Class I
Air Quality Operating Permit
Guidance Document
Guide for completing the application for a Class I Air Quality Operating Permit
Our goal is to achieve and maintain levels of air quality that will protect human health, prevent injury to plant and animal life, prevent damage to property, and preserve the scenic, historical, and aesthetic treasures of the state.
Table of Contents

ACRONYMS AND ABBREVIATIONS 1

INTRODUCTION 2

3 THINGS TO REMEMBER BEFORE STARTING 2
WHAT IS A CLASS I SOURCE? 2
APPLICATION SUBMITTAL AND PROCESSING TIMELINE 3

REGULATIONS AND STATUTES BEHIND THIS APPLICATION 5

1. COVER PAGE 5
2. IMPORTANT INFORMATION 6
3. GENERAL COMPANY INFORMATION FORM 6
4. EMISSION UNIT APPLICATION FORMS 11

GENERAL APPLICATION FORM INFORMATION 12

4.1 Equipment Description 13
4.2 For Reciprocating Internal Combustion Engines (RICE) Only 16
4.3 Location of Emission Source 17
4.4 Operating Parameters or Operating Parameters/Fuel Usage 17
4.5 Control Equipment 18
4.6 Stack Parameters 18

APPLICABLE REGULATIONS 19

4.7 Federal Regulations 19
4.8 State Regulations 19
4.9 Work Practice Standards 19
4.10 Compliance Monitoring Devices or Activities 19

5. DETAILED EMISSION CALCULATIONS 19

5.1 System Number and Name 20
5.2 Emission Unit Description 20
5.3 Operating Hours 20
5.4 Throughput 20
5.5 Control Equipment 20
5.6 Regulated Air Pollutants 21
5.7 Emission Factor 22
5.8 Emission Factor Reference 22
5.9 Emission Limits 22
5.10 HAPs and Other Pollutant(s) 23

6. FACILITY-WIDE POTENTIAL TO EMIT TABLE 23
7. SURFACE AREA DISTURBANCE FORM
8. PLANT BOUNDARY COORDINATES FORM
9. PLANT BUILDING PARAMETERS FORM
10. ADDITIONAL REQUIRED ATTACHMENTS
    PROCESS NARRATIVE
    PROCESS FLOW DIAGRAM(S)
    SITE PLANS
    MAPS: FACILITY LOCATION AND AREA MAP OF THE FACILITY
    ENVIRONMENTAL EVALUATION (AERMOD AIR DISPERSION MODELING REPORT AND ELECTRONIC INPUT FILES)
    10.1 Standards of Quality for Ambient Air
    10.2 Information Required by the BAPC for Modeling Purposes
    10.3 Air Dispersion Modeling Submitted by Applicant
    MANUFACTURER’S GUARANTEE CERTIFICATIONS AND EQUIPMENT SPECIFICATION SHEETS
    SOURCE (STACK) TESTING DATA
    TANKS EMISSIONS ESTIMATES
11. APPLICATION CERTIFICATION DOCUMENT
12. MAINTENANCE/ANNUAL FEES
APPENDIX 1
APPENDIX 2
APPENDIX 3
APPENDIX 4
APPENDIX 5
APPENDIX 6
APPENDIX 7
APPENDIX 8
APPENDIX 9
ACRONYMS AND ABBREVIATIONS

Administrator: Administrator of EPA as defined in NAC 445B.004
ACFM: Actual Cubic Feet per Minute
AQOP: Air Quality Operating Permit
BAPC: Bureau of Air Pollution Control
BAQP: Bureau of Air Quality Planning
BPM: Best Practical Methods
CAA: Clean Air Act
CAM: Compliance Assurance Monitoring
CEMS: Continuous Emissions Monitoring System
CFR: Code of Federal Regulations
CH4: Methane
CO: Carbon Monoxide
CO2: Carbon Dioxide
CO2e: Greenhouse Gases (Carbon Dioxide Equivalent)
COMS: Continuous Opacity Monitoring System
Director: Director of Nevada State Department of Conservation and Natural Resources as defined in NAC 445B.053
DSCFM: Dry Standard Cubic Feet per Minute
EF: Emission Factor
EPA: Environmental Protection Agency
FIN: Facility Identification Number
FLM: Federal Land Manager
GHG: Greenhouse Gas
HA: Hydrographic Area (Basin)
HAP: Hazardous Air Pollutant
hp: Horsepower
hr: Hour
H2S: Hydrogen Sulfide
H2SO4: Sulfuric Acid Mist
IA: Insignificant Activity
ID: Identification Number
kW: Kilowatt
L x W x H: Length x Width x Height
lb: Pound
MMBtu: Million British Thermal Units
N/A: Not Applicable
NAC: Nevada Administrative Code
NAD: North American Datum
NAICS: North American Industry Classification System
NDEP: Nevada Division of Environmental Protection
NESHAP: National Emission Standards for Hazardous Air Pollutants
NO2: Nitrogen Dioxide
N2O: Nitrous Oxide
NOx: Oxides of Nitrogen
NRS: Nevada Revised Statutes
NSR: New Source Review
NSPS: New Source Performance Standards
ODS: Official Date of Submittal
O3: Ozone
OP: Other Pollutant
OPTC: Operating Permit to Construct
Pb: Lead
PM: Particulate Matter
PM10: Particulate Matter with an Aerodynamic Diameter Less Than or Equal to 10 Micrometers
PM2.5: Particulate Matter with an Aerodynamic Diameter Less Than or Equal to 2.5 Micrometers
PSD: Prevention of Significant Deterioration
PSI(A): Pounds per Square Inch (Absolute)
PTE: Potential to Emit
RICE: Reciprocating Internal Combustion Engine
RO: Responsible Official
SCC: Source Classification Code
SCF: Standard Cubic Feet
SIC: Standard Industrial Classification
ACRONYMS AND ABBREVIATIONS

SF₆ .......... Sulphur Hexafluoride  
SO₂ .......... Sulfur Dioxide  
TBD .......... To Be Determined  
USC .......... United States Code  
USGS .......... United States Geological Survey  
UTM .......... Universal Transverse Mercator  
VOC .......... Volatile Organic Compounds
INTRODUCTION

This document is a detailed guide for completing an application for a Class I Air Quality Operating Permit. Each major section (numbered) covers one of the multiple forms and supplemental documents that will be submitted as part of the application. This application requires precise calculations and extensive details about the facility.

For additional questions, call (775) 687-9349.

This guide and its associated application forms can be found on the Nevada Division of Environmental Protection (NDEP) website.

3 THINGS TO REMEMBER BEFORE STARTING

1. When filling out the application, complete every blank or explain why no information is provided. Specify "N/A" (Not Applicable) if necessary. Any field left blank may cause the application to be deemed incomplete. If the application is deemed incomplete, the application fee will be returned to the facility along with a checklist that shows which items are missing.

2. The Bureau of Air Pollution Control (BAPC) treats permit renewals just like new applications. Make sure to submit all pages of the application and all required attachments.

3. If revising a permit, the facility must still submit all pages of the application and attachments. However, only include emission unit forms for new or revised units.

WHAT IS A CLASS I SOURCE?

A facility is a Class I source if one or more of the following criteria are met:

- Has a facility-wide Potential to Emit (PTE) ≥ 100 tons per year of any criteria pollutant. Criteria pollutants include PM$_{10}$, PM$_{2.5}$, CO, NO$_X$, SO$_2$, VOC, H$_2$S, and Pb.
- Is subject to the federal requirements under 40 Code of Federal Regulations (CFR) Part 70 Title V Program. The Title V program was established by the U.S. Congress as part of the 1990 Clean Air Act (CAA) Amendments which requires major sources of air pollutants, and certain other sources, to obtain, and operate in compliance with an operating permit (in this case, a Title V permit). It should be noted that any facility that is considered a Class I source is automatically subject to Title V requirements. Additionally, Class I operating permits are also called Title V permits. A source may request a state-only Class I operating permit to construct before obtaining a Class I operating permit in most cases.
- Is subject to a federal subpart requirement (e.g. 40 CFR Part 63 New Source Performance Standards (NSPS) Subpart EEEEEE) that would require a Title V permit.
- Is a Major Stationary Source (40 CFR Part 52.21(b)(1)(i)) with a facility-wide PTE ≥ 250 tons per year of any regulated New Source Review (NSR) pollutant or ≥ 100 tons per year of any regulated NSR pollutant for sources classified as one of the 28 Source Categories.
- Is a Major Source of Hazardous Air Pollutants (HAPs) (40 CFR Part 63.2) which emits $> 10$ tons per year of any individual HAP and/or $> 25$ tons per year of a combination of HAPs.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Class I Threshold PTE (tons per year)</th>
<th>Class I PSD 28 Source Categories Threshold PTE (tons per year)</th>
<th>Class I PSD Threshold PTE (tons per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Particulate Matter with an Aerodynamic Diameter Less Than or Equal to 2.5 Micrometers</strong></td>
<td>PM$_{2.5}$ 100</td>
<td>100</td>
<td>250</td>
</tr>
<tr>
<td><strong>Particulate Matter with an Aerodynamic Diameter Less Than or Equal to 10 Micrometers</strong></td>
<td>PM$_{10}$ 100</td>
<td>100</td>
<td>250</td>
</tr>
<tr>
<td><strong>Carbon Monoxide</strong></td>
<td>CO 100</td>
<td>100</td>
<td>250</td>
</tr>
<tr>
<td><strong>Volatile Organic Compounds</strong></td>
<td>VOC 100</td>
<td>100</td>
<td>250</td>
</tr>
<tr>
<td><strong>Nitrogen Oxides</strong></td>
<td>NO$_x$ 100</td>
<td>100</td>
<td>250</td>
</tr>
<tr>
<td><strong>Sulfur Dioxide</strong></td>
<td>SO$_2$ 100</td>
<td>100</td>
<td>250</td>
</tr>
<tr>
<td><strong>Lead</strong></td>
<td>Pb 100</td>
<td>100</td>
<td>250</td>
</tr>
<tr>
<td><strong>Hydrogen Sulfide</strong></td>
<td>H$_2$S 10</td>
<td>100</td>
<td>10</td>
</tr>
<tr>
<td><strong>Hazardous Air Pollutants (Individual)</strong></td>
<td>HAPs 10</td>
<td>100</td>
<td>10</td>
</tr>
<tr>
<td><strong>Hazardous Air Pollutants (Combined)</strong></td>
<td>HAPs 25</td>
<td>250</td>
<td>25</td>
</tr>
</tbody>
</table>

When determining PTE, treat any physical or operational limitation on the capacity of the facility to emit a pollutant as part of its design. These limitations may include equipment that controls air pollution, restrictions on the hours of operation, or limits on the type or amount of material combusted, stored, or processed.

**Think the facility falls below Table 1 thresholds?**

If the facility thinks the emissions of the facility are below the Table 1 thresholds, complete a Class II Air Quality Operating Permit Application Form instead.

