925	957	987
Exhaust Temperature	deg F	905	925	957	987
Fuel Gas Composition (Volume Percent)		Methane (CH4) 92.79			
		Ethane (C2H6) 4.16			
		Propane (C3H8) 0.84			
		N-Butane (C4H10) 0.18			
		N-Pentane (C5H12) 0.04			
		Hexane (C6H14) 0.04			
		Carbon Dioxide (CO2) 0.44			
		Hydrogen Sulfide (H2S) 0.0001			
		Nitrogen (N2) 1.51			
Fuel Gas Properties		LHV (Btu/Scf)	939.2	Specific Gravity	0.5970
		Wobbe Index at 60F	1215.6		

This performance was calculated with a basic inlet and exhaust system. Special equipment such as low noise silencers, special filters, heat recovery systems or cooling devices will affect engine performance. Performance shown is "Expected" performance at the pressure drops stated, not guaranteed.

PREDICTED EMISSION PERFORMANCE

Customer	NNG - Hugo, MN			Engine Model	TAURUS 60-7800S		
Job ID				CS/MD	59F MATCH		
Inquiry Number	CH25-07775			Fuel Type	SD NATURAL GAS		Water Injection
Run By	Gordon Yale J		Date Run	25-Nov-25		NO	
				Engine Emissions Data	REV. 0.1		

				NOx EMISSIONS		CO EMISSIONS		UHC EMISSIONS	
4	6152 HP	100.0% Load	Elev. 929 ft	Rel. Humidity 60.0%	Temperature 90.0 Deg. F				
PPMvd at 15% O2				15.00	25.00	25.00			
ton/yr				13.87	14.07	8.06			
lbm/MMBtu (Fuel LHV)				0.059	0.060	0.034			
lbm/(MW-hr)				0.69	0.70	0.40			
(gas turbine shaft pwr)									
lbm/hr				3.17	3.21	1.84			

- Notes
- For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
 - Solar's typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F or -20 deg F, and between 50% and 100% load for gas fuel, and between 65% and 100% load for liquid fuel (except for the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F or -20 deg F and between 80% and 100% load.
 - Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
 - If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
 - Solar can provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
 - Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Original Data							115% Safety Factor				
Ambient Temperature	*F	-20	0	30	60	90	-20	0	30	60	90
Load	%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Engine Exhaust Flow	lbm/hr	185577	180665	172914	163910	151183	185577	180665	172914	163910	151183
Heat Input	MMBtu/hr (LHV)	66.28	64.33	61.53	58.42	53.62	76.22	73.98	70.76	67.18	61.66
Heat Input	MMBtu/hr (HHV)	73.57	71.41	68.30	64.85	59.52	84.61	82.12	78.54	74.57	68.45

Exhaust Temperature	*F	908	905	925	957	987		905	925	957	987	*R = *F + 459.67
	*R	1368	1365	1385	1417	1447	460	1365	1385	1417	1447	

NOx											
Ambient Temperature	*F	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Load	%	-20	0	30	60	90	-20	0	30	60	90
Concentration	ppmvd @ 15% O2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Emission Rate	lb/MMBtu HHV	42	15	15	15	15	42	15	15	15	15
Emission Rate	lbm/hr	0.1512	0.0600	0.0600	0.0600	0.0600	0.1512	0.0600	0.0600	0.0600	0.0600
Emission Rate	lbm/hr	11.2	3.86	3.69	3.51	3.22	12.88	4.44	4.25	4.03	3.70

CO											
Ambient Temperature	*F	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Load	%	-20	0	30	60	90	-20	0	30	60	90
Concentration	ppmvd @ 15% O2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Emission Rate	lb/MMBtu HHV	100	25	25	25	25	100	25	25	25	25
Emission Rate	lbm/hr	0.2192	0.0610	0.0610	0.0610	0.0600	0.2192	0.0610	0.0610	0.0610	0.0600
Emission Rate	lbm/hr	16.2	3.92	3.75	3.56	3.22	18.63	4.51	4.32	4.10	3.70

UHC											
Ambient Temperature	*F	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Load	%	-20	0	30	60	90	-20	0	30	60	90
Concentration	ppmvd @ 15% O2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Emission Rate	lb/MMBtu HHV	50	25	25	25	25	50	25	25	25	25
Emission Rate	lbm/hr	0.0626	0.0350	0.0350	0.0350	0.0340	0.0626	0.0350	0.0350	0.0350	0.0340
Emission Rate	lbm/hr	4.6	2.25	2.15	2.04	1.82	5.29	2.59	2.48	2.35	2.10

VOCs (20% of UHC)											
Ambient Temperature	*F	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Load	%	-20	0	30	60	90	-20	0	30	60	90
Concentration	ppmvd @ 15% O2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Emission Rate	lb/MMBtu HHV	10	5	5	5	5	10	5	5	5	5
Emission Rate	lbm/hr	0.0125	0.0070	0.0070	0.0070	0.0068	0.0125	0.0070	0.0070	0.0070	0.0068
Emission Rate	lbm/hr	0.920	0.450	0.431	0.409	0.365	1.058	0.518	0.495	0.470	0.419

Exhaust flow at 0 deg F and 100% load (for Appendix J)
Assume MW = 27.7 lb/lbmol
R = 0.7302 ft*3*atm/lbmol*R
P = 1 atm

6242.382671 lbmol/hr
6311585.938 ft^3/hr
105193.099 acfm
1753.218316 acfs
ft (diameter)
85.5625 ft*2 (area of stack)
20.490 ft/sec (velocity)

normally use 8,710 scf/MMBtu
8,520 to match normal emission rate
8550 1055.075

Low Temp 0 *F < temp < 32 *F
Very Low Temp Not Applicable for Evangeline, Louisiana
Low Load load < 40 %; temp > 0 *F

Exhaust flow at 59 deg F and 100% load (for Appendix J)
Assume MW = 27.7 lb/lbmol
R = 0.7302 ft*3*atm/lbmol*R
P = 1 atm

5457.870036 lbmol/hr
5645906.943 ft^3/hr
94098.44906 acfm
1568.307484 acfs
ft (diameter)
85.5625 ft*2 (area of stack)
18.329 ft/sec (velocity)

normally use 8,710 scf/MMBtu
8,520 to match normal emission rate

ar Turbines Low Load/Low Temperature Emissions Estima

Turbine Model: Taurus 60 7802S								
Operatin g Point	Load%	Amb. Temp. *F	NOx, ppm	NOx, lbm/hr	CO, ppm	CO, lbm/hr	UHC, ppm	UHC, lbm/hr
1	Full	-20.0	42	11.2	100	16.2	50	4.6

Assumptions: SD Natural Gas, 933 feet elevation, 4.0/4.0 *H2O inlet/outlet losses

Note: ppm values are corrected to 15%O2, dry

Solar Turbines

A Caterpillar Company

PREDICTED ENGINE PERFORMANCE

Customer	Model CENTAUR 40-4700S
Job ID	Package Type C S/MD
Run By Shane M Kowalewski	Date Run 23-May-22
Engine Performance Code REV. 4.20.2.27.13	Engine Performance Data REV. 2.3
	Match 99F MATCH
	Fuel System GAS
	Fuel Type SD NATURAL GAS

DATA FOR NOMINAL PERFORMANCE

Elevation	feet	935
Inlet Loss	in H2O	4.0
Exhaust Loss	in H2O	4.0
Accessory on GP Shaft	HP	15.5
Engine Inlet Temperature	deg F	20.0
Relative Humidity	%	60.0
Driven Equipment Speed	RPM	15500
Specified Load	HP	FULL
Net Output Power	HP	49.3
Fuel Flow	mmBtu/hr	46.52
Heat Rate	Btu/HP-hr	9355
Therm Eff	%	27.200
Engine Exhaust Flow	lbm/hr	164316
PT Exit Temperature	deg F	764
Exhaust Temperature	deg F	764

Fuel Gas Composition (Volume Percent)	Methane (CH4)	92.79
	Ethane (C2H6)	4.16
	Propane (C3H8)	0.84
	N-Butane (C4H10)	0.18
	N-Pentane (C5H12)	0.04
	Hexane (C6H14)	0.04
	Carbon Dioxide (CO2)	0.44
	Hydrogen Sulfide (H2S)	0.0001
	Nitrogen (N2)	1.51

Fuel Gas Properties LHV (Btu/Scf) 939.2 | Specific Gravity 0.5970 | Wobbe Index at 60F 1215.6

This performance was calculated with a basic inlet and exhaust system. Special equipment such as low noise silencers, special filters, heat recovery systems or cooling devices will affect engine performance. Performance shown is "Expected" performance at the pressure drops stated, not guaranteed.