Find the form on the NDEP website

**APPLICATION SUBMITTAL AND PROCESSING TIMELINE**

In order to start processing the application, both the application packet and fee must be received in accordance with NAC 445B.327.

Mail or hand deliver the application and fee(s), payable by check, to the following address:
When submitting an electronic payment, include the facility’s name and, if applicable, its existing permit number and facility identification number. The application and fees are date stamped when received. The regulatory time frame for the BAPC to issue a Class I Air Quality Operating Permit (AQOP) varies by permitting action (see Table 2).

*Fees may also be submitted online.*

**Bind the physical copies of the application.**

Ensure the physical application contains the wet signature of the responsible official on the Certification Document page (See “Application Certification Document”).

<table>
<thead>
<tr>
<th>Type of Permit</th>
<th>NAC Reference</th>
<th>Completeness Period</th>
<th>Preliminary Determination to Issue or Deny (Days after ODS)</th>
<th>30 Day Public Notice Period</th>
<th>45 Day EPA Review</th>
<th>Issue or Deny (Days after ODS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1 PSD</td>
<td>445B.3395</td>
<td>30 Days*</td>
<td>180</td>
<td>Yes</td>
<td>Yes</td>
<td>365</td>
</tr>
<tr>
<td>Class 1 OPTC PSD</td>
<td>445B.3364</td>
<td>30 Days*</td>
<td>180</td>
<td>Yes</td>
<td>Yes</td>
<td>365</td>
</tr>
<tr>
<td>Class 1 New</td>
<td>445B.3395</td>
<td>60 Days</td>
<td>180</td>
<td>Yes</td>
<td>Yes</td>
<td>365</td>
</tr>
<tr>
<td>Class 1 Renewal</td>
<td>445B.3395</td>
<td>60 Days</td>
<td>180</td>
<td>Yes</td>
<td>Yes</td>
<td>365</td>
</tr>
<tr>
<td>Class 1 Significant Revision</td>
<td>445B.3395</td>
<td>60 Days</td>
<td>180</td>
<td>Yes</td>
<td>Yes</td>
<td>365</td>
</tr>
<tr>
<td>Class 1 Minor Revision</td>
<td>445B.3395</td>
<td>10 Working Days</td>
<td>45</td>
<td>**</td>
<td>Yes</td>
<td>90</td>
</tr>
<tr>
<td>Class 1 Administrative Revision</td>
<td>445B.3441</td>
<td>45 Days</td>
<td>90</td>
<td>Yes</td>
<td>Yes</td>
<td>180</td>
</tr>
<tr>
<td>Class 1 OPTC</td>
<td>445B.3364</td>
<td>45 Days</td>
<td>90</td>
<td>Yes</td>
<td>No</td>
<td>180</td>
</tr>
<tr>
<td>Class 1 OPTC Revision</td>
<td>444B.3364</td>
<td>45 Days</td>
<td>90</td>
<td>Yes</td>
<td>No</td>
<td>180</td>
</tr>
<tr>
<td>Class 1 Notification of Authorized Change</td>
<td>445B.342</td>
<td>Provide Notification 7 Days Before Change</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrative Amendment</td>
<td>445B.319</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30 Days After Receipt</td>
</tr>
<tr>
<td>Request for Change of Location</td>
<td>445B.331</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10 Days After Receipt</td>
</tr>
</tbody>
</table>
*The application shall be deemed complete for the purposes of 40 CFR Part 52.21 on the date that the Director makes the preliminary determination to issue or deny the Class I operating permit or the revision of the Class I operating permit (or OPTC).

**Not required if the Director determines that the minor revision does not result in a significant change in air quality at any location where the public is present on a regular basis.

** REGULATIONS AND STATUTES BEHIND THIS APPLICATION **

There are a few important Nevada Administrative Code (NAC) and Nevada Revised Statute (NRS) chapters that need to be reviewed before beginning this application:

- **Regulations on this application and processing fees** — NAC 445B.3361 and NAC 445B.327
- **Statement of purpose** — NRS 445B.100 through 445B.640, and NAC 445B.001 through 445B.3689.
- **Nevada Standards of Quality for Ambient Air and allowable emission concentrations** — NAC 445B.22097

1. **COVER PAGE**

The cover page is the first page of the application, which includes the type of application and whether the facility is new or existing.

**Facility Name** – A company may have several facilities. Provide the name of the facility. If there is no facility name available, write the company name here. The company name will also be requested on page 4 of the application.

**Existing Facility ID** – A facility identification number (FIN) is only required if the facility already has a permit. On existing operating permits, the FIN is in the header section as Facility ID No. AXXXX (Example: A1234). If the facility currently does not have a permit, specify “N/A.”

**Existing Class I AQOP/OPTC** – This refers to the existing permit number located in the header section (Example: Permit No. AP1499-3576). If the facility does not currently have a Class I Air Quality Operating Permit, specify “N/A.”

**Type of Facility** – Specify the general activity at this facility (e.g. Gold Mine).

**Number of Units (including IA’s) in Facility and Number of Units (including IA’s) Affected in Action** – Specify how many emission units are in the application. This will also include insignificant activities.

**Application Type** – The application can be submitted for a new AQOP, minor revision of existing AQOP, significant revision of existing AQOP, renewal of existing AQOP, new OPTC, Rollover OPTC to a new AQOP, Rollover OPTC to existing AQOP, Revision of OPTC, administrative revision of existing AQOP, new PSD, major PSD revision of AQOP, new PSD OPTC, major PSD revision of OPTC. Check the box for all that apply for this permitting action.
2. IMPORTANT INFORMATION

The application contains a section titled “Important Information.” Read this information carefully before completing the application. It contains a list of application forms, due dates, regulations, and fee(s) associated with a permit.

3. GENERAL COMPANY INFORMATION FORM

The General Company Information Form requests a brief description of the operations of the facility, the contact and mailing information of the company, the responsible official (RO) of the facility, the plant manager or other appropriate contact, and the location and driving directions to the facility.

Section 1: Facility’s process — Provide an overview of the facility’s operations (Example: “The facility mines and processes iron ore”). This description should be brief. More detail will be given in the process narrative (see “Process Narrative”). A list of Standard Industrial Classification (SIC) numbers and a list of numbers from the North American Industry Classification System (NAICS) can be found online. Provide both SIC and NAICS.

Section 2: Company name and address — Provide the company name and address as you want it to appear on the permit.

Section 3: Owner’s name and address — Provide the name and address of the company owner. The owner is the person who owns, leases, operates, controls, or supervises the facility or a stationary source.

Section 4: Facility name and address — Provide the facility name and address if it is different than the company name and address in Section 2, or write “same as above.”

Section 5: Records location — Provide the location where all records required by the permit will be stored. If they will be on-site, rewrite the information from Section 4. If records will be stored at another location, insert the information for the location.

Section 6: Responsible official — Provide the name, title, and mailing address for the responsible official (RO). If the facility already has an air permit, the RO should be the same as what the BAPC already has on file.

Does the RO need to change?

Attach the RO Request Form stating who the new RO will be. This should be signed by the appropriate individual.
The RO can be:

1. For a corporation:
   (a) A president;
   (b) A vice president in charge of a principal business function;
   (c) A secretary;
   (d) A treasurer; or
   (e) An authorized representative of such a person who is responsible for the overall operation of the facility and who is designated in writing by an officer of the corporation and approved in advance by the director of the Nevada Department of Conservation and Natural Resources.
2. For a partnership or sole proprietorship, a general partner or the proprietor, respectively.
3. For a municipality or a state, federal, or other public agency, a ranking elected official or a principal executive officer, including, for a federal agency, a chief executive officer who has responsibility for the overall operations of a principal geographic unit of the agency.
4. For an affected source, the designated representative or his or her alternate, as defined in 42 U.S.C. § 7651a(26).

Section 7: Plant manager or other appropriate contact — This is the person the BAPC will communicate with when on site if the RO is not available. Provide the name, title, and contact information for a plant manager or other appropriate contact from the facility if it will not be the RO. For example, if the company president is the RO but is not physically at the facility, provide an appropriate contact who works on-site.

Section 8: Location and driving directions to the facility:

- Provide the hydrographic area (HA) number(s) and name, township(s), range(s), and section(s) of the facility;
- Provide the Universal Transverse Mercator (UTM) coordinates of the front gate of the facility. The UTM coordinates must be in metric units using North American Datum of 1983 (NAD 83), Zone 11;
- Describe the location of the facility with respect to the nearest road and city (such as 8th Street, Wells, Nevada) and the county the facility is located in;
- Provide driving directions from Carson City, Nevada to the facility.

Find the right maps.
The BAPC keeps online maps that can help determine HA basin number and names; township, section, and range; and UTM coordinates. Maps can be found online
Section 9: Emissions cap — Check the appropriate box when requesting an emissions cap. A federally enforceable emissions cap is a voluntary condition of the air quality operating permit which limits how much the facility can emit. This request is independent of any applicable requirement(s).\(^2\) It is recommended that the facility contacts the BAPC before requesting an emissions cap. If the facility is requesting an emissions cap, at a minimum, cover these points in the process narrative (see “Process Narrative”).\(^3\)

1. State each applicable requirement which the facility seeks to avoid;
2. Show that the facility will meet any applicable requirements not avoided by the cap;
3. Explain proposed conditions of the permit which will ensure compliance with any applicable requirement, including monitoring and recordkeeping conditions for each proposed federally enforceable emissions cap;
4. Give any additional information that NDEP or BAPC may determine necessary to process the application.

Section 11: Controls and Limit Restrictions — Check the appropriate box that defines the type of source.

The EPA defines a “major stationary source” as a stationary source of air pollutants which emits, or has the potential to emit, 100 tons per year or more of any regulated NSR pollutant under one of the 28 source categories (as defined under 40 CFR 52.21(b)(1)(iii)), or 250 tons per year or more of any regulated NSR pollutant (as defined under 40 CFR 52.21(b)(1)(i)(b)).

A “minor source” is defined as a source that emits or has the potential to emit regulated NSR pollutants in amounts that are less than the major source thresholds under the PSD program under 40 CFR 52.21.

The EPA describes a “new source review synthetic minor” source as a source that otherwise has the potential to emit regulated NSR pollutants in amounts that are at or above those for major sources in 40 CFR 49.167, 40 CFR 52.21 or 40 CFR 71.2, as applicable, but has taken a restriction so that its potential to emit is less than such amounts for major sources. Such restrictions must be enforceable as a practical matter (as defined in 40 CFR 49.152).

Section 12: Class I Federal Area — If the stationary source is within 100 km of a Class I Federal Area (Jarbidge Wilderness), 40 CFR 52.21(p) and 51.307 requires the operator of any new major stationary source or major modification that may affect visibility in Class I areas to provide written notification to the FLM, including the visibility analysis and all information relevant to their permit application.

Section 13: Significant Revision Determination — If any of the boxes are checked, the permit action is considered a significant revision pursuant to NAC 445B.344.

---

\(^2\) NAC 445B.070

\(^3\) NAC 445B.296(2)
Section 14: Phases of Construction — If construction will occur in more than one phase, the projected date of the commencement of construction of each phase of construction must be approved by NDEP or the BAPC. A Class I operating permit or the revision of a Class I operating permit for a new or modified stationary source, other than a stationary source subject to the provisions of 40 CFR 52.21 regarding the prevention of significant deterioration of air quality, expires if the initial phase of construction is not commenced within 18 months after the projected date of the commencement of construction approved by NDEP or the BAPC. NDEP or the BAPC may extend only the date on which the initial phase of construction may be commenced upon a showing that the extension is justified. (NAC 445B.3395(17))

Section 15: Applicable Requirements — Applicant must specify whether the facility will violate NAC 445B.019 “Applicable requirement” defined.

Section 16: Compliance Status — Applicant must be compliant with the following requirements. If the unit is not compliant, provide a compliance plan pursuant to NAC 445B.3368(h). If the unit is exempt from any of these requirements, explain why:

- NAC 445B.225 – Prohibited conduct: Concealment of emissions
- NAC 445B.315(3)(h), (i), & (k) – Contents of operating permits: Exception for operating permits to construct; required conditions
- 40 CFR 52.21(r)(4) – Prevention of significant deterioration of air quality: Source obligation
- NAC 445B.22067 – Open burning
- NAC 445B.22093 – Organic solvents and other volatile compounds
- NAC 445B.22037 – Emissions of particulate matter: Fugitive dust
- NAC 445B.227 – Prohibited conduct: Operation of source without required equipment; removal or modification of required equipment; and modification of required procedure
- NAC 445B.252 – Testing and Compliance
- 40 CFR Parts 60.1-60.19, 61.01-61.19, 61.140-61.157, 63.1-63.15, and 70
- 40 CFR Part 82 – Protection of stratospheric ozone
- NAC 445B.230 – Plan for reduction of emissions
- NAC 445B.22017 – Visible emissions: Maximum opacity; determination and monitoring of opacity
- NRS 445B.470 – Test station: Display of licenses; availability of reference information
- NAC 445B.22013 – Hazardous air pollutants and toxic regulated air pollutants: Prohibited discharge
- NAC 445B.326(1) – Operating permits: Assertion of emergency as affirmative defense to action for noncompliance
- NAC 445B.22087 – Odors
- NAC 459.952 - 459.95528 – Regulations of highly hazardous substances and explosives
Section 17: Non-Combustion Baghouse Testing — The information provided will be used to determine testing frequencies of particulate matter emissions for non-combustion baghouses. Non-combustion baghouses that only control laboratories or silos that are not in constant use are exempt from this program. One of the main factors in determining testing frequency is the air dispersion model. The facility may choose to opt-in to a special program and model all applicable non-combustion baghouses as individual sources. This could potentially increase testing frequencies of applicable baghouses that contribute more emissions to the ambient air quality and potentially decrease frequencies of other applicable baghouses. A facility that wants to utilize this program must submit air dispersion modeling files for all applicable baghouses.

Failing to provide all required documents may result in a delay in permit issuance or the application being deemed incomplete. A rolling 60-month period for compliance history will also be used to determine testing frequencies. Facilities that maintain good compliance status will have reduced testing requirements. Facilities that do not maintain compliance may have increased testing requirements. All testing requirement changes will occur through a Notice of Findings and Order. If additional information is desired, contact the permitting or compliance branch and see the Baghouse TDS guidance document located under Resources for All Sources of [https://ndep.nv.gov/air/permitting/download-permit-forms](https://ndep.nv.gov/air/permitting/download-permit-forms).
4. EMISSION UNIT APPLICATION FORMS

An emission unit is part of a facility which emits or has the potential to emit any regulated air pollutant. There are four different emission unit forms:

- **Industrial Process Application Form** — used for equipment that emits PM, PM$_{10}$, and PM$_{2.5}$ like hoppers, crushers, screens, and conveyor drop points. The equipment may be controlled by baghouses, water sprays, enclosures, or other methods. See Appendix 1 for an example of a completed Industrial Process Application Form.

- **Combustion Equipment Application Form** — used for heaters, engines, generators, emergency generators, and different control equipment such as thermal oxidizers. The equipment can be fueled with diesel oil, natural gas, propane, etc. See Appendix 2 for an example of a Combustion Equipment Application Form.

- **Storage Silo Application Form** — used for storage silo loading and unloading. The emissions commonly exit through a silo stack, chimney, or vent during these processes.

- **Liquid Storage Tank Application Form** — used for tanks storing liquid materials such as fuel, asphalt, waste oil, etc. The facility is not required to complete this form if the tank is attached to a unit (Example: a belly tank).

The facility must complete a form for every emission unit and transfer point. If the facility has more than one emission unit of a given type (Example: multiple liquid storage tanks), the facility must complete a separate form for each. Include as many additional forms as needed.

The facility must also complete separate forms for every unit considered an insignificant activity (see page 11). Print out and attach additional forms as necessary. Any field left blank may cause the application to be deemed incomplete.

In the detailed emission calculations, include the emission calculations for all emission units (see “Detailed Emission Calculations”).

**If the permit is being revised**, only complete emission unit forms for the units that plan to be changed, upgraded, or revised. Detail these revisions in the process narrative (see “Process Narrative”).

Remember to fill out every field!

Empty fields may make the application incomplete, resulting in delays and the return of the application.

---

4 NAC 445B.059

Guidance Document for Class I Air Quality Operating Permit Application 11
GENERAL APPLICATION FORM INFORMATION

Each of the four emission unit application forms require the same information on the top of the page before the detailed table.

**System Number and Name** — Give each system a number and name a group of one or more units. A system contains emission units that are part of the same process (Example: Secondary Crusher and Associated Transfers).

**Emission Unit Description** — Give each emission unit a name and a system number for units in the same system. A system contains emission units that are part of the same process (Example: a screening process and associated conveyors) or are controlled by the same air pollution control equipment (Example: all stacks lead to one baghouse). Emission units can be grouped in systems (Example: System 1 – Conveyor 1; System 1 – Screen 1; etc.). If a system has multiple units, please provide an emission unit application form for each unit.

**Alternative Operating Scenario** — Check “Yes” if the emission unit is part of an alternative process or can operate in multiple ways. “Yes” signifies that there is an alternative operating scenario, and the forms are filled out the same as for any other permitted unit. An example of an alternative operating scenario is a heater that can operate on natural gas or propane.

**Insignificant Activity** — Check “Yes” or “No” to indicate if the emission unit is considered an insignificant activity (IA) pursuant to NAC 445B.288. Provide the appropriate emission unit form for all IA emission units. The BAPC uses these forms for air dispersion modeling.

Proposed insignificant activities not listed under NAC 445B.288(2) must be submitted, under separate cover pursuant to NAC 445B.288(4), to the director of the BAPC for approval.

In the proposal, include a clear description of the emission unit(s), all emissions calculations based on unlimited annual hours of operation (see “Detailed Emission Calculations”), and emission factor references pursuant to NAC 445B.288(4). If the IA has been previously approved by the BAPC, send us a copy of the original approval letter. Engines, generators, and gasoline tanks subject to federal regulations cannot be considered IAs.

**Subject to a Federal Regulation (40 CFR Part 60, 61, or 63)** — Check the appropriate box to indicate if the emission unit is subject to any of these federal regulations:

- 40 CFR Part 60 — Standards for Performance for New Stationary Sources

Include calculations for IA emission limits in the detailed emission calculations (see “Detailed Emission Calculations”). In addition, include the total IA emission limits in the Facility-Wide Potential to Emit Table (see, “Facility-Wide Potential to Emit”). Make sure to include the VOCs calculated from the tank emissions.

---

5 NAC 445B.288(1) and NAC 445B.288(2)
4.1 Equipment Description

Each of the four emission unit application forms have a section titled “Equipment Description”. While much of this information is the same for all four forms, there is some unique information. We’ve indicated unique information in italics, below.

**BAPC Emission Unit ID and System Number** — Write “N/A” if the emission unit is not currently in the permit or if this is an application for a new permit. If the facility has an existing permit, use the pre-existing emission unit IDs and system numbers. The facility may choose to change emission unit IDs and system numbering, but must still reference pre-existing emission unit IDs and system number. Emission unit IDs are assigned based on release type (**Example:** if the release type is a stack, the emission unit ID will be formatted as S2.XXX. Process fugitive release will be formatted as PF1.XXX. IA will be formatted as IA1.XXX).

**Source Classification Code (SCC)** — The Environmental Protection Agency uses source classification codes to categorize sources of air pollution. The facility may find the appropriate SCC online.

MORE ON SCCs

There are four levels of source description, associated with the first 1, 3, 6, and 8 digits of the codes:

The first level (and digit) describes the most general information on the category of the emissions.

The second level (and first 3 digits) subdivides the five major categories into major industry groups (**Example:** 1-02 indicates external combustion in industrial boilers).

The third level (and first 6 digits) specifies the industry or emission source category (**Example:** 1-02-010 indicates it is for electric generation and uses liquefied petroleum gas).

The fourth level (all 8 digits) specifies the particular emitting process within the third-level source category (**Example:** 1-02-010-02 specifies it is propane).

**Manufacturer** — Provide the name of the manufacturer of the equipment. Write “unknown” if the manufacturer of the equipment is unknown.

**Date Manufactured** — Provide the year and, if possible, the month when the equipment was manufactured. Write “unknown” if the manufactured date of the equipment is unknown.

**Model Number** (**For Industrial Process, Storage Silo, and Liquid Storage Tank Only**) — Provide the model number of the equipment. Write “unknown” if the model number of the equipment is unknown.

**Model and Serial Number** (**For Combustion Equipment Only**) — Provide the model and the serial number of the equipment. Write “unknown” if the model or serial number of the equipment is unknown.

**Equipment Dimensions** (**For Industrial Process, Storage Silo, and Liquid Storage Tank Only**) — Provide the length (L), width (W), and height (H) of the equipment in feet.
**Drop Dimensions** (*For Industrial Process and Storage Silo Only*) — The drop length is the distance the material falls at a transfer point. The drop height indicates the distance relative to the ground. The drop height can be measured from the top of the drop length, the middle of the drop length, or the bottom of the drop length. The horizontal dimensions refers to the width of the transfer point. Refer to Figures 1 and 2:

![Figure 1: Drop Dimensions Diagram - Pile](image)

**Figure 1: Drop Dimensions Diagram - Pile**
Figure 2: Drop Dimensions Diagram – Conveyor

**Emissions Released Inside Building?** *(For Industrial Process, Combustion Equipment, and Storage Silo Only)* — Specify “Yes” if emissions are released inside a building. If not, specify “No.”