Solar Turbines Emissions Estimates

C40-4700S

Assumptions: pipeline gas fuel, 835' elevation, 4/4" inlet/outlet losses

100% load						
Temp, F	NOx (ppm)	NOx (lb/hr)	CO (ppm)	CO (lb/hr)	UHC (ppm)	UHC (lb/hr)
-20	120	22.4	150	17.0	50	3.2

GAS ANALYSIS
HUGO COMPRESSOR STATION
NORTHERN NATURAL GAS COMPANY

Component ¹	Molecular Weight	Mol % ²	Molar Weight ³	Average Mass % ⁴
Carbon Monoxide	28.01	0.000%	0.000	0.000%
Hydrogen Sulfide	34.08	0.000%	0.000	0.000%
Oxygen	16.04	0.000%	0.000	0.000%
Helium	4	0.000%	0.000	0.000%
Nitrogen	28.02	2.067%	0.579	3.182%
Carbon Dioxide	44.01	0.913%	0.402	2.207%
Methane	16.04	85.824%	13.766	75.622%
Ethane	30.07	10.408%	3.130	17.192%
Propane	44.09	0.686%	0.302	1.661%
i-Butane	58.12	0.011%	0.006	0.035%
n-Butane	58.12	0.019%	0.011	0.061%
i-Pentane	72.15	0.005%	0.004	0.020%
n-Pentane	72.15	0.005%	0.004	0.020%
Other Hexanes	86.17	0.000%	0.000	0.000%
Totals:		99.94%	18.20	100.00%
⁵ VOC Totals:		0.73%	0.33	1.80%

- Notes:
- Typical components listed in gas analysis for field gas.
 - Mol % values obtained from the gas analysis from the Facility.
 - Molar weight = Molecular weight x Mol % /100.
 - Average mass % = Molar weight / Total molar weight.
 - VOC Totals include the following components (C3+):

Propane

i-Butane

n-Butane

i-Pentane

n-Pentane

Hexanes

n-Hexane

Heptanes

Benzene

Toluene

Octanes

e-Benzene

Xylenes

	BTU	CO2	N2	Gravity	Methane	Ethane	Propane	Ibutane	Nbutane	Ipentane	Npentane
Average	1075	0.913	2.067	0.630	85.824	10.408	0.686	0.011	0.019	0.005	0.005
Max	1104	1.148	2.92	0.654	95.139	14.262	1.068	0.028	0.052	0.019	0.023
Min	1035	0.519	0.338	0.582	81.172	3.765	0.091	0.001	0.001	0.001	0

Please review this information and address any questions.

Solar Turbines Estimated Emissions

Assumptions: pipeline nat gas gas, 32F, 0' MSL, 4" inlet/outlet losses, nominal perf.

Centaur 40S						
Load	NOx ppm	NOx lb/hr	CO ppm	CO lb/hr	UHC ppm	UHC lb/hr
10%	54	3.3	9600	358	960	20.5
40%	66	7.5	4400	305	440	17.4
Taurus 60S						
Load	NOx ppm	NOx lb/hr	CO ppm	CO lb/hr	UHC ppm	UHC lb/hr
10%	54	3.1	9600	337	960	19.3
40%	66	8.5	4400	345	440	19.7
Taurus 70S						
Load	NOx ppm	NOx lb/hr	CO ppm	CO lb/hr	UHC ppm	UHC lb/hr
10%	54	4.9	9600	531	960	30.3
40%	66	14.5	4400	586	440	33.5
Mars 90S						
Load	NOx ppm	NOx lb/hr	CO ppm	CO lb/hr	UHC ppm	UHC lb/hr
10%	54	5.2	9600	528	960	32.5
40%	66	14.3	4400	582	440	33.2
Mars 100S						
Load	NOx ppm	NOx lb/hr	CO ppm	CO lb/hr	UHC ppm	UHC lb/hr
10%	54	5.9	9600	636	960	36.4
40%	66	16.1	4400	653	440	37.3
Titan 130S						
Load	NOx ppm	NOx lb/hr	CO ppm	CO lb/hr	UHC ppm	UHC lb/hr
10%	54	7.5	9600	825	960	45.2
40%	66	21.0	4400	851	440	48.6

Assumptions: pipeline nat gas gas, 32F, 134' MSL, 4.4" inlet/outlet losses.

Mars 100-16000S						
Load	NOx ppm	NOx lb/hr	CO ppm	CO lb/hr	UHC ppm	UHC lb/hr
10%	40	9.8	4000	595	4000	340.0
20%	40	12.2	4000	740	3000	317.0
30%	40	14.0	4000	851	2000	243.0

Attachment 2 – Subject item inventory and facility requirements

SI List

AI ID (Name): 714 (Northern Natural Gas Co - Hugo)
Activity: IND20260001

SI Category	SI Type	Subject Item ID	Delta Designation	Description	
Activity	Insignificant Air Emissions Activity	ACTV 1	Null	All IAs	
Agency Interest	Conventional Site	AISI 714	Null	Null	
Equipment	Reciprocating IC Engine	EQUI 3	Null	Back up Generator	
		EQUI 5	Null	Emergency Generator	
	Turbine	EQUI 1	EU001	Gas Turbine Compressor	
		EQUI 4	Null	Natural Gas-Fired Turbine	
Fugitive	Equipment Leaks	FUGI 1	FS001	Fugitive emissions components	
	Fugitive-Other	FUGI 4	Null	Compressor Blowdown	
Structure	Stack/Vent	STRU 1	SV001	Turbine Stack	
		STRU 3	Null	Generator Stack	
		STRU 4	Null	Emergency Generator Stack	
Total Facility	Air Quality Total Facility	TFAC 1	16300110	Northern Natural Gas Co - Hugo	

Insignificant Activities

AI ID (Name): 714 (Northern Natural Gas Co - Hugo)

Activity: IND20260001

SI Category	SI Type	Status Description	Sub Attribute Description	
Activity	Insignificant Air Emissions Activity	Active / Existing	Minn. R. 7007.1300, subp. 3(F)	

Emission Units 1

AI ID (Name): 714 (Northern Natural Gas Co - Hugo)
Activity: IND20260001

SI Type	Subject Item ID	Delta Designation	Description	Manufacturer	Model	Max Design Capacity	Max Design Capacity Units	Material	Firing Method	Subject to CSAPR?	Electric Generating Capacity (MW)	Construction Start Date	Operation Start Date	Modification Date	
Turbine	EQUI 1	EU001	Gas Turbine Compressor	Solar Turbine Inc	Taurus 60-T7000S	7,229	horsepower/each	Energy	Null	N	Null	4/1/1997	10/31/1997	Null	
	EQUI 4	Null	Natural Gas-Fired Turbine	Solar	Taurus 60-7800S	7,782	horsepower/hours	Energy	Null	N	Null	TBD	TBD	Null	

Emission Units 2

AI ID (Name): 714 (Northern Natural Gas Co - Hugo)
Activity: IND20260001

SI Type	Subject Item ID	Delta Designation	Description	Manufacturer	Model	Max Design Capacity	Max Design Capacity Units	Material	Engine Use	Firing Method	Engine Displacement	Engine Displacement Units	Construction Start Date	Operation Start Date	Modification Date	
Reciprocating IC Engine	EQUI 3	Null	Back up Generator	Cummings	GFPA	150	kilowatts/each	Energy	Emergency/blacks..	SI-4SRB	1.1	liters per cylinder	6/1/2015	6/1/2015	Null	
	EQUI 5	Null	Emergency Generator	Cummins	GTA 28E	770	horsepower/hours	Energy	Emergency/blacks..	SI-4SRB	28,005	total cubic centimeters	TBD	TBD	Null	

PTE by SI

AI ID (Name): 714 (Northern Natural Gas Co - Hugo)
Activity: IND20260001

SI Category	SI Type	Subject Item ID	Delta Designation	Description	Pollutant	Potential (lbs/hr)	Unrestricted Potential (tons/yr)	Potential Limited (tons/yr)	Actual Emissions (tons/yr)
Equipment	Reciprocating IC Engine	EQUI 3	Null	Back up Generator	1,1-Dichloroethane	2.09e-05	5.22e-06	5.22e-06	
					1,1,2-Trichloroethane	4.68e-05	1.17e-06	1.17e-06	
					1,1,2,2-Tetrachloroethane	4.68e-05	1.17e-05	1.17e-05	
					1,2-Dibromoethane (Ethylene dibromide); EDB	3.94e-05	9.85e-06	9.85e-06	
					1,2-Dichloropropane	2.4e-05	6.01e-06	6.01e-06	
					1,3-Butadiene	0.00123	0.000306	0.000306	
					1,3-Dichloropropene	2.4e-05	6.01e-06	6.01e-06	
					Acetaldehyde	0.00516	0.00129	0.00129	
					Acrolein	0.00486	0.00122	0.00122	
					Benzene	0.00292	0.00073	0.00073	
					Carbon Dioxide	203.38	50.85	50.85	
					Carbon Dioxide Equivalent	203.6	50.9	50.9	
					Carbon Monoxide	2.13	0.53	0.53	
					Carbon tetrachloride	3.27e-05	8.18e-06	8.18e-06	
					Chlorobenzene (Monochlorobenzene)	2.53e-05	6.33e-06	6.33e-06	
					Chloroform	7.62e-05	1.9e-05	1.9e-05	
					Dichloromethane (Methylene chloride)	7.62e-05	1.9e-05	1.9e-05	
					Ethylbenzene	4.59e-05	1.15e-05	1.15e-05	
					Formaldehyde	0.0379	0.00948	0.00948	
					HAPs - Total	0.06	0.015	0.015	
					Methane	0.00408	0.00102	0.00102	
					Methanol	0.00566	0.00141	0.00141	
					Naphthalene	0.00018	4.49e-05	4.49e-05	
					Nitrogen Oxides	1.06	0.27	0.27	
					Nitrous Oxide	0.000408	0.000102	0.000102	
					Particulate Matter	0.0359	0.00897	0.00897	
					PM < 2.5 micron	0.0359	0.00897	0.00897	
					PM < 10 micron	0.0359	0.00897	0.00897	
					Polycyclic organic matter	0.00044	0.00011	0.00011	
					Styrene	2.2e-05	5.5e-06	5.5e-06	
					Sulfur Dioxide	0.00109	0.000272	0.000272	
					Toluene	0.00103	0.000258	0.000258	
					Vinyl chloride (chloroethene)	1.33e-05	3.32e-06	3.32e-06	
					Volatile Organic Compounds	0.53	0.13	0.13	
					Xylenes, Total	0.000361	9.01e-05	9.01e-05	
	EQUI 5	Null	Null	Emergency Generator	1,1-Dichloroethane	7.29e-05	1.82e-05	1.82e-05	
					1,1,2-Trichloroethane	0.000163	4.08e-05	4.08e-05	
					1,1,2,2-Tetrachloroethane	0.000163	4.08e-05	4.08e-05	
					1,2-Dibromoethane (Ethylene dibromide); EDB	0.000138	3.44e-05	3.44e-05	
					1,2-Dichloropropane	8.39e-05	2.1e-05	2.1e-05	
					1,3-Butadiene	0.00428	0.00107	0.00107	
					1,3-Dichloropropene	8.39e-05	2.1e-05	2.1e-05	
					Acetaldehyde	0.018	0.0045	0.0045	
					Acrolein	0.017	0.00424	0.00424	
					Benzene	0.0102	0.00255	0.00255	
					Carbon Dioxide	710.12	177.53	177.53	
					Carbon Dioxide Equivalent	710.9	177.73	177.73	
					Carbon Monoxide	6.79	1.7	1.7	
					Carbon tetrachloride	0.000114	2.86e-05	2.86e-05	
					Chlorobenzene (Monochlorobenzene)	8.84e-05	2.21e-05	2.21e-05	
					Chloroform	0.000266	6.65e-05	6.65e-05	
					Dichloromethane (Methylene chloride)	0.000266	6.65e-05	6.65e-05	
					Ethylbenzene	0.00016	4e-05	4e-05	
					Formaldehyde	0.132	0.0331	0.0331	
					HAPs - Total	0.21	0.0524	0.0524	
					Methane	0.0142	0.00356	0.00356	
					Methanol	0.0198	0.00494	0.00494	
					Naphthalene	0.000627	0.000157	0.000157	
					Nitrogen Oxides	3.4	0.85	0.85	
					Nitrous Oxide	0.00142	0.000356	0.000356	
					Particulate Matter	0.13	0.03	0.03	
					PM < 2.5 micron	0.13	0.03	0.03	
					PM < 10 micron	0.13	0.03	0.03	
					Polycyclic organic matter	0.00154	0.000384	0.000384	
					Styrene	7.68e-05	1.92e-05	1.92e-05	
					Sulfur Dioxide	0.0038	0.000949	0.000949	
					Toluene	0.0036	0.000901	0.000901	
					Vinyl chloride (chloroethene)	4.64e-05	1.16e-05	1.16e-05	
					Volatile Organic Compounds	1.7	0.42	0.42	
					Xylenes, Total	0.00126	0.000315	0.000315	

PTE by SI

AI ID (Name): 714 (Northern Natural Gas Co - Hugo)
Activity: IND20260001

SI Category	SI Type	Subject Item ID	Delta Designation	Description	Pollutant	Potential (lbs/hr)	Unrestricted Potential (tons/yr)	Potential Limited (tons/yr)	Actual Emissions (tons/yr)
Equipment	Turbine	EQUI 1	EU001	Gas Turbine Compressor	1,3-Butadiene	2.49e-05	0.000109	0.000109	
					Acetaldehyde	0.00231	0.0101	0.0101	
					Acrolein	0.00037	0.00162	0.00162	
					Benzene	0.000694	0.00304	0.00304	
					Carbon Dioxide	6,765	29,632	29,632	
					Carbon Dioxide Equivalent	6,772	29,662	29,662	
					Carbon Monoxide	16.89	73.97	73.97	
					Ethylbenzene	0.00185	0.00811	0.00811	
					Formaldehyde	0.0411	0.18	0.18	
					HAPs - Total	0.0594	0.26	0.26	
					Methane	0.128	0.558	0.558	
					Naphthalene	7.52e-05	0.000329	0.000329	
					Nitrogen Oxides	5.78	25.33	25.33	
					Nitrous Oxide	0.0128	0.0558	0.0558	
					Particulate Matter	0.38	1.67	1.67	
					PM < 2.5 micron	0.38	1.67	1.67	
					PM < 10 micron	0.38	1.67	1.67	
					Polycyclic organic matter	0.000127	0.000557	0.000557	
					Propylene oxide	0.00168	0.00735	0.00735	
					Sulfur Dioxide	0.0815	0.357	0.357	
					Toluene	0.00752	0.0329	0.0329	
					Volatile Organic Compounds	2.02	8.84	8.84	
					Xylenes, Total	0.0037	0.0162	0.0162	
		EQUI 4	Null	Natural Gas-Fired Turbine	1,3-Butadiene	3.53e-05	0.000155	0.000155	
					Acetaldehyde	0.00328	0.0144	0.0144	
					Acrolein	0.0003526	0.0023	0.0023	
					Benzene	0.000985	0.00432	0.00432	
					Carbon Dioxide	9,606	42,074	42,074	
					Carbon Dioxide Equivalent	9,616	42,117	42,117	
					Carbon Monoxide	4.51	85.27	85.27	
					Ethylbenzene	0.00263	0.0115	0.0115	
					Formaldehyde	0.0583	0.255	0.255	
					HAPs - Total	0.0844	0.37	0.37	
					Methane	0.181	0.793	0.793	
					Naphthalene	0.000107	0.000468	0.000468	
					Nitrogen Oxides	4.44	23.66	23.66	
					Nitrous Oxide	0.0181	0.0793	0.0793	
					Particulate Matter	0.54	2.37	2.37	
					PM < 2.5 micron	0.54	2.37	2.37	
					PM < 10 micron	0.54	2.37	2.37	
					Propylene oxide	0.00238	0.0104	0.0104	
					Sulfur Dioxide	0.12	0.26	0.26	
					Toluene	0.0107	0.0463	0.0463	
					Total Polycyclic aromatic hydrocarbons	0.000181	0.000791	0.000791	
					Volatile Organic Compounds	0.52	8.23	8.23	
					Xylenes, Total	0.00526	0.023	0.023	
Fugitive	Equipment Leaks	FUGI 1	FS001	Fugitive emissions components	Carbon Dioxide	0.0053	0.023	0.023	
					Carbon Dioxide Equivalent	13.75	60.24	60.24	
					Methane	0.49	2.15	2.15	
					Volatle Organic Compounds	0.0041	0.01	0.01	
	Fugitive-Other	FUGI 4	Null	Compressor Blowdown	Carbon Dioxide	0.36	1.59	1.59	
					Carbon Dioxide Equivalent	348.48	1,526.35	1,526.35	
					Methane	12.43	54.46	54.46	
					Volatile Organic Compounds	0.11	0.461	0.461	

Relationships

AI ID (Name): 714 (Northern Natural Gas Co - Hugo)
Activity: IND20260001

SI Category	SI Type	Subject Item ID	Delta Designation	Description	Relationship	Related SI ID	% Flow	Related SI Type	Related Delta Designation	Relationship Start Date	Relationship End Date	
Equipment	Reciprocating IC Engine	EQUI 3	Null	Back up Generator	sends to	STRU 3	100	Stack/Vent	Null	6/1/2015	Null	
		EQUI 5	Null	Emergency Generator	sends to	STRU 4	100	Stack/Vent	Null	4/13/2026	Null	
	Turbine	EQUI 1	EU001	Gas Turbine Compressor	sends to	STRU 1	100	Stack/Vent	SV001	5/22/1997	Null	
		EQUI 4	Null	Natural Gas-Fired Turbine	sends to	STRU 1	100	Stack/Vent	SV001	4/13/2026	Null	

FUGI

AI ID (Name): 714 (Northern Natural Gas Co - Hugo)
Activity: IND20260001

Subject Item Type	Subject Item ID	Delta Designation	Description	Install Year	Pollutants Emitted	
Equipment Leaks	FUGI 1	FS001	Fugitive emissions components	1997	Volatile Organic Compounds	
Fugitive-Other	FUGI 4	Null	Compressor Blowdown	1997	Carbon Dioxide Equivalent	
					HAPs - Total	
					Volatile Organic Compounds	

Stack/Vents

AI ID (Name): 714 (Northern Natural Gas Co - Hugo)
Activity: IND20260001

Subject Item ID	Delta Designation	Description	Stack Height (feet)	Stack Diameter (feet)	Stack Length (feet)	Stack Width (feet)	Stack Flow Rate (cubic ft/min)	Discharge Temperature (°F)	Flow Rate/Temp Information Source	Discharge Direction	
STRU 1	SV001	Turbine Stack	50	3	Null	Null	101,156	841	Manufacturer	Upwards with no cap on stack/vent	
STRU 3	Null	Generator Stack	6.58	0.25	Null	Null	955	1,250	Manufacturer	Upwards with no cap on stack/vent	
STRU 4	Null	Emergency Generator Stack	26.2	0.83	Null	Null	6,959	971	Manufacturer	Upwards with no cap on stack/vent	