**Heated or Non-Heated Tank** *(For Liquid Storage Tank Only)* — Specify if the emission unit is a heated or non-heated storage tank.

**Shell Height** *(For Liquid Storage Tank Only)* — Provide the shell height of the storage tank in feet.

**Shell Diameter** *(For Liquid Storage Tank Only)* — Provide the shell diameter of the storage tank in feet.

**Maximum Liquid Height** *(For Liquid Storage Tank Only)* — Provide the maximum liquid height of the stored material in feet.

**Average Liquid Height** *(For Liquid Storage Tank Only)* — Provide the average liquid height of the stored material in feet.

**Capacity of Tank** *(For Liquid Storage Tank Only)* — Provide the capacity of the storage tank in gallons.

**Shell Color** *(For Liquid Storage Tank Only)* — Provide the color of the shell (white, gray, aluminum, red primer, etc.).

**Roof Condition** *(For Liquid Storage Tank Only)* — Provide a description of the condition of the roof (bad, good, excellent, etc.).

**Roof Type** *(For Liquid Storage Tank Only)* — Indicate if the tank has a cone, dome, external, or internal floating roof.

**Roof Height** *(For Liquid Storage Tank Only)* — For a cone or dome roof, specify the roof height in feet.
**Cone Roof Slope** *(For Liquid Storage Tank Only)* — For a cone roof, specify the roof slope in feet per feet (ft/ft).

**Dome Roof Radius** *(For Liquid Storage Tank Only)* — For a dome roof, specify the radius of the roof in feet.

**True Vapor Pressure of Liquid** *(For Liquid Storage Tank Only)* — Provide the true vapor pressure of the liquid stored in pounds per square inch absolute (psia). The true vapor pressure is a measure of the volatility of petroleum distillate fuels.

**Reid Vapor Pressure Liquid** *(For Liquid Storage Tank Only)* — Provide the Reid vapor pressure of the liquid stored in pounds per square inch (psi). The Reid vapor pressure is a measure of the volatility of gasoline. It is the absolute vapor pressure exerted by a liquid at 100 °F.

**Orientation of Tank** *(For Liquid Storage Tank Only)* — Specify the orientation of the tank (horizontal or vertical).

**Submerged Fill** *(For Liquid Storage Tank Only)* — Provide information on the method of filling the storage tank.

### 4.2 For Reciprocating Internal Combustion Engines (RICE) Only

This section is only relevant to internal combustion engines and only appears on the Combustion Equipment Application Form. Most of this information may be found within the engine specification sheets provided by the manufacturer or on the engine nameplate. For extra guidance, please see the [RICE Frequently Asked Questions for Stationary Internal Combustion Engines](#).

**Type of Engine Code** — Provide the engine code (from the table below) that corresponds to the emission unit *(Example: an emergency spark ignition 4-stroke rich burn engine would have the code E-SI4SRB)*.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LU</td>
<td>Limited Use</td>
<td>E-SI</td>
<td>Emergency Spark Ignition</td>
</tr>
<tr>
<td>LDG</td>
<td>Landfill/Digester Gas</td>
<td>SI4SRB</td>
<td>Spark Ignition 4-Stroke Rich Burn</td>
</tr>
<tr>
<td>NECI</td>
<td>Non-Emergency Compression Ignition</td>
<td>SI4SLB</td>
<td>Spark Ignition 4-Stroke Lean Burn</td>
</tr>
<tr>
<td>ECI</td>
<td>Emergency Compression Ignition</td>
<td>SI2SLB</td>
<td>Spark Ignition 2-Stroke Lean Burn</td>
</tr>
</tbody>
</table>

**Date Constructed** — Provide the date the unit was originally constructed.

**Cylinder Displacement** — Provide the cylinder displacement of the RICE in liters per cylinder.

**EPA Tier #** — The EPA Tier Number refers to applicable 40 CFR Subpart regulations. For example, Table 1 of [40 CFR Part 89.112](#) has standards for oxides of nitrogen, carbon monoxide,

---

6 NAC 445B.22093(3)
hydrocarbon, and particulate matter exhaust. Typical subparts for RICEs include 40 CFR Part 60 Subparts IIII and IIII and 40 CFR Part 63 Subpart ZZZZ.

4.3 Location of Emission Source

All four emission unit application forms — Industrial Process, Combustion Equipment, Storage Silo, and Liquid Storage Tank — require the exact Universal Transverse Mercator (UTM) coordinates for the emission unit. The northing and easting UTM coordinates must be in metric units NAD 83 / UTM Zone 11. The BAPC uses each emission unit’s unique UTM coordinates for air dispersion modeling (even when modeling is not required by the applicant).

4.4 Operating Parameters or Operating Parameters/Fuel Usage

All four emission unit application forms have an “Operating Parameters” section or an “Operating Parameters/Fuel Usage” section. While much of this information is the same for all four forms, there is some unique information. Unique information has been indicated below in italics.

Material Type Processed (For Industrial Process and Storage Silo Only) — Provide the type of material processed such as aggregate, gold ore, gypsum, limestone, lime, prill, etc.

Batch Process (For Industrial Process and Storage Silo Only) — Batch processes measure material in batches instead of a continual hourly basis. Provide the amount of material used for each batch and the unit.

Material Type (For Liquid Storage Tanks Only) — Provide the material type processed or stored in the storage tank such as asphalt, recycled fuel oil, etc. If the stored material is a combination of multiple materials, list each material and its percentage of the total mass.

Fuel Type (For Combustion Equipment Only) — Provide the type of fuel the combustion unit will operate on. If more than one type of fuel is burned under the same operating scenario, specify the primary fuel and the percentage. If the primary fuel is a blend of multiple fuels, then identify the percentage of each fuel in the blend.

Fuel Flow Meter Installed (For Combustion Equipment Only) — Indicate to the BAPC if the facility is using a fuel flow meter on the combustion unit to track fuel usage.

Sulfur Content (For Combustion Equipment Only) — Provide the sulfur content, which can be obtained from the fuel supplier. This is the nominal percent, by weight, of sulfur in the fuel supply.

Heat Content (For Combustion Equipment Only) — Provide the heat content of the fuel being used. This value should be listed in the amount of heat (BTU) per unit of fuel combusted (pound, gallon, scf). If the facility includes a heat content value other than a default value listed below, provide documentation from the fuel supplier that shows the nominal heat content of the fuel. The facility must also give supporting documents if the facility prefers coal with a different heat content. The default heat content values are listed below:

---

**Maximum Throughput** *(For Liquid Storage Tanks Only)* — Provide the maximum throughput of the stored material in gallons per month and gallons per year.

**Start Time** *(For Industrial Process, Combustion Equipment, and Storage Silo Only)* — Provide the start time in this section. Specify “N/A” for the facility to have the flexibility to operate the equipment at any time and not have the start and end times listed in the permit. If the facility does not request a piece of equipment to operate 24 hours per day, the facility must list the exact hours of operation that the equipment will operate, such as 6:00 AM – 10:00 PM or 0600 – 2200.

**End Time** *(For Industrial Process, Combustion Equipment, and Storage Silo Only)* — Provide the end time in this section. Specify “N/A” if the facility would prefer to have the flexibility to operate the equipment at any time and not have the start and end times listed in the permit. If the facility does not request an emission unit to operate 24 hours per day, the facility must list the exact hours of operation that the equipment will operate, such as 6:00 AM – 10:00 PM or 0600 – 2200.

### 4.5 Control Equipment

**Manufacturer** — Provide the name of the company that manufactured the control equipment. Write “unknown” if the manufacturer of the equipment is unknown.

**Manufacturer’s Guarantee Included?** — If the facility is using a control efficiency from a manufacturer’s guarantee, provide a copy of the guarantee. The BAPC will not accept a control efficiency from a manufacturer’s guarantee without a copy of this information. The guarantee should be provided immediately after the form.

### 4.6 Stack Parameters

This section only appears on the Industrial Process, Combustion Equipment, and Storage Silo Process application forms.

**Stack Height** — Provide the height of the stack in feet.

**Stack Inside Diameter** — Provide the inside diameter of the stack in feet. If the diameter is non-cylindrical, provide the actual dimensions (LxW).

**Stack Temperature** — Provide the temperature of the pollutant exiting the stack in degrees Fahrenheit. Write “ambient” if the stack temperature is the same as the ambient air temperature.

**Stack Exit Velocity** — Provide the exit velocity of the pollutant exiting the stack in feet per second (ft/sec).

**Stack Release Type** — A vertical stack release type is the most common release type and is the default value when the Bureau of Air Quality Planning (BAQP) completes modeling. If the stack...
is capped, indicate if it is fixed or a flapper type. Contact the BAQP Modeling Group with any questions.

APPLICABLE REGULATIONS

4.7 Federal Regulations

List any applicable federal regulations. The following are examples:

- 40 CFR Part 60 – Standards Of Performance for New Stationary Sources
- 40 CFR Part 64 – Compliance Assurance Monitoring
- 40 CFR Part 73 – Sulfur Dioxide Allowance System
- 40 CFR Part 74 – Sulfur Dioxide Opt-Ins
- 40 CFR Part 76 – Acid Rain Nitrogen Oxides Emission Reduction Program

4.8 State Regulations

List any applicable state regulations. The following are examples:

- NAC 445B.2203 – Emissions of particulate matter: Fuel-burning equipment
- NAC 445B.22047 – Sulfur emissions: Fuel-burning equipment
- NAC 445B.22033 – Emissions of particulate matter: Sources not otherwise limited
- NAC 445B.22017 – Visible emissions: Maximum opacity; determination and monitoring of opacity
- NAC 445B.22096 – Control measures constituting BART; limitations on emissions

4.9 Work Practice Standards

Identify work practice standards (e.g. At all times, including startup, shutdown and malfunction, the emission unit will be operated in a manner consistent with good air pollution control practices).

4.10 Compliance Monitoring Devices or Activities

Identify and describe compliance testing, performance testing, monitoring devices, compliance plan, or other activities required to determine compliance with an applicable requirement (e.g. emissions from this unit will be monitored by Continuous Emissions Monitoring System (CEMS) and Continuous Opacity Monitoring System (COMS) for NOx, CO, and opacity) (see “EPA Testing Methods”, “CEMS Part 60 Requirements”, “CEMS Part 75 Requirements”).

5. DETAILED EMISSION CALCULATIONS

A table for detailed emission calculations has been provided to correspond with each type of emission unit application form. The submitted detailed emission calculations do not need to
follow the same format as those provided by the BAPC, as long as all of the information is included.

5.1 System Number and Name

See description provided in Section 4.

5.2 Emission Unit Description

See description provided in Section 4.

5.3 Operating Hours

Daily – Provide how many hours a day the equipment will be operating.

Annual – If the unit will operate 24 hours per day, 365 days per year, the Annual Operating Hours is 8,760 hours/year. If the unit will operate less, multiply the hours per day and the days per year of operation to obtain the Annual Operating Hours.