SI Id	Sequence	Requirement
TFAC 1	1240	Permit Appendices: This permit contains appendices as listed in the permit Table of Contents. The Permittee shall comply with all requirements contained in Appendices: Appendix A: Insignificant Activities and Applicable Requirements; Appendix B: 40 CFR pt. 60, subp. A - General Provisions; Appendix C: 40 CFR pt. 60, subp. JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines; Appendix D: 40 CFR pt. 60, subp. KKKKa - Standards of Performance for Stationary Combustion Turbines; Appendix E: 40 CFR pt. 60, subp. OOOOb - Standards of performance for crude oil and natural gas facilities for which construction, modification or reconstruction commenced after December 6, 2022; and Appendix H: 40 CFR pt.60 subp. GG – Standards of performance for Stationary Gus Turbine. [Minn. R. 7007.0800, subp. 2(A) & (B)]
	7400	The Permittee must comply with Minn. Stat. 116.385. The Permittee may not use trichloroethylene at its permitted facility including in any manufacturing, processing, or cleaning processes, except as described in Minn. Stat. 116.385, subd. 2(b) and 4. This is a state-only requirement and is not enforceable by the U.S. Environmental Protection Agency (EPA) Administrator and citizens under the Clean Air Act. [Minn. R. 7007.0100, subp. 7(X), Minn. Stat. 116.385]
	7420	PERMIT SHIELD: Subject to the limitations in Minn. R. 7007.1800, compliance with the conditions of this permit shall be deemed compliance with the specific provision of the applicable requirement identified in the permit as the basis of each condition. Subject to the limitations of Minn. R. 7007.1800 and 7017.0100, subp. 2, notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements. This permit shall not alter or affect the liability of the Permittee for any violation of applicable requirements prior to or at the time of permit issuance. [Minn. R. 7007.1800(A)(2)]
	7450	The Permittee must comply with National Primary and Secondary Ambient Air Quality Standards, 40 CFR pt. 50, and the Minnesota Ambient Air Quality Standards, Minn. R. 7009.0010 to 7009.0090. Compliance must be demonstrated upon written request by the MPCA. [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]
	7540	Circumvention: Do not install or use a device or means that conceals or dilutes emissions, which would otherwise violate a federal or state air pollution control rule, without reducing the total amount of pollutant emitted. [Minn. R. 7011.0020]
	7550	The Permittee must at all times properly operate and maintain the facilities and systems of treatment and control and the appurtenances related to them that are installed or used by the Permittee to achieve compliance with the conditions of the permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. [Minn. R. 7007.0800, subp. 16(J)]
	7560	Operation and Maintenance Plan: Retain at the stationary source an operation and maintenance plan for all air pollution control equipment. At a minimum, the O & M plan shall identify all air pollution control equipment and control practices and shall include a preventative maintenance program for the equipment and practices, a description of (the minimum but not necessarily the only) corrective actions to be taken to restore the equipment and practices to proper operation to meet applicable permit conditions, a description of the employee training program for proper operation and maintenance of the control equipment and practices, and the records kept to demonstrate plan implementation. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 16(J)]
	7570	Operation Changes: In any shutdown, breakdown, or deviation the Permittee must immediately or as soon as possible considering plant and personnel safety take all practical steps to modify operations to reduce the emission of any regulated air pollutant. No emissions units that have an unreasonable shutdown or breakdown frequency of process or control equipment are permitted to operate. [Minn. R. 7019.1000, subp. 4]

SI Id	Sequence	Requirement
	7580	Fugitive Emissions: Do not cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne. Comply with all other requirements listed in Minn. R. 7011.0150. [Minn. R. 7011.0150]
	7590	Noise: The Permittee shall comply with the noise standards set forth in Minn. R. 7030.0010 to 7030.0080 at all times during the operation of any emission units. This is a state only requirement and is not enforceable by the U.S. Environmental Protection Agency (EPA) Administrator and citizens under the Clean Air Act. [Minn. R. 7030.0010-7030.0080]
	7600	Inspections: The Permittee shall comply with the inspection procedures and requirements as found in Minn. R. 7007.0800, subp. 9(A). [Minn. R. 7007.0800, subp. 9(A)]
	7610	The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16. [Minn. R. 7007.0800, subp. 16]
	7620	Performance Testing: Conduct all performance tests in accordance with Minn. R. ch. 7017 unless otherwise noted in this permit. [Minn. R. ch. 7017]
	7630	Performance Test Notifications and Submittals: Performance Test Notification and Plan: due 30 days before each Performance Test Performance Test Pre-test Meeting: due seven days before each Performance Test Performance Test Report: due 45 days after each Performance Test The Notification, Test Plan, and Test Report must be submitted in a format specified by the commissioner. [Minn. R. 7017.2017, Minn. R. 7017.2030, subps. 1-4, Minn. R. 7017.2035, subps. 1-2]
	7640	Limits set as a result of a performance test (conducted before or after permit issuance) apply until superseded as stated in the MPCA's Notice of Compliance letter granting preliminary approval. Preliminary approval is based on formal review of a subsequent performance test on the same unit as specified by Minn. R. 7017.2025, subp. 3. The limit is final upon issuance of a permit amendment incorporating the change. [Minn. R. 7017.2025, subp. 3]
	7650	Monitoring Equipment Calibration - The Permittee shall either: 1. Calibrate or replace required monitoring equipment every 12 months; or 2. Calibrate at the frequency stated in the manufacturer's specifications. For each monitor, the Permittee shall maintain a record of all calibrations, including the date conducted, and any corrective action that resulted. The Permittee shall include the calibration frequencies, procedures, and manufacturer's specifications (if applicable) in the Operations and Maintenance Plan. Any requirements applying to continuous emission monitors are listed separately in this permit. [Minn. R. 7007.0800, subp. 4(D)]
	7660	Operation of Monitoring Equipment: Unless noted elsewhere in this permit, monitoring a process or control equipment connected to that process is not necessary during periods when the process is shutdown, or during checks of the monitoring systems, such as calibration checks and zero and span adjustments. If monitoring records are required, they should reflect any such periods of process shutdown or checks of the monitoring system. [Minn. R. 7007.0800, subp. 4(D)]
	7670	Recordkeeping: Retain all records at the stationary source, unless otherwise specified within this permit, for five (5) years from the date of monitoring, sample, measurement, or report. Records which must be retained at this location include all calibration and maintenance records, all original recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. Records must conform to the requirements listed in Minn. R. 7007.0800, subp. 5(A). [Minn. R. 7007.0800, subp. 5(C)]
	7680	Recordkeeping: Maintain records describing any insignificant modifications (as required by Minn. R. 7007.1250, subp. 3) or changes contravening permit terms (as required by Minn. R. 7007.1350, subp. 2), including records of the emissions resulting from those changes. [Minn. R. 7007.0800, subp. 5(B)]

SI Id	Sequence	Requirement
	7690	If the Permittee determines that no permit amendment or notification is required prior to making a change, the Permittee must retain records of all calculations required under Minn. R. 7007.1200. For non-expiring permits, these records shall be kept for a period of five years from the date that the change was made. The records shall be kept at the stationary source for the current calendar year of operation and may be kept at the stationary source or office of the stationary source for all other years. The records may be maintained in either electronic or paper format. [Minn. R. 7007.1200, subp. 4]
	7770	Shutdown Notifications: Notify the commissioner at least 24 hours in advance of a planned shutdown of any control equipment or process equipment if the shutdown would cause any increase in the emissions of any regulated air pollutant. If the Permittee does not have advance knowledge of the shutdown, the Permittee must notify the commissioner as soon as possible after the shutdown. However, notification is not required in the circumstances outlined in items A, B, and C of Minn. R. 7019.1000, subp. 3. At the time of notification, the owner or operator must inform the commissioner of the cause of the shutdown and the estimated duration. The owner or operator must notify the commissioner when the shutdown is over. [Minn. R. 7019.1000, subp. 3]
	7780	Breakdown Notifications: Notify the commissioner within 24 hours of a breakdown of more than one hour of any control equipment or process equipment if the breakdown causes any increase in the emissions of any regulated air pollutant. The 24-hour time period starts when the breakdown was discovered or reasonably should have been discovered by the owner or operator. However, notification is not required in the circumstances outlined in items A, B, and C of Minn. R. 7019.1000, subp. 2. At the time of notification or as soon as possible thereafter, the Permittee must inform the commissioner of the cause of the breakdown and the estimated duration. The Permittee must notify the commissioner when the breakdown is over. [Minn. R. 7019.1000, subp. 2]
	7790	Notification of Deviations Endangering Human Health or the Environment: Immediately after discovery of the deviation or immediately after when the deviation reasonably should have been discovered, notify the commissioner either orally or by e-mail, or telephone the state duty officer at 800-422-0798 or 651-649-5451, of any deviation from permit conditions that could endanger human health or the environment. [Minn. R. 7019.1000, subp. 1]
	7800	Notification of Deviations Endangering Human Health or the Environment Report: Within two working days of discovery, notify the commissioner in writing of any deviation from permit conditions that could endanger human health or the environment. Include the following information in this written description: 1. the cause of the deviation; 2. the exact dates of the period of the deviation, if the deviation has been corrected; 3. whether or not the deviation has been corrected; 4. the anticipated time by which the deviation is expected to be corrected, if not yet corrected; and 5. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation. [Minn. R. 7019.1000, subp. 1]
	7810	The Permittee must submit a semiannual deviations report : Due semiannually, by the 30th of January and July. The first semiannual report submitted by the Permittee must cover the calendar half-year in which the permit is issued. The first report of each calendar year covers January 1 - June 30. The second report of each calendar year covers July 1 - December 31. Submit this on form DRF-2 (Deviation Reporting Form). If no deviations have occurred, submit the signed report certifying that there were no deviations. [Minn. R. 7007.0800, subp. 6(B)(2)]

SI Id	Sequence	Requirement
	7830	Application for Permit Amendment: If a permit amendment is needed, submit an application in accordance with the requirements of Minn. R. 7007.1150 through Minn. R. 7007.1500. Submittal dates vary, depending on the type of amendment needed. Upon adoption of a new or amended federal applicable requirement, and if there are three or more years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150 - 7007.1500]
	7840	Extension Requests: The Permittee may apply for an Administrative Amendment to extend a deadline in a permit by no more than 120 days, provided the proposed deadline extension meets the requirements of Minn. R. 7007.1400, subp. 1(H). Performance testing deadlines from the General Provisions of 40 CFR pt. 60 and pt. 63 are examples of deadlines for which the MPCA does not have authority to grant extensions and therefore do not meet the requirements of Minn. R. 7007.1400, subp. 1(H). [Minn. R. 7007.1400, subp. 1(H)]
	7860	The Permittee must submit a compliance certification : Due annually, by the 31st of January (for the previous calendar year). Submit this on form CR-04 (Annual Compliance Certification Report). This report covers all deviations experienced during the calendar year. If no deviations have occurred, submit the signed report certifying that there were no deviations. [Minn. R. 7007.0800, subp. 6(D)]
	7870	Within 15 days of a request from the Commissioner, the Permittee must provide a complete summary of all performance tests required at the facility including the subject item, pollutant, most recent test date (if applicable), and the date of the next test in an approved format. [Minn. R. 7007.0800, subp. 16(L)]
	7900	Emission Inventory Report: due on or before April 1 of each calendar year following permit issuance. Submit in a format specified by the Commissioner. [Minn. R. 7019.3000-7019.3100]
	7910	Emission Fees: due 30 days after receipt of an MPCA bill. [Minn. R. 7002.0005-7002.0085]
	7910	Emission Fees: due 30 days after receipt of an MPCA bill. [Minn. R. 7002.0005-7002.0085]
EQUI 1	3080	The Permittee shall submit a notification of equipment removal/dismantlement: Due 15 calendar days after Equipment Removal and/or Dismantlement Date. This notification shall specify which Subject Items (by ID#) were removed and on what date. [Minn. R. 7007.0800, subp. 2(A)]
	3519	The Permittee shall remove and/or dismantle before initial startup of EQUI 4. [Minn. R. 7007.0800, subp. 2(A)]
	3520	Opacity <= 20 percent opacity once operating temperatures have been attained. [Minn. R. 7011.2300, subp. 1]
	3535	Sulfur Dioxide <= 0.0015 pounds per million Btu heat input. The potential to emit from the unit is 0.0014 lb/MMBtu due to equipment design and allowable fuels. [Minn. R. 7011.2300, subp. 2(B)]
	3560	The Permittee shall keep records of fuel type and usage on a monthly basis. [Minn. R. 7007.0800, subp. 5]
	19000	Sulfur Content of Fuel <= 0.8 percent by weight. [40 CFR 60.333, Minn. R. 7011.2350]
	19010	Nitrogen Oxides <= 0.00157 percent by volume 25 percent oxygen and on a dry basis when combusting natural gas. [40 CFR 60.332(d), Minn. R. 7011.2350]
	19030	Fuel Type: Limited to pipeline natural gas meeting the definition in 40 CFR 60.331(u). [Minn. R. 7005.0100, subp. 35a, Minn. R. 7007.0800, subp. 2(A)]
	19060	Turbine Component Replacement Recordkeeping: The Permittee must record the date and nature of each component replacement no later than five business days after completion of each replacement. The Permittee must also record the total cost of the component replacement compared to the cost of an entirely new stationary gas turbine (as defined at 40 CFR 60.4420a). This record must be made at least 30 days before a NOx test is conducted on the gas turbine (as a result of the component replacement), but no later than 180 days after each component replacement. [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7007.0800, subp. 4, Minn. R. 7007.0800, subp. 5]

SI Id	Sequence	Requirement
	19080	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. GG as follows: 40 CFR 60.330(a)-(b); 40 CFR 60.330(d); 40 CFR 60.331; 40 CFR 60.332(a)(2); 40 CFR 60.332(a)(4); 40 CFR 60.332(c); 40 CFR 60.333(b); 40 CFR 60.334(h); 40 CFR 60.334(i)(2); 40 CFR 60.334(j)(1)(ii); 40 CFR 60.334(j)(2)(i); 40 CFR 60.334(j)(2)(iii); and 40 CFR 60.334(j)(5). A copy of 40 CFR pt. 60, subp. GG is included in Appendix H. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR pt. 60, subp. GG, Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.2350]
	35700	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. A as follows: 40 CFR 60.1(a)-(c); 40 CFR 60.2; 40 CFR 60.3; 40 CFR 60.4; 40 CFR 60.5(a); 40 CFR 60.5(b); 40 CFR 60.6(a); 40 CFR 60.6(b); 40 CFR 60.7(a)(1); 40 CFR 60.7(a)(3); 40 CFR 60.7(a)(4); 40 CFR 60.7(a)(5); 40 CFR 60.7(a)(6); 40 CFR 60.7(a)(7); 40 CFR 60.7(b)-(d); 40 CFR 60.9; 40 CFR 60.11(a)-(d); 40 CFR 60.11(e)(1)-(8); 40 CFR 60.11(f); 40 CFR 60.11(g); 40 CFR 60.12; 40 CFR 60.13(a)-(c); 40 CFR 60.13(d)(1); 40 CFR 60.13(d)(2); 40 CFR 60.13(e)(1); 40 CFR 60.13(e)(2); 40 CFR 60.13(f); 40 CFR 60.13(g); 40 CFR 60.13(h)(1)-(3); 40 CFR 60.13(i)(1)-(9); 40 CFR 60.13(j)(1)-(2); 40 CFR 60.14(a)-(l); 40 CFR 60.15(a)-(g); 40 CFR 60.17; 40 CFR 60.18(b)-(f); 40 CFR 60.18(g)-(i); 40 CFR 60.19(a)-(e); and 40 CFR 60.19(f)(1)-(4). A copy of 40 CFR pt. 60, subp. A is included in Appendix B. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR pt. 60, subp. A, 40 CFR pt. 60, subp. GG, Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.0050, subp. 1(A), Minn. R. 7011.2350, Minn. R. 7017.1010 & 7017.2015, subp. 2, Minn. R. 7019.0100]
EQUI 3	1	The Permittee shall remove and/or dismantle before initial startup of EQUI 5. [Minn. R. 7007.0800, subp. 2(A)]
	3080	The Permittee shall submit a notification of equipment removal/dismantlement: Due 15 calendar days after Equipment Removal and/or Dismantlement Date. This notification shall specify which Subject Items (by ID#) were removed and on what date. [Minn. R. 7007.0800, subp. 2(A)]
	3520	Opacity <= 20 percent opacity once operating temperatures have been attained. [Minn. R. 7011.2300, subp. 1]
	3535	Sulfur Dioxide <= 0.0015 pounds per million Btu heat input. The potential to emit from the unit is 0.000588 lb/MMBtu due to equipment design and allowable fuels. [Minn. R. 7011.2300, subp. 2(B)]
	3540	Fuel type: Natural gas only, by design. [Minn. R. 7005.0100, subp. 35a]
	3550	Hours of Operation: The Permittee shall maintain documentation on site that the unit is an emergency generator by design that qualifies under the U.S. EPA memorandum entitled "Calculating Potential to Emit (PTE) for Emergency Generators" dated September 6, 1995, that allows calculation of potential emissions based on 500 operating hours per year. [Minn. R. 7007.0800, subps. 4-5]