5.4 Throughput

Hourly – The Hourly Throughput Rate is the weight of material processed in one hour by the listed equipment.

Annual – For the Annual Throughput Rate, multiply the Hourly Throughput Rate by the Annual Operating Hours and convert to tons per year.

Units – The measurement of the throughput material (lbs, tons, gallons, scf, etc).

5.5 Control Equipment

Type of Control — Provide the type of control equipment used (baghouse, bin vent, enclosure, water spray, wet scrubber, thermal oxidizer, carbon vessel, etc.) and add a label and number (Baghouse BH-1). If an emission unit is not equipped with control equipment, write “no control” in this section.

Control Efficiency — Control efficiencies may be utilized for various types of controls including water sprays, enclosures, bin vents, etc. For baghouses, a manufacturer’s guarantee or source test is required if using an efficiency better than the default control efficiency. The BAPC will accept the following default control efficiencies:

<table>
<thead>
<tr>
<th>Emission Control Technology</th>
<th>Control Efficiency Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Sprays</td>
<td>75%</td>
</tr>
<tr>
<td>Enclosure</td>
<td>50%</td>
</tr>
<tr>
<td>Baghouse</td>
<td>0.02 grains/dscf</td>
</tr>
</tbody>
</table>

Pollutant(s) Controlled — List the regulated air pollutants controlled by the control equipment. For example: PM, PM$_{10}$ and PM$_{2.5}$.
Gas Volume Flow Rate — Provide the gas volume flow rate through the stack in actual cubic feet per minute (acfm) and in dry standard cubic feet per minute (dscfm).

5.6 Regulated Air Pollutants

Emission factors are used to calculate the requested emission limits for regulated and non-regulated pollutants. The throughput rate or fuel usage rate combined with the emission factor gives the emission limit of a pollutant (see “Operating Parameters or Operating Parameters/Fuel Usage”).

The facility may apply a safety factor to increase the emission limit. But make sure the emission limit doesn’t exceed any applicable standard (see “Standards of Quality for Ambient Air”).

Emission limits of applicable regulated air pollutants are required for each emission unit. The facility may have to calculate limits for multiple pollutants:

- **Particulate matter (PM):** material, except uncombined water, that exists in a finely divided form as a liquid or solid (i.e. steam) at reference conditions (NAC 445B.129).

- **PM₁₀:** particulate matter in the atmosphere with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by an approved reference method or equivalent method based on 40 CFR Part 50, Appendix J and designated in accordance with 40 CFR Part 53 (NAC 445B.135).

- **PM₂.₅:** particulate matter in the atmosphere with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers as measured by an approved reference method or equivalent method based on 40 CFR Part 50, Appendix L and designated in accordance with 40 CFR Part 53 (NAC 445B.1348).

- **Nitrogen oxides:** all oxides of nitrogen, except nitrous oxide, as measured by test methods approved by the EPA (NAC 445B.109).

- **Volatile organic compounds (VOCs):** any compound of carbon — excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate — which participates in atmospheric photochemical reactions (40 CFR § 51.100(s)).

- **Greenhouse gas:** any of the following gases, either alone or in combination (NRS 445B.137):
  - Carbon dioxide (CO₂)
  - Hydrofluorocarbons
  - Methane (CH₄)
  - Nitrous oxide (N₂O)
  - Perfluorocarbons
  - Sulphur hexafluoride (SF₆)

- **Other pollutants:** these may include carbon monoxide (CO), sulfur dioxide (SO₂), lead (Pb), and hydrogen sulfide (H₂S).
5.7 Emission Factor

Choose the appropriate emission factor for each emission unit and insignificant activity. Provide the calculations for the emission limits in both lb/hr and tons/year (See “Emission Factor”). The BAPC prefers these calculations in spreadsheet form and have provided a template with minimum requirements in the application. Example calculations have been provided in Appendices 3 through 9.

An emission factor is a measurement ratio that helps estimate how much of a pollutant is released over time. It links the quantity of a pollutant released to the atmosphere with an activity that generates the pollutant. The emission factor will help determine the emission rate. Emission factors are commonly expressed as a weight divided by a unit, volume, distance, or duration such as lb/MMBtu, lb/ton, or lb/1000 gallons.

There is only one row for the emission factors associated with Carbon Dioxide Equivalent (CO\textsubscript{2}e) and there are multiple CO\textsubscript{2}e pollutants. Calculate each CO\textsubscript{2}e pollutant in the Greenhouse Gas (GHG) Detailed Calculations.

There are a few ways the facility can find the appropriate emission factor for each pollutant:

- AP-42: Compilation of Air Emissions Factors
- Manufacturer’s specification sheets
- Source tests
- Guidance on Emission Factors for the Mining Industry

5.8 Emission Factor Reference

Provide a reference to the source where the facility found the emission factor (Example: AP-42 Ch. 11.19.2, Table 11.19.2-2). Emission factors should be chosen in accordance with NAC 445B.239.

For liquid storage tanks, use the EPA TANKs 4.09d (TANKs) software to calculate emission limits and determine emission factor back-calculation for volatile organic compounds (VOCs). The results from TANKs are reported in lb/year, and the facility must also convert the results to tons/year. Attach the TANKs report to the application.

TANKs software is available from the EPA’s website.

The facility may also use methods described in AP-42 Chapter 7 if the facility chooses not to use TANKS to estimate VOC emissions from the storage tank. Make sure to provide supporting documents for all parameters.

5.9 Emission Limits

The emission limit should be calculated in units of pounds per hour (lb/hr) and tons per year (tpy) for each air pollutant for the emission unit. Example calculations have been provided in Appendices 3 through 9.
5.10 HAPs and Other Pollutant(s)

Combustion units typically emit more than one Hazardous Air Pollutant (HAP). Include each individual HAP in the HAPs Detailed Calculations.

6. FACILITY-WIDE POTENTIAL TO EMIT TABLE

The Facility-Wide Potential to Emit (PTE) Table should record the total emissions per pollutant. In this table, include the sum of the emissions from all units — both permitted and insignificant activities. If the facility has air pollutants other than those listed in the table, include them under “Other Regulated Pollutants.”

If the facility is revising the permit, provide the PTE changes in the second table, titled “Revision Table.” In the “Change in Facility-Wide PTE” category, include the difference between the permitted PTE and the new, proposed PTE. For each pollutant, also write if these changes will increase or decrease the permitted PTE (+ / –). Add more columns for other regulated air pollutants, if needed.

7. SURFACE AREA DISTURBANCE FORM

By law, a facility may not cause or permit the handling, transporting or storing of any material in a manner which allows or may allow controllable particulate matter to become airborne.8 There are multiple proven methods for reducing airborne dust:

- Water trucks or water spray systems to control wind-blown dust
- Soil binding agents or chemical surfactants to treat roadways and areas of disturbed soil
- Wind-breaks or wind-limiting fences that are designed to limit wind erosion of soils

The Surface Area Disturbance Form requests the following information if the facility will produce dust:

**Total Acres of the Facility Site** — Provide the total size of the site in acres. Specify the total acreage within the fence line of your facility, including undisturbed areas, the facility area, and any asphalted areas.

**Total Acres Disturbed** — Provide the information of the total acres disturbed. When calculating the total acreage, all ground being disturbed, and all ground previously disturbed but not stabilized, must be measured.

**Surface Area Disturbance Location** — Provide the surface area disturbance location as Township(s), Range(s), and Section(s). Fill this form out even if the surface area disturbance will be less than 5 acres.

---

8 NAC 445B.22037
8. **PLANT BOUNDARY COORDINATES FORM**

Provide the UTM coordinates of each corner of the plant boundary. UTM coordinates must be in the NAD 83 Zone 11 datum. Areas considered “ambient air” — as defined in 40 CFR Part 50.1(e) and NAC 445B.018 — may not be included within the plant boundary. This is only required if an environmental analysis is not submitted.

9. **PLANT BUILDING PARAMETERS FORM**

Provide UTM coordinates for each building corner. This is only required if an environmental analysis is not submitted.

**Building Tier** — Provide the building height and UTM coordinates for each tier separately.

**Roof Height** — Provide the roof height measured from ground level.

**Building Diameter** — Provide the building diameter. Only required for cylindrical buildings (i.e., silos).

**Building UTM Coordinates** — UTM coordinates must be in the NAD 83 Zone 11 datum. Provide the UTM coordinates of the center of the building for cylindrical buildings/tiers. Provide sufficient UTM coordinates to define the footprint of the building/tier for all other buildings/tiers.

10. **ADDITIONAL REQUIRED ATTACHMENTS**

There are several other attachments that support and contextualize the information the facility provides elsewhere in the application. The BAPC uses these attachments to inform the public of facilities that need permits, prepare the technical review supporting the permit, verify data used in the application, and write permit conditions. Please draft the required attachments in a readable format, with both appropriate font and size.

These attachments are an important part of the application. The BAPC may have to reject the application if the required attachments are illegible or incomplete.
PROCESS NARRATIVE

The process narrative should describe all processes in the application and any renewal or revision details. The goal is to give the BAPC a clear picture of the process of the facility so the BAPC can understand how the facility will monitor emissions and know what to write into the permit. Make sure the process narrative matches the process flow diagram.

Here’s a basic outline to follow when drafting the process narrative:

- Specify the location of the facility and its parent company, if part of a larger business (Example: Arturo Mine is located 45 miles Northwest of Elko in Elko County, Nevada, Hydrographic Area 61 – Boulder Flat. The mine is part of the Nevada Gold, LLC.).
- Describe what the facility does (Example: mining gold ore, crushing and screening aggregates, etc).
- Describe the emission units (equipment) used at the facility. Make sure to discuss both permitted units and insignificant activity units. The description should outline how the emission units work together as part of a larger process. Include information that helps describe what the facility does and how it functions.
- Characterize all regulated air pollutants that may be emitted by each emission unit.
- Discuss the emissions cap, if applicable (See “Section 9: Emissions Cap” under “General Company Information Form”)
- If the facility is requesting a revision, explain what is going to change and why it is necessary.
- Outline how and where the facility will be monitoring throughputs to show compliance.

PROCESS FLOW DIAGRAM(S)

A process flow diagram is a drawing that illustrates how all processes are interconnected. The process flow diagram should include each emission unit(s), drop point(s), and minimum requirements as described in our Guidance Document for Process Flow Diagrams.

Only include information that is relevant to air pollution control. The facility does not need to include the locations of valves and electrical and water plans.
SITE PLANS

Provide the site plan of the entire facility (drawn to scale). Include the dimensions scale and north arrow. The site plan should include the UTM coordinates (NAD 83 / UTM Zone 11) as well as the dimensions and heights of buildings, though this can be formatted as an excel table for UTM coordinates (NAD 83 / UTM Zone 11) and dimensions and heights of buildings. Make sure the facility site plan indicates and labels the locations of systems.

MAPS: FACILITY LOCATION AND AREA MAP OF THE FACILITY

Submit the following maps as visible, readable printouts (color optional):

1. A vicinity map that shows the location of the facility with respect to the nearest recognizable city, town, and major road, all labeled. Outline the facility.

2. An area map of the facility with a closer, aerial view that includes the fence line, all buildings, the location of the front gate, and emission unit locations (clearly labeled).

ENVIRONMENTAL EVALUATION (AERMOD AIR DISPERSION MODELING REPORT AND ELECTRONIC INPUT FILES)

Air dispersion modeling is part of routine environmental evaluations\(^9\) to make sure facilities in Nevada meet air quality standards (see “Standards of Quality for Ambient Air”). Such models give us a technical basis for issuing a Class I air permit. The facility must submit an environmental evaluation if: \(^10\)

1. The facility is renewing a permit or seeking a new permit for a facility that emits, or has the potential to emit, greater than 25 tons of a regulated air pollutant per year; and

2. The facility is revising a permit for a facility with a proposed emissions increase greater than 10 tons per year of a regulated air pollutant.

While the BAPC uses the Environmental Protection Agency’s AERMOD modeling system to model the movement of regulated air pollutants, the facility may use other modeling platforms with approval from the EPA Model Clearinghouse. For questions regarding environmental evaluations and modeling, please contact the NDEP Bureau of Air Quality Planning at (775) 687-9349 and ask for the modeling supervisor.

\(^9\) NAC 445B.311(4).
\(^10\) NAC 445B.310, NAC 445B.311
### 10.1 Standards of Quality for Ambient Air

<table>
<thead>
<tr>
<th>POLLUTANT</th>
<th>AVERAGING TIME</th>
<th>CONCENTRATION C</th>
<th>METHOD</th>
<th>PRIMARY C, E</th>
<th>SECONDARY C, F</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>8 hours</td>
<td>0.075 ppm</td>
<td>Chemiluminescence</td>
<td>0.070 ppm</td>
<td>Same as primary</td>
<td>Chemiluminescence</td>
</tr>
<tr>
<td>Ozone-Lake Tahoe Basin, #90</td>
<td>1 hour</td>
<td>0.10 ppm (195 µg/m³)</td>
<td>Ultraviolet absorption</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Carbon monoxide less than 5,000' above mean sea level</td>
<td>8 hours</td>
<td>9 ppm (10,500 µg/m³)</td>
<td>Nondispersive infrared photometry</td>
<td>9 ppm (10 mg/m³)</td>
<td>None</td>
<td>Nondispersive infrared photometry</td>
</tr>
<tr>
<td>At or greater than 5,000' above mean sea level</td>
<td>1 hour</td>
<td>6 ppm (7,000 µg/m³)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Carbon monoxide at any elevation</td>
<td>1 hour</td>
<td>35 ppm (40,500 µg/m³)</td>
<td>Annual arithmetic mean</td>
<td>35 ppm (40 mg/m³)</td>
<td>None</td>
<td>Gas phase chemiluminescence</td>
</tr>
<tr>
<td>Nitrogen dioxide</td>
<td>1 hour</td>
<td>100 ppb</td>
<td>--</td>
<td>100 ppb</td>
<td>None</td>
<td>--</td>
</tr>
<tr>
<td>Sulfur dioxide</td>
<td>Annual arithmetic mean</td>
<td>0.030 ppm (80 µg/m³)</td>
<td>Ultraviolet fluorescence</td>
<td>0.03 ppm¹¹ (1971 standard)</td>
<td>None</td>
<td>Spectrophotometry (Pararosaniline method)</td>
</tr>
<tr>
<td></td>
<td>24 hours</td>
<td>0.14 ppm (365 µg/m³)</td>
<td>--</td>
<td>0.14 ppm¹¹ (1971 standard)</td>
<td>None</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>3 hours</td>
<td>0.5 ppm (1,300 µg/m³)</td>
<td>None</td>
<td>0.5 ppm</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>1 hour</td>
<td>75 ppb</td>
<td>--</td>
<td>75 ppb</td>
<td>None</td>
<td>--</td>
</tr>
<tr>
<td>Particulate matter as PM₁₀</td>
<td>Annual arithmetic mean</td>
<td>None</td>
<td>High volume PM₁₀ (sampling)</td>
<td>None</td>
<td>None</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>24 hours</td>
<td>150 µg/m³</td>
<td>High volume PM₁₀ sampling</td>
<td>150 µg/m³</td>
<td>Same as primary</td>
<td>High or low volume PM₁₀ sampling</td>
</tr>
<tr>
<td>Particulate matter as PM₂.₅</td>
<td>Annual arithmetic mean</td>
<td>12.0 µg/m³</td>
<td>--</td>
<td>12.0 µg/m³</td>
<td>Same as primary</td>
<td>Low volume PM₂.₅ sampling</td>
</tr>
<tr>
<td></td>
<td>24 hours</td>
<td>35 µg/m³</td>
<td>--</td>
<td>35 µg/m³</td>
<td>Same as primary</td>
<td>--</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>Rolling 3 mo. average</td>
<td>0.15 µg/m³</td>
<td>High volume sampling, acid extraction and atomic absorption spectrometry</td>
<td>0.15 µg/m³</td>
<td>Same as primary</td>
<td>High volume sampling, acid extraction and atomic absorption spectrometry</td>
</tr>
<tr>
<td>Hydrogen sulfide</td>
<td>1 hour</td>
<td>0.08 ppm (112 µg/m³)¹</td>
<td>Ultraviolet fluorescence</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

### 10.2 Information Required by the BAPC for Modeling Purposes
Provide the following information as an attachment for all permitted and IA emission units (unless the requested information is already given in another section of the application):

- Emission limit calculations, in spreadsheet form, of all regulated air pollutants (in pounds per hour (lb/hr)).
- UTM coordinates (in meters, NAD 83 / UTM Zone 11) of the locations of all the permitted and IA emission units.
- Stack parameters (height, diameter (or stack dimensions if non-circular), flow rate, temperature, location, etc.).
- Release dimensions for process fugitive emissions (transfer release height, drop distance, width of transfer).
- Tank dimensions and their UTM coordinates.
- Building height in feet and the NAD 83 UTM coordinates of each corner of each building.
- For tanks with a capacity greater than 10,000 gallons: tank height in feet and the NAD 83 UTM coordinates of each corner of the tank if the tank is rectangular or the tank height and radius along with the UTM coordinates of the center if the tank is cylindrical.
- Facility plot plan with fence line boundary and UTM coordinates as requested in Chapter 8 Plant Boundary Coordinates Form and Chapter 9 Plant Building Parameters Form.
- Topographic Map (with scale and North arrow) as requested in Chapter 10.5 Maps.

10.3 Air Dispersion Modeling Submitted by Applicant

Provide all model input files required to perform the air dispersion modeling performed with the latest version of AERMOD. Provide a digital copy and a written report containing all the information above, as well as the meteorological data, terrain, receptors and grid spacing, the pollutants the model was run for, and the results table showing either passing or failing the Standards of Quality for Ambient Air in accordance with NAC 445B.22097.
MANUFACTURER’S GUARANTEE CERTIFICATIONS AND EQUIPMENT SPECIFICATION SHEETS

There are three instances when the facility should include a manufacturer’s guarantee:

1. **To show emission limits** for all engines required to meet emission limits from a federal subpart.

2. **To show maximum fuel usage** for engines without a fuel flow meter or a procedure to determine their fuel usage (see “Operating Parameters or Operating Parameters/Fuel Usage”).

3. **To support control efficiency or emissions calculations** for all other emission units based on a manufacturer’s guarantee (see “Guidance on Emission Factors for the Mining Industry”).

Manufacturer’s guarantees are important.
The BAPC may be required to apply the uncontrolled emission factor to calculate the emission limit(s) if the facility does not attach these documents.

SOURCE (STACK) TESTING DATA

Attach any source testing data used to estimate emissions.

TANKS EMISSIONS ESTIMATES

Perform TANKs modeling in order to estimate emission limits from liquid storage tanks storing petroleum or VOCs. TANKs 4.0.9d modeling software can be found on EPA’s website. The TANKs report will show the VOC emission limit in pounds. Use this value to calculate the VOC emission limit in pounds per hour (lb/hr) and tons per year (tpy) and to back-calculate the emission factor for the storage tank.

Include the TANKs report for all permitted and IA storage tanks within the application. If the facility does not want to use TANKS to estimate annual VOC emissions from the storage tank, the methodology outlined in AP-42 Chapter 7 can be used. (see “Detailed Emission Calculations”)

11. APPLICATION CERTIFICATION DOCUMENT

The last page of the Class I air permit application packet is the Application Certification Document — a short summary of the required documents in the application. It must be signed \textit{in ink} by the responsible official (RO) of the company or facility.

Check the boxes next to each submitted document, and make sure the Application Certification Document is signed by the RO listed in Section 6 of the General Company Information Form. Create a digital copy of the application, including all requested documents, and submit a digital and hard copy of the application with the application processing fee. The complete application package can be mailed or hand delivered to the BAPC office (see “Application Submittal and Processing Timeline”).

12. MAINTENANCE/ANNUAL FEES

See “How much does a permit cost?” online under the “Permit Guidance” page.
Appendix 1

INDUSTRIAL PROCESS APPLICATION FORM EXAMPLE
INDUSTRIAL PROCESS APPLICATION FORM
CLASS I OPERATING PERMIT

System Number and Name: System 1 – North Creek Crusher Circuit
Emission Unit Description: Conveyor C-3 to Conveyor C-4

Alternative Operating Scenario: Yes ☒ No ☐
Insignificant Activity: Yes ☐ No ☒ If yes, identify exemption regulation: ________________________
Subject to a Federal Regulation (40 CFR Part 60, 61, or 63): Yes ☐ No ☒ If yes, identify in attached Process Narrative.