SI Id	Sequence	Requirement
	3560	The Permittee shall keep records of fuel type and usage on a monthly basis. [Minn. R. 7007.0800, subp. 5]
	19530	EQUI 3 is a new affected source as defined under 40 CFR pt. 63, subp. ZZZZ, and the facility is an area source as defined at 40 CFR 63.2. The Permittee shall meet the requirements of 40 CFR pt. 63, subp. ZZZZ by meeting the requirements of 40 CFR pt. 60, subp. JJJJ. No further requirements of 40 CFR pt. 63, subp. ZZZZ apply to EQUI 3. [40 CFR 63.6590(c), Minn. R. 7011.8150]
	19534	If EQUI 3 operates or is contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in 40 CFR 60.4243(d)(2)(ii) and (iii) or that operates for the purposes specified in 40 CFR 60.4243(d)(3)(i), then the following applies: The Permittee shall submit an annual report for each calendar year no later than March 31 of the following calendar year. The annual report must be submitted electronically using the subpart specific reporting form in the Compliance and Emissions Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) (www.epa.gov/cdx). However, if the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, the written report must be submitted to the Administrator at the appropriate address listed in 40 CFR 60.4. [40 CFR 60.4245(e)(2), 40 CFR 60.4245(e)(3), 40 CFR 63.6590(c)(1), Minn. R. 7011.2310, Minn. R. 7011.8150]
	28180	The Permittee must limit Nitrogen Oxides $\leq$ 2.0 grams per horsepower-hour. [40 CFR 60.4233(e), 40 CFR 63.6590(c), 40 CFR pt. 60, subp. JJJJ(Table 1), Minn. R. 7011.2310, Minn. R. 7011.8150]
	28190	The Permittee must limit Carbon Monoxide $\leq$ 4.0 grams per horsepower-hour. [40 CFR 60.4233(e), 40 CFR 63.6590(c), 40 CFR pt. 60, subp. JJJJ(Table 1), Minn. R. 7011.2310, Minn. R. 7011.8150]
	28200	The Permittee must limit Volatile Organic Compounds $\leq$ 1.0 grams per horsepower-hour. [40 CFR 60.4233(e), 40 CFR 63.6590(c), 40 CFR pt. 60, subp. JJJJ(Table 1), Minn. R. 7011.2310, Minn. R. 7011.8150]
	28210	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. JJJJ as follows: 40 CFR 60.4230(a)(4)(iv); 40 CFR 60.4230(a)(6); 40 CFR 60.4233(e), as it pertains to stationary SI ICE meeting the criteria in the first sentence of this item; 40 CFR 60.4234; 40 CFR 60.4237(b); 40 CFR 60.4243(b)(1); 40 CFR 60.4243(a)(1); 40 CFR 60.4243(d); 40 CFR 60.4243(d)(1); 40 CFR 60.4243(d)(2); 40 CFR 60.4243(d)(2)(i); 40 CFR 60.4243(d)(3); 40 CFR 60.4243(e); 40 CFR 60.4245(a)(1)-(a)(3); 40 CFR 60.4245(b); 40 CFR 60.4245(e); 40 CFR 60.4245(g); 40 CFR 60.4246; 40 CFR 60.4248; and 40 CFR pt. 60, subp JJJJ, Table 1. A copy of 40 CFR pt. 60, subp. JJJJ is included in Appendix C. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR 63.6590(c), 40 CFR pt. 60, subp. JJJJ, Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.2310, Minn. R. 7011.8150]
	35700	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. A as follows: 40 CFR 60.1(a); 40 CFR 60.1(b); 40 CFR 60.1(c); 40 CFR 60.2; 40 CFR 60.3; 40 CFR 60.4; 40 CFR 60.7(a); 40 CFR 60.7(b); 40 CFR 60.8(a)-(f); 40 CFR 60.8(h); 40 CFR 60.8(i); 40 CFR 60.9; 40 CFR 60.11(a); 40 CFR 60.11(d); 40 CFR 60.11(f); 40 CFR 60.11(g); 40 CFR 60.12; and 40 CFR 40.19(a)-(c). A copy of 40 CFR pt. 60, subp. A is included in Appendix B. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR 60.4246(a), 40 CFR 63.6590(c), 40 CFR pt. 60, subp. A, 40 CFR pt. 60, subp. JJJJ(Table 3), Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.0050, subp. 1(A), Minn. R. 7011.2310, Minn. R. 7011.8150, Minn. R. 7017.1010 & 7017.2015, subp. 2, Minn. R. 7019.0100]

SI Id	Sequence	Requirement
EQUI 4	1	The Permittee is authorized to construct and operate EQUI 4 meeting the following design requirements: ISO-Rated 7004 hp Solar Taurus 60-7800S combustion turbine. The authorization to construct expires 5 years after issuance of Air Emissions Permit No. 16300110-102. The units must meet all applicable permit requirements. [Minn. R. 7007.0800, subp. 2(A)]
	3	The Permittee must limit emissions of Sulfur Dioxide $\leq$ 110 nanograms per joule (0.90 lb/MWh) gross output or 26 ng SO ₂ /J (0.060 lb SO ₂ /MMBtu) heat input. [40 CFR 60.4330a(a)]
	3090	The Permittee must limit emissions of Nitrogen Oxides $\leq$ 15 parts per million at 15 percent O ₂ or 24 ng/J (0.055 lb/MMBtu). This limit applies when turbine is firing natural gas at utilization rate $>$ 45 percent. [40 CFR 60.4320a(a), 40 CFR pt. 60, subp. KKKa(Table 1)]
	3095	The Permittee must limit Other $\leq$ 10 scfm per seal. For the purpose of this requirement, other means the volumetric flow rate. If the individual seals are manifolded to a single open-ended vent line, the volumetric flow rate must not exceed the sum of the individual seals multiplied by 10 scfm. [40 CFR 60.5380b(a)(6)(i), 40 CFR 60.5410b(d)(6)(iii), 40 CFR 60.5415b(d)(2)]
	3097	The Permittee shall submit a notification of the date construction began: Due 30 calendar days after Date of Construction Start (or reconstruction). Submit the name and number of the Subject Item and the date construction began. The notification shall be submitted electronically on Form CS-02. [Minn. R. 7007.0800, subp. 16(L)]
	3098	The Permittee shall submit a notification of the actual date of initial startup: Due 15 calendar days after Initial Startup Date. Submit the name and number of the Subject Item and the date of startup. Startup is as defined in Minn. R. 7005.0100, subp. 42a. The notification shall be submitted electronically on Form CS-02. [Minn. R. 7007.0800, subp. 16(L)]
	3099	The Permittee must submit a notification: due 30 days prior to any performance test. [40 CFR 60.4375a(b), 40 CFR 60.8(d), Minn. R. 7017.2020, subp. 1]
	3100	Within 60 days after the date of completing each performance test or continuous emissions monitoring systems (CEMS) performance evaluation that includes a RATA, the Permittee must submit the results following the procedures specified in paragraph 40 CFR 60.4375(g). [40 CFR 60.4375a(e)]
	3110	The Permittee must submit initial annual report: Due no later than 90 days after the end of the initial compliance period as determined according to 40 CFR 60.5410b. Subsequent annual reports are due no later than the same date each year as the initial annual report. The report must contain the applicable information identified in 40 CFR 60.5420b(b)(1) and (5), and (b)(11), and (13), as applicable. [40 CFR 60.5380b(d), 40 CFR 60.5410b(d)(7), 40 CFR 60.5415b(d)(3), 40 CFR 60.5420b(b), 40 CFR 60.5420b(d)]
	3200	Opacity $\leq$ 20 percent opacity once operating temperatures have been attained. [Minn. R. 7011.2300, subp. 1]
	3520	Sulfur Dioxide $\leq$ 0.0015 pounds per million Btu heat input. The potential to emit from the unit is 0.0014 lb/MMBtu due to equipment design and allowable fuels. [Minn. R. 7011.2300, subp. 2(B)]
	3535	Fuel type: Natural gas only, by design. [Minn. R. 7005.0100, subp. 35a]
	3540	The Permittee shall keep records of fuel type and usage on a monthly basis. [Minn. R. 7007.0800, subp. 5]
	3560	non-SoLoNOx (low-load) Operating Hours $\leq$ 100 hours per year 12-month rolling sum in non-SoLoNOx (Low-Load) operation mode to be calculated by the 15th day of each month for the previous 12-month period as described later in this permit. [Minn. R. 7007.0800, subp. 2(A)]
	3831	Low-temperature Operating Hours $\leq$ 720 hours per year 12-month rolling sum in low temperature (-20 deg F < Temperature < 0 deg F) operation mode to be calculated by the 15th day of each month for the previous 12-month period as described later in this permit. [Minn. R. 7007.0800, subp. 2(A)] Startup and Shutdown (SUSD) events $\leq$ 1,400 times per year 12-month rolling sum in SUSD operation mode to be calculated by the 15th day of each month for the previous 12-month period as described later in this permit. The definition of SUSD is defined at 40 CFR 60.2. [Minn. R. 7007.0800, subp. 2(A)]
	3832	Hours: Daily Recordkeeping. On each day of operation, the Permittee must calculate, record, and maintain a record of the total hours of operation at each operation mode. This must be based on hour meter readings. [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7007.0800, subps. 4-5]

SI Id	Sequence	Requirement
	3840	Daily Recordkeeping. On each day of operation, the Permittee must calculate, record, and maintain a record of the total number of SUSD events. This must be based on operation logs. [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7007.0800, subps. 4-5]
	3845	Hours: Monthly Recordkeeping. By the 15th of the month, the Permittee must calculate and record the following for each operation mode: 1) The total hours of operation for each mode for the previous calendar month using the daily data; and 2) The 12-month rolling sum hours of operation for each mode by summing the monthly hours of operation for each operation mode for the previous 12 months. [Minn. R. 7007.0800, subps. 4-5]
	3850	Hours: Monthly Recordkeeping. By the 15th of the month, the Permittee must calculate and record the following: 1) The total number of SUSD events for the previous calendar month using the daily data; and 2) The 12-month rolling sum number of SUSD events for the previous 12-month period by summing the monthly number of SUSD events for the previous 12 months. [Minn. R. 7007.0800, subps. 4-5]
	19400	The Permittee must conduct first volumetric flow rate measurement from the centrifugal compressor equipped with a dry seal before 8,760 hours of operation after startup. The Permittee must determine the volumetric flow rate as specified in 40 CFR 60.5380b(a)(7)(iii). [40 CFR 60.5380b(a)(6)(ii), 40 CFR 60.5380b(a)(7)(iii)]
	19410	The Permittee must conduct subsequent volumetric flow rate measurements from the centrifugal compressor equipped with dry seals before 8,760 hours of operation after the previous measurement which demonstrated compliance with the 10 scfm volumetric flow rate per seal. The Permittee must determine the volumetric flow rate as specified in 40 CFR 60.5380b(a)(7)(iii). [40 CFR 60.5380b(a)(6)(iii), 40 CFR 60.5380b(a)(7)(iii)]
	19530	Nitrogen Oxides: Initial performance test: The Permittee shall conduct a performance test due 180 calendar days after Initial Startup Date to measure emissions of NOx in accordance with 40 CFR 60.8 and 40 CFR 60.4400a. The performance test must be done at any load condition within +/-2.5 percent of 100 percent of the base load rating. The Permittee may perform testing at the highest achievable load point, if at least 75 percent of the base load rating cannot be achieved in practice. The Permittee must conduct three separate test runs for each performance test. The minimum time per run is 20 minutes. [40 CFR 60.4333a(b)(1), 40 CFR 60.4400a(a)-(c), 40 CFR 60.4400a(d)(5), 40 CFR 60.8, Minn. R. 7011.2020, subp. 1]
	19534	Nitrogen Oxides: Performance Test. The Permittee must conduct performance tests: Due within 12 calendar months of the date that the previous performance test was conducted to measure emissions of NOx in accordance with 40 CFR 60.8 and the procedures in 40 CFR 60.4400a. The performance test must be done at any load condition within +/-2.5 percent of 100 percent of the base load rating. The Permittee may perform testing at the highest achievable load point, if at least 75 percent of the base load rating cannot be achieved in practice. The Permittee must conduct three separate test runs for each performance test. The minimum time per run is 20 minutes. If the NOx emission result from the most recent performance test is less than or equal to 75 percent of the NOx emissions standard for the stationary combustion turbine, the Permittee may reduce the frequency of subsequent performance tests to 26 calendar months following the date the previous performance test was conducted. If the results of any subsequent performance test exceed 75 percent of the NOx emission standard for the stationary combustion turbine, the Permittee must resume 14-calendar-month performance testing. [40 CFR 60.4333a(b)(1)-(3), 40 CFR 60.4400a(a), 40 CFR 60.4400a(b)-(c), 40 CFR 60.4400a(d)(5), 40 CFR 60.8, Minn. R. 7011.2020, subp. 1]
	19550	Sulfur Dioxide: The Permittee must conduct a performance test due 180 calendar days after Initial Startup Date to measure emissions of SO2 in accordance with 40 CFR 60.8 and 40 CFR 60.4415a. The performance test shall be conducted at worst-case conditions as defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2, using EPA Reference Method 6C, or other method approved by MPCA in the performance test plan approval. [40 CFR 60.4333a(d)(3), 40 CFR 60.4415a, 40 CFR 60.8, Minn. R. 7011.2020, subp. 1]

SI Id	Sequence	Requirement
	35600	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. KKKKa as follows: 40 CFR 60.4300a; 40 CFR 60.4305a(a)-(b); 40 CFR 60.4315a; 40 CFR 60.4320a(a); 40 CFR 60.4320a(b)(1); 40 CFR 60.4320a(b)(3); 40 CFR 60.4320a(d); 40 CFR 60.4330a(a)(1)-(2); 40 CFR 60.4333a(a); 40 CFR 60.4333a(b)(1)-(3); 40 CFR 60.4333a(c)(2); 40 CFR 60.4333a(d)(3); 40 CFR 60.4340a(a)(1); 40 CFR 60.4372a(a)-(b); 40 CFR 60.4375a(b); 40 CFR 60.4375a(e)-(j); 40 CFR 60.4385a(b); 40 CFR 60.4390a(a)-(b); 40 CFR 60.4390a(f); 40 CFR 60.4395a; 40 CFR 60.4400a(a)-(c); 40 CFR 60.4400a(d)(5); 40 CFR 60.4415a; 40 CFR 60.4420a; and 40 CFR pt. 60, subp. KKKKa, Table 1. A copy of 40 CFR pt. 60, subp. KKKKa is included in Appendix D. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR pt. 60, subp. KKKKa, Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500]
	35700	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. A for 40 CFR pt. 60, subp. KKKKa as follows: 40 CFR 60.1; 40 CFR 60.2; Additional terms defined in 40 CFR 60.4420a; 40 CFR 60.3; 40 CFR 60.4; 40 CFR 60.5; 40 CFR 60.6; 40 CFR 60.7; Only the requirements to submit the notifications in 40 CFR 60.7(a)(1) and (3) and to keep records of malfunctions in 40 CFR 60.7(b), if applicable; 40 CFR 60.8(a); 40 CFR 60.8(b); 40 CFR 60.8(d)-(f); 40 CFR 60.9; 40 CFR 60.10; 40 CFR 60.12; 40 CFR 60.13(a)-(h); 40 CFR 60.13(j); 40 CFR 60.13(i); MPCA can approve alternative monitoring procedures or requirements; 40 CFR 60.14; 40 CFR 60.15; 40 CFR 60.17; 40 CFR 60.18; and 40 CFR 60.19. A copy of 40 CFR pt. 60, subp. A is included in Appendix B. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR 60.4416a(a), 40 CFR pt. 60, subp. A, 40 CFR pt. 60, subp. KKKKa(Table 3), Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.0050, subp. 1(A), Minn. R. 7017.1010 & 7017.2015, subp. 2, Minn. R. 7019.0100]
	35701	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. OOOOb as follows: 40 CFR 60.5360b; 40 CFR 60.5365b(b); 40 CFR 60.5370b(a)(7)(i); 40 CFR 60.5370b(b)-(c); 40 CFR 60.5371b; 40 CFR 60.5380b(a)(6); 40 CFR 60.5380b(a)(7)(iii); 40 CFR 60.5380b(a)(8); 40 CFR 60.5380b(b)-(d); 40 CFR 60.5386b; 40 CFR 60.5410b(d); 40 CFR 60.5415b(d)(2)-(4); 40 CFR 60.5420b(a)(1); 40 CFR 60.5420b(b)-(c); 40 CFR 60.5420b(c)(4)(i); 40 CFR 60.5420b(c)(4)(iii); 40 CFR 60.5420b(d)-(f); 40 CFR 60.5425b; and 40 CFR 60.5430b. A copy of 40 CFR pt. 60, subp. OOOOb is included in Appendix E. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee must file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR pt. 60, subp. OOOOb, Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-1500]

SI Id	Sequence	Requirement
	35705	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. A for 40 CFR pt. 60, subp. OOOOb as follows: 40 CFR 60.1; 40 CFR 60.2; Additional terms defined in 40 CFR 60.5430b; 40 CFR 60.3; 40 CFR 60.4; 40 CFR 60.5; 40 CFR 60.6; 40 CFR 60.7; Except that 40 CFR 60.7 only applies as specified in 40 CFR 60.5417b(c) and 40 CFR 60.5420b(a); 40 CFR 60.8; Except that the format and submittal of performance test report is described in 40 CFR 60.5420b(b) and (d); 40 CFR 60.9; 40 CFR 60.10; 40 CFR 60.12; 40 CFR 60.13; 40 CFR 60.14; To the extent any provision in 40 CFR 60.14 conflicts with specific provisions in subpart OOOOb, it is superseded by subpart OOOOb provisions; 40 CFR 60.15; 40 CFR 60.16; 40 CFR 60.17; 40 CFR 60.18; and 40 CFR 60.19. A copy of 40 CFR pt. 60, subp. A is included in Appendix B. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR 60.5425b, 40 CFR pt. 60, subp. A, 40 CFR pt. 60, subp. OOOOb(Table 5), Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.0050, subp. 1(A), Minn. R. 7017.1010 & 7017.2015, subp. 2, Minn. R. 7019.0100]
EQUI 5	3010	The Permittee is authorized to construct and operate EQUI 5 meeting the following design requirements: 770 Hp/hr Cummins GTA 28E emergency generator. The authorization to construct expires 5 years after issuance of Air Emissions Permit No. 16300110-102. The units must meet all applicable permit requirements. [Minn. R. 7007.0800, subp. 2(A)]
	3020	The Permittee must limit Nitrogen Oxides <= 2.0 grams per horsepower-hour. [40 CFR 60.4233(e), 40 CFR 63.6590(c), 40 CFR pt. 60, subp. JJJJ(Table 1), Minn. R. 7011.2310, Minn. R. 7011.8150]
	3030	The Permittee must limit Carbon Monoxide <= 4.0 grams per horsepower-hour. [40 CFR 60.4233(e), 40 CFR 63.6590(c), 40 CFR pt. 60, subp. JJJJ(Table 1), Minn. R. 7011.2310, Minn. R. 7011.8150]
	3040	The Permittee must limit Volatile Organic Compounds <= 1.0 grams per horsepower-hour. [40 CFR 60.4233(e), 40 CFR 63.6590(c), 40 CFR pt. 60, subp. JJJJ(Table 1), Minn. R. 7011.2310, Minn. R. 7011.8150]
	3100	The Permittee shall submit a notification of the date construction began: Due 30 calendar days after Date of Construction Start (or reconstruction). Submit the name and number of the Subject Item and the date construction began. The notification shall be submitted electronically on Form CS-02. [Minn. R. 7007.0800, subp. 16(L)]
	3110	The Permittee shall submit a notification of the actual date of initial startup: Due 15 calendar days after Initial Startup Date. Submit the name and number of the Subject Item and the date of startup. Startup is as defined in Minn. R. 7005.0100, subp. 42a. The notification shall be submitted electronically on Form CS-02. [Minn. R. 7007.0800, subp. 16(L)]
	3520	Opacity <= 20 percent opacity once operating temperatures have been attained. [Minn. R. 7011.2300, subp. 1]
	3535	Sulfur Dioxide <= 0.0015 pounds per million Btu heat input. The potential to emit from the unit is 0.000588 lb/MMBtu due to equipment design and allowable fuels. [Minn. R. 7011.2300, subp. 2(B)]
	3540	Fuel type: Natural gas only, by design. [Minn. R. 7005.0100, subp. 35a]
	3550	Hours of Operation: The Permittee shall maintain documentation on site that the unit is an emergency generator by design that qualifies under the U.S. EPA memorandum entitled "Calculating Potential to Emit (PTE) for Emergency Generators" dated September 6, 1995, that allows calculation of potential emissions based on 500 operating hours per year. [Minn. R. 7007.0800, subps. 4-5]
	3560	The Permittee shall keep records of fuel type and usage on a monthly basis. [Minn. R. 7007.0800, subp. 5]