<table>
<thead>
<tr>
<th>Description</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAPC Emission Unit ID Applicable for Renewal or Revision</td>
<td>eg. Unit ID: S2.001, PF1.001 S2.001</td>
</tr>
<tr>
<td>Source Classification Code (SCC)</td>
<td>e.g. 3-03-024-04 for Conveyors 3-05-002-17</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Industrial Products Inc.</td>
</tr>
<tr>
<td>Date Manufactured</td>
<td>2006</td>
</tr>
<tr>
<td>Model Number</td>
<td>HF938271-d</td>
</tr>
<tr>
<td>Equipment Dimensions (LxWxH) Feet</td>
<td>2’ x 2’ x 9’</td>
</tr>
<tr>
<td>Drop Length if applicable Feet</td>
<td>5’</td>
</tr>
<tr>
<td>Drop Height if applicable Feet</td>
<td>5’</td>
</tr>
<tr>
<td>The drop height is measured from the ☐ top of the drop length ☐ middle of the drop length ☐ bottom of the drop length, in reference to the ground. Choose one, if applicable</td>
<td></td>
</tr>
<tr>
<td>Drop Horizontal Dimension 1 if applicable Feet</td>
<td>10’</td>
</tr>
<tr>
<td>Drop Horizontal Dimension 2 if applicable Feet</td>
<td>5’</td>
</tr>
<tr>
<td>Emissions Released Inside building? yes/no</td>
<td>No</td>
</tr>
<tr>
<td>Location of Emission Source</td>
<td></td>
</tr>
<tr>
<td>UTM Northing (NAD 83, Zone 11) M</td>
<td>4,410,203</td>
</tr>
<tr>
<td>UTM Easting (NAD 83, Zone 11) M</td>
<td>331,732</td>
</tr>
<tr>
<td>Operating Parameters</td>
<td></td>
</tr>
<tr>
<td>Material Type Processed</td>
<td>Aggregate</td>
</tr>
<tr>
<td>Batch Process if applicable unit/batch</td>
<td>N/A</td>
</tr>
<tr>
<td>Start Time if operating less than 24 hours/day hour:minute</td>
<td>N/A</td>
</tr>
<tr>
<td>End Time if operating less than 24 hours/day hour:minute</td>
<td>N/A</td>
</tr>
<tr>
<td>Control Equipment</td>
<td></td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Water Co.</td>
</tr>
<tr>
<td>Manufacturer’s Guarantee Included? If “yes”, attach manufacturer’s sheets immediately after these forms. yes/N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Stack Parameters</td>
<td></td>
</tr>
<tr>
<td>Stack Height Feet</td>
<td>N/A</td>
</tr>
<tr>
<td>Stack Inside Diameter Feet</td>
<td>N/A</td>
</tr>
<tr>
<td>Stack Temperature °F</td>
<td>N/A</td>
</tr>
<tr>
<td>Stack Exit Velocity feet/second</td>
<td>N/A</td>
</tr>
<tr>
<td>Actual Gas Volume Flow Rate Acfm</td>
<td>N/A</td>
</tr>
<tr>
<td>Dry Gas Volume Flow Rate If not included in detailed calculations. Dscfm</td>
<td>N/A</td>
</tr>
<tr>
<td>Stack Release Type ☐ vertical ☐ capped ☐ horizontal</td>
<td></td>
</tr>
</tbody>
</table>

Guide for completing the application for a Class I Air Quality Operating Permit 32
## INDUSTRIAL PROCESS APPLICATION FORM
### CLASS I OPERATING PERMIT (continued)

**Emission Unit Description:**  
**System 1 – Conveyor C-3 to Conveyor C-4**

1. Subject to a Federal Regulation specific to the emission unit (e.g. 40 CFR Part 60, 61, 63, 64, 76, or other):  
   ☐ Yes ☒ No  
   If yes, identify regulation and applicability and include required analysis or plans (e.g. siting analysis or Continuous Assurance Monitoring (CAM) plans).  
   N/A

2. Subject to a State Regulation specific to the emission unit (e.g. NAC 445B.22033, NAC 445B.22017):  
   ☒ Yes ☐ No  
   If yes, identify regulation and applicability.  
   NAC 445B.22033, NAC 445B.22017

3. Identify standards for work practices which affect emissions for all regulated air pollutants (e.g. At all times, including startup, shutdown and malfunction).  
   Maintenance log will be kept and updated each week to ensure proper baghouse operation.

4. Identify and describe compliance and performance testing with reference to any applicable test methods, monitoring devices, compliance plan, or other activities required to determine compliance with an applicable requirement (e.g. Emissions from this unit will be monitored by CEMS and/or COMS for the specific pollutant(s) (NOx, CO, etc.)).  
   N/A

5. How will throughput be monitored for this emission unit? Identify if the throughput will be monitored at this emission unit or at another emission unit and the method (e.g. weigh belt).  
   A weigh belt will be installed at this emission point.
Appendix 2

COMBUSTION EQUIPMENT APPLICATION FORM EXAMPLE
**COMBUSTION EQUIPMENT APPLICATION FORM**  
**CLASS I OPERATING PERMIT**

**System Number and Name:** System 2 – Emergency Diesel Generator  
**Emission Unit Description:** Emergency Diesel Generator  

Alternative Operating Scenario: ☐ Yes ☒ No  
Insignificant Activity: ☐ Yes ☒ No  
If yes, identify exemption regulation:  

Subject to a Federal Regulation (40 CFR Part 60, 61, or 63): ☒ Yes ☐ No  
If yes, identify in process narrative.

<table>
<thead>
<tr>
<th>Description</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAPC Emission Unit ID</td>
<td>Applicable for Renewal or Revision S2.002</td>
</tr>
<tr>
<td>Source Classification Code (SCC)</td>
<td>e.g. 3-03-024-04 for Conveyors 2-01-001-02</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Cummins</td>
</tr>
<tr>
<td>Date Manufactured</td>
<td>2007</td>
</tr>
<tr>
<td>Model and Serial Number</td>
<td>Model SD048, Serial 159df6</td>
</tr>
<tr>
<td>Emissions Released Inside building?</td>
<td>yes/no No</td>
</tr>
<tr>
<td>Type of Engine Code (See Notes*)</td>
<td>ECI</td>
</tr>
<tr>
<td>Date Constructed</td>
<td>month/day/yr 8/26/2007</td>
</tr>
<tr>
<td>Cylinder Displacement</td>
<td>liter/cylinder &lt; 10</td>
</tr>
<tr>
<td>EPA Tier #</td>
<td>2</td>
</tr>
<tr>
<td>Location of Emission Source</td>
<td>UTILITY Northing (NAD 83, Zone 11) m 4,493,382</td>
</tr>
<tr>
<td></td>
<td>UTILITY Easting (NAD 83, Zone 11) m 588,574</td>
</tr>
<tr>
<td>Fuel Type</td>
<td>Fuel Oil #2 (Diesel)</td>
</tr>
<tr>
<td>Fuel Flow Meter Installed?</td>
<td>yes/no/NA 24</td>
</tr>
<tr>
<td>Sulfur Content</td>
<td>% 100</td>
</tr>
<tr>
<td>Heat Content</td>
<td>Btu/gallons 151.0</td>
</tr>
<tr>
<td>Start Time if operating less than 24 hours/day</td>
<td>hour:minute N/A</td>
</tr>
<tr>
<td>End Time if operating less than 24 hours/day</td>
<td>hour:minute N/A</td>
</tr>
<tr>
<td>Manufacturer’s Guarantee Included?</td>
<td>yes/NA N/A</td>
</tr>
<tr>
<td>Stack Height</td>
<td>feet 7.1</td>
</tr>
<tr>
<td>Stack Inside Diameter</td>
<td>feet 0.83</td>
</tr>
<tr>
<td>Stack Temperature</td>
<td>°F 893</td>
</tr>
<tr>
<td>Stack Exit Velocity</td>
<td>feet/second 74</td>
</tr>
<tr>
<td>Actual Gas Volume Flow Rate</td>
<td>acfm 14,920</td>
</tr>
<tr>
<td>Dry Gas Volume Flow Rate If not included in detailed calculations.</td>
<td>dscfm 4,770</td>
</tr>
<tr>
<td>Stack Release Type</td>
<td>☒ vertical ☐ capped ☐ horizontal</td>
</tr>
</tbody>
</table>

**Notes***

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LU</td>
<td>Limited Use</td>
<td>E-SI</td>
<td>Emergency Spark Ignition</td>
</tr>
<tr>
<td>LDG</td>
<td>Landfill/Digester Gas</td>
<td>SI4SRB</td>
<td>Spark Ignition 4-Stroke Rich Burn</td>
</tr>
<tr>
<td>NECI</td>
<td>Non-Emergency Compression Ignition</td>
<td>SI4SLB</td>
<td>Spark Ignition 4-Stroke Lean Burn</td>
</tr>
<tr>
<td>ECI</td>
<td>Emergency Compression Ignition</td>
<td>SI2SLB</td>
<td>Spark Ignition 2-Stroke Lean Burn</td>
</tr>
</tbody>
</table>
COMBUSTION EQUIPMENT APPLICATION FORM
CLASS I OPERATING PERMIT (continued)

Emission Unit Description: System 2 – Emergency Diesel Generator

1. Subject to a Federal Regulation specific to the emission unit (e.g. 40 CFR Part 60, 61, 63, 64, 76, or other):
   ☒ Yes ☐ No If yes, identify regulation and applicability and include required analysis or plans (e.g. siting
   analysis or Continuous Assurance Monitoring (CAM) plans).
   40 CFR Part 63

2. Subject to a State Regulation specific to the emission unit (e.g. NAC 445B.2203, NAC 445B.22047, NAC
   445B.22017):
   ☒ Yes ☐ No If yes, identify regulation and applicability.
   NAC 445B.2203, NAC 445B.22047, NAC 445B.22033, NAC 445B.22017

3. Identify standards for work practices which affect emissions for all regulated air pollutants (e.g. At all times,
   including startup, shutdown and malfunction).
   Maintain daily equipment check log.

4. Identify and describe compliance and performance testing with reference to any applicable test methods,
   monitoring devices, compliance plan, or other activities required to determine compliance with an applicable
   requirement (e.g. Emissions from this unit will be monitored by CEMS and/or COMS for the specific pollutant(s)
   (NOx, CO, etc.)).
   N/A

5. How will fuel consumption be monitored for this emission unit? (e.g. maximum fuel consumption rate supplied
   by manufacturer, fuel flow meter).
   A fuel flow meter will track the consumption rate.

6. Does this unit have the capability to bypass air pollution controls in an emergency situation as defined under
   NAC 445B.056?:
   ☐ Yes ☒ No
Appendix 3

EXAMPLE OF EMISSION LIMIT CALCULATIONS FOR CONVEYOR TRANSFER POINTS
Formulas Used for Calculating Emission Limits

\[
EL_{lb/hr} = (Th_{hour} \times EF) \times (1 - C_{eff})
\]

\[
EL_{ton/year} = \frac{(Th_{year} \times EF) \times (1 - C_{eff})}{2000 \text{ lb/ton}}
\]

Where:
- \(C_{eff}\) = The listed Control Efficiency for a given control and pollutant.
- \(EF\) = The listed Uncontrolled Emission Factor for a given pollutant.
- \(EL_{lb/hr}\) = The requested Permit Emission Limit for a given pollutant in pounds per hour.
- \(EL_{ton/year}\) = The requested Permit Emission Limit for a given pollutant in tons per year.
- \(Th_{hour}\) = The Throughput of Material through the system in tons per hour.
- \(Th_{year}\) = The Throughput of Material through the system in tons per year.

*Uncontrolled emissions must be included for each unit.

Example Calculation:

\[
EL_{lb of PM} = \left(350 \frac{tons}{hour} \times 0.0030 \frac{lb}{ton}\right) \times (1 - 0.750) = 0.263 \frac{lb}{hour}
\]

\[
EL_{ton of PM} = \frac{100,000 \times 0.0030 \frac{lb}{ton} \times (1 - 0.750)}{2000 \frac{lb}{ton}} = 0.0375 \frac{ton}{year}
\]

Notes: The end result emission limits were intentionally rounded up in the table so that all emissions were included, even when the answer is held to two significant figures.

In this example, \(C_{eff} = 75.0\% = 0.750\).
Appendix 4

EXAMPLE OF EMISSION LIMIT CALCULATIONS FOR NON-METALLIC CRUSHING
Formulas for calculating Emission Limits

\[ E_L^{\text{lb/\text{hr}}} = (T_h \times EF) \times (1 - C_{\text{eff}}) \]

\[ E_L^{\text{ton/year}} = \frac{(T_y \times EF) \times (1 - C_{\text{eff}})}{2,000 \text{ lb/ton}} \]

Where:
- \( C_{\text{eff}} \) = The listed Control Efficiency for a given control and pollutant.
- \( EF \) = The listed Uncontrolled Emission Factor for a given pollutant.
- \( E_L^{\text{lb/\text{hr}}} \) = The requested Permit Emission Limit for a given pollutant in pounds per hour.
- \( E_L^{\text{ton/year}} \) = The requested Permit Emission Limit for a given pollutant in tons per year.
- \( T_h \) = The Throughput of Material through the crusher in tons per hour.
- \( T_y \) = The Throughput of Material through the crusher in tons per year.

*Uncontrolled emissions must be included for each unit.

Example Calculation:

\[ E_L^{\text{lb/\text{hr}} \text{ of } PM} = \left( 350 \frac{\text{ton}}{\text{hr}} \times 0.0054 \frac{\text{lb}}{\text{ton}} \right) \times (1 - 0.750) = 0.473 \frac{\text{lb}}{\text{hour}} \]

\[ E_L^{\text{ton/year}} \text{ of } PM = \frac{100,000 \text{ ton/year} \times 0.0054 \frac{\text{lb}}{\text{ton}} (1-0.750)}{2,000 \text{ lb/ton}} = 0.068 \text{ ton/year} \]

Notes: The end result emission limits were intentionally rounded up in the table so that all emissions were included, even when the answer is held to two significant figures.

In this example \( C_{\text{eff}} = 75.0\% = 0.750 \)
Appendix 5

EXAMPLE OF EMISSION LIMIT CALCULATIONS FOR NON-METALLIC SCREENING
Guide for completing the application for a Class I Air Quality Operating Permit

Formulas Used for Calculating Emission Limits

\[
EL_{\text{lb/hr}} = (Th_{\text{hour}} + EF) \times (1 - C_{\text{eff}})
\]

\[
EL_{\text{ton/year}} = \frac{(Th_{\text{year}} \times EF) \times (1 - C_{\text{eff}})}{2000 \text{ lb/ton}}
\]

Where:

- \(C_{\text{eff}}\) = The listed Control Efficiency for a given control and pollutant.
- \(EF\) = The listed Uncontrolled Emission Factor for a given pollutant.
- \(EL_{\text{lb/hr}}\) = The requested Permit Emission Limit for a given pollutant in pounds per hour.
- \(EL_{\text{ton/year}}\) = The requested Permit Emission Limit for a given pollutant in tons per year.
- \(Th_{\text{hour}}\) = The Throughput of Material through the screen in tons per hour.
- \(Th_{\text{year}}\) = The Throughput of Material through the screen in tons per year.

*Uncontrolled emissions must be included for each unit.

Example Calculation:

\[
EL_{\text{lb/hr of PM}} = \left(350 \text{ tons/hour} \times 0.025 \text{ lb/ton} \right) \times (1 - 0.750) = 2.188 \text{ lb/hour}
\]

\[
EL_{\text{ton/year of PM}} = \frac{100,000 \text{ tons/year} \times 0.025 \text{ lb/ton} \times (1 - 0.750)}{2000 \text{ lb/ton}} = 0.313 \text{ ton/year}
\]

Notes: The end result emission limits were intentionally rounded up in the table so that all emissions were included, even when the
Appendix 6

EXAMPLE OF EMISSION LIMIT CALCULATIONS FOR BAGHOUSE CONTROLLED SYSTEM
<table>
<thead>
<tr>
<th>Unit No.</th>
<th>Unit Description</th>
<th>Operating Hours</th>
<th>Throughput</th>
<th>Controls</th>
<th>Emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>S2.001</td>
<td>Crusher Feed Conveyor C-3</td>
<td>24</td>
<td>8,400</td>
<td>40</td>
<td>336,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Daily</td>
<td>Annual</td>
<td>Hourly</td>
<td>Annula</td>
</tr>
<tr>
<td></td>
<td></td>
<td>24</td>
<td>8,400</td>
<td>40</td>
<td>336,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S2.002</td>
<td>Three Roll Crusher Including Transfer to/from Crusher Feed Conveyor C-3 and Discharge to Crusher Discharge Conveyor C-4</td>
<td>24</td>
<td>8,400</td>
<td>40</td>
<td>336,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Daily</td>
<td>Annual</td>
<td>Hourly</td>
<td>Annula</td>
</tr>
<tr>
<td></td>
<td></td>
<td>24</td>
<td>8,400</td>
<td>40</td>
<td>336,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S2.003</td>
<td>Crusher Discharge Conveyor C-4 and Discharge to Crusher Transfer Conveyor C-5</td>
<td>24</td>
<td>8,400</td>
<td>40</td>
<td>336,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Daily</td>
<td>Annual</td>
<td>Hourly</td>
<td>Annula</td>
</tr>
<tr>
<td></td>
<td></td>
<td>24</td>
<td>8,400</td>
<td>40</td>
<td>336,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S2.004</td>
<td>Crusher Transfer Conveyor C-5 and Discharge to Kiln Hopper Feed Conveyor C-6</td>
<td>24</td>
<td>8,400</td>
<td>40</td>
<td>336,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Daily</td>
<td>Annual</td>
<td>Hourly</td>
<td>Annula</td>
</tr>
<tr>
<td></td>
<td></td>
<td>24</td>
<td>8,400</td>
<td>40</td>
<td>336,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Formulas Used for Calculating Emission Limits

\[
EL_{\text{hr}} = (FR_{\text{DSCFM min}} \times EF_{\text{gr DSCFM}}) \times 60 \text{ min} \times \frac{1 \text{ lb}}{7,000 \text{ gr}}
\]

\[
EL_{\text{ton year}} = (FR_{\text{DSCFM min}} \times EF_{\text{gr DSCFM}}) \times 60 \text{ min} \times \frac{1 \text{ lb}}{7,000 \text{ gr}} \times t_{\text{year}} \times \frac{1 \text{ ton}}{2,000 \text{ lb}}
\]

Where:

- \(EF\) = The listed Emission Factor for a given pollutant in grains per dry standard cubic feet.
- \(EL_{\text{hr}}\) = The requested Permit Emission Limit for a given pollutant in pounds per hour.
- \(EL_{\text{ton year}}\) = The requested Permit Emission Limit for a given pollutant in tons per year.
- \(FR_{\text{DSCFM min}}\) = The requested Baghouse Stack Exit Flow Rate in dry standard cubic feet per minute.
- \(t_{\text{year}}\) = The requested operating hours per year.

*Uncontrolled* emissions must be included for each unit.
**Example Calculation:**

\[
\begin{align*}
EL_{lb} &= (2,500 \frac{DSCF}{min} \times 0.02 \frac{gr}{DSCF}) \times 60 \frac{min}{hour} \times \frac{1 \text{ lb}}{7,000 \text{ gr}} = 0.429 \frac{lb}{hr}
\end{align*}
\]

\[
\begin{align*}
EL_{ton\ year} &= (2,500 \frac{DSCF}{min} \times 0.02 \frac{gr}{DSCF}) \times 60 \frac{min}{hour} \times \frac{1 \text{ lb}}{7,000 \text{ gr}} \times 8,400 \frac{hr}{year} \times \frac{1 \text{ ton}}{2,000 \text{ lb}} = 1.80 \text{ ton\ year}
\end{align*}
\]

**Notes:** The end result emission limits may be intentionally rounded up in the table so that all emissions were included, even when the answer is held to two significant figures.

In this calculation, the ratio \(\frac{1 \text{ lb}}{7,000 \text{ gr}}\) is a conversion factor of 7,000 grains in one pound of material.

\(gr = \text{grain}\)
Appendix 7

EXAMPLE OF EMISSION LIMIT CALCULATIONS FOR COOLING TOWERS
### Data given by Applicant for the Cooling Tower:

**Drift Loss** = \( D_{\text{loss}} = 0.005\% = 0.00005 \)

**Maximum Water Throughput Rate (or Maximum Water recirculation Rate)** = \( WTR = 10,500 \text{ gal/min} = 630,000 \text{ gal/hour} = 5,518,800,000 \text{ gal/year} \)

**Total Dissolved Solids** = \( TDS = 2,750 \text{ ppmw} \)
Formulas Used for Calculating Emission Limits

\[ EF_{PM_{10}} = \frac{TLDL}{100\%} \times \frac{lb\ TDS}{10^6\ lb\ drift} \times \frac{8.34\ lb\ water}{gallon\ water} \]

\[ D_{uncontrolled} = \frac{D_{loss}}{TLDL} \]

\[ EL_{PM_{10}\ lb} = EF_{PM_{10}} \times WTR \times \frac{60\ min}{hour} \times D_{uncontrolled} \]

\[ EL_{PM_{10}\ ton\ year} = \frac{EL_{PM_{10}\ lb}}{2,000} \times \frac{lb}{ton} \times t_{year} \]

\[ EL_{PM_{10}\ year} = EL_{PM_{10}\ lb\ year} \times t_{year} \]

Where:

\( D_{uncontrolled} = \) Tower Uncontrolled Drift.

\( D_{loss} = \) Drift Loss expressed as a percent, is provided by Permittee.

\( EF_{PM_{10}} = \) The Total Uncontrolled Emission Factor for PM\(_{10}\) in pounds per 1,000 gallons of water recirculated.

\( EL_{PM_{10}\ lb\ year} = \) The Requested Permit Emission Limit for PM\(_{10}\) in pounds per hour.

\( EL_{PM_{10}\ ton\ year} = \) The Requested Permit Emission Limit for PM\(_{10}\) in tons per year.

\( t_{year} = \) The requested operating hours in hours per year.

\( TDS = \) Total Disolved Solids in parts per million by weight.

\( TLDL = \) The Total Liquid Drift Loss expressed as a percent (from AP 42 Ch. 13.4 Wet Cooling Towers, Table 13.4 - 1).

\( WTR = \) The Maximum Water Throughput Rate in gallon per minute, gallon per hour, or gallon per year.

*Uncontrolled emissions must be included for each unit.
Example Calculation:

\[
EF_{PM_{10