SI Id	Sequence	Requirement
	19530	EQUI 5 is a new affected source as defined under 40 CFR pt. 63, subp. ZZZZ, and the facility is an area source as defined at 40 CFR 63.2. The Permittee shall meet the requirements of 40 CFR pt. 63, subp. ZZZZ by meeting the requirements of 40 CFR pt. 60, subp. JJJJ. No further requirements of 40 CFR pt. 63, subp. ZZZZ apply to EQUI 5. [40 CFR 63.6590(c), Minn. R. 7011.8150]
	35600	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. JJJJ as follows: 40 CFR 60.4230(a)(4)(iv); 40 CFR 60.4230(a)(6); 40 CFR 60.4233(e), as it pertains to stationary SI ICE meeting the criteria in the first sentence of this item; 40 CFR 60.4234; 40 CFR 60.4237(a); 40 CFR 60.4243(b)(1); 40 CFR 60.4243(a)(1); 40 CFR 60.4243(d); 40 CFR 60.4243(d)(1); 40 CFR 60.4243(d)(2); 40 CFR 60.4243(d)(2)(i); 40 CFR 60.4243(d)(3); 40 CFR 60.4243(e); 40 CFR 60.4245(a)(1)-(3); 40 CFR 60.4245(b); 40 CFR 60.4245(e); 40 CFR 60.4245(g); 40 CFR 60.4245(j); 40 CFR 60.4246(a); 40 CFR 60.4248; and 40 CFR pt. 60, subp JJJJ Table 1. A copy of 40 CFR pt. 60, subp. JJJJ is included in Appendix C. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR 63.6590(c), 40 CFR pt. 60, subp. JJJJ, Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.2310, Minn. R. 7011.8150]
	35700	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. A as follows: 40 CFR 60.1; 40 CFR 60.2; 40 CFR 60.3; 40 CFR 60.4; 40 CFR 60.5; 40 CFR 60.6; 40 CFR 60.7; 40 CFR 60.8; 40 CFR 60.9; 40 CFR 60.10; 40 CFR 60.11; 40 CFR 60.12; 40 CFR 60.14; 40 CFR 60.15; 40 CFR 60.16; 40 CFR 60.17; 40 CFR 60.18; and 40 CFR 60.19. A copy of 40 CFR pt. 60, subp. A is included in Appendix B. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR 60.4246(a), 40 CFR 63.6590(c), 40 CFR pt. 60, JJJJ(Table 3), 40 CFR pt. 60, subp. A, Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.0050, subp. 1(A), Minn. R. 7011.2310, Minn. R. 7011.8150, Minn. R. 7017.1010 & 7017.2015, subp. 2, Minn. R. 7019.0100]
FUGI 1	1	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. OOOOb as follows: 40 CFR 60.5360b; 40 CFR 60.5365b(i)(3); 40 CFR 60.5370b(b)-(c); 40 CFR 60.5371b; 40 CFR 60.5397b(a)-(g)(1); 40 CFR 60.5397b(g)(1)(v); 40 CFR 60.5397b(g)(2)-(4); 40 CFR 60.5397b(h)-(k); 40 CFR 60.5410b(k); 40 CFR 60.5415b(l); 40 CFR 60.5420b(a)(1); 40 CFR 60.5420b(b)-(c); 40 CFR 60.5420b(c)(14)(i); 40 CFR 60.5420b(c)(14)(iv)-(vi); 40 CFR 60.5420b(c)(14)(viii); 40 CFR 60.5420b(d)-(f); 40 CFR 60.5425b; and 40 CFR 60.5430b. A copy of 40 CFR pt. 60, subp. OOOOb is included in Appendix E. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee must file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR pt. 60, subp. OOOOb, Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-1500]
	2	The Permittee must submit initial annual report: Due no later than 90 days after the end of the initial compliance period as determined according to 40 CFR 60.5410b. Subsequent annual reports are due no later than the same date each year as the initial annual report. The report must contain the applicable information identified in 40 CFR 60.5420b(b). [40 CFR 60.5410b(k)(4), 40 CFR 60.5415b(l)(3), 40 CFR 60.5420b(b), 40 CFR 60.5420b(d)]

SI Id	Sequence	Requirement
	35705	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. A for 40 CFR pt. 60, subp. OOOOb as follows: 40 CFR 60.1; 40 CFR 60.2; Additional terms defined in 40 CFR 60.5430b; 40 CFR 60.3; 40 CFR 60.4; 40 CFR 60.5; 40 CFR 60.6; 40 CFR 60.7; Except that 40 CFR 60.7 only applies as specified in 40 CFR 60.5417b(c) and 40 CFR 60.5420b(a); 40 CFR 60.8; Except that the format and submittal of performance test report is described in 40 CFR 60.5420b(b) and (d); 40 CFR 60.9; 40 CFR 60.10; 40 CFR 60.12; 40 CFR 60.13; 40 CFR 60.14; To the extent any provision in 40 CFR 60.14 conflicts with specific provisions in subpart OOOOb, it is superseded by subpart OOOOb provisions; 40 CFR 60.15; 40 CFR 60.16; 40 CFR 60.17; 40 CFR 60.18; and 40 CFR 60.19. A copy of 40 CFR pt. 60, subp. A is included in Appendix B. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR 60.5425b, 40 CFR pt. 60, subp. A, 40 CFR pt. 60, subp. OOOOb(Table 5), Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.0050, subp. 1(A), Minn. R. 7017.1010 & 7017.2015, subp. 2, Minn. R. 7019.0100]
FUGI 4	3680	Opacity <= 20 percent opacity. [Minn. R. 7011.0715, subp. 1(B)]
	3690	Particulate Matter <= 0.30 grains per dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735. [Minn. R. 7011.0715, subp. 1(A)]

TSD Attachment 3. Points Calculator

Points Calculator

1) AI ID No.: 714
 2) Facility Name: Northern Natural Gas Co - Hugo
 3) Small business? y/n? No
 4) Air Project Tracking Numbers (including all rolled) : 7989
 5) Date of each Application Received: 3/5/2026
 6) Final Permit No. 16300110-102
 7) Permit Staff Meg Muramoto-Mathieu

Total Points	65
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Application Type	Air Project Tracking No.	Tempo Activity ID	Qty.	Points	Total Points	Total Additional Cost	Details
Administrative Amendment			1	0	0	\$ -	
Minor Amendment			4	0	0	\$ -	
Applicability Request			10	0	0	\$ -	
Moderate Amendment			15	0	0	\$ -	
Major Amendment	7989	IND20260001	1	25	25	\$ 7,125.00	
Individual State Permit (not reissuance)			50	0	0	\$ -	
Individual Part 70 Permit (not reissuance)			75	0	0	\$ -	
Additional Points							
Modeling Review			15	0	0	\$ -	
BACT Review			15	0	0	\$ -	
LAER Review			15	0	0	\$ -	
CAA section 110(a)(2)(D)(i)(I) Review (i.e., Transport Rule/CAIR/CSAPR)			10	0	0	\$ -	
Part 75 CEM analysis			10	0	0	\$ -	
NESPS Review	7989	IND20260001	3	10	30	\$ 8,550.00	subps. JJJJ, KKKKa, and OOOOb
NESHAP Review	7989	IND20260001	1	10	10	\$ 2,850.00	subp. ZZZZ
Case-by-case MACT Review			20	0	0	\$ -	
Netting			10	0	0	\$ -	
Limits to remain below threshold			10	0	0	\$ -	
Plantwide Applicability Limit (PAL)			20	0	0	\$ -	
AERA review			15	0	0	\$ -	
Variance request under 7000.7000			35	0	0	\$ -	
Confidentiality request under 7000.1300			2	0	0	\$ -	
FAW review			0	0	0	\$ -	
Part 4410.4300, subparts 18, item A; and 29			15	0	0	\$ -	
Part 4410.4300, subparts 8, items A & B; 10, items A to C; 16, items A & D; 17, items A to C & E to G; and 18, items B & C			35	0	0	\$ -	
Part 4410.4300, subparts 4; 5 items A & B; 13; 15; 16, items B & C; and 17 item D			70	0	0	\$ -	
				Add'l Points	40		

NOTES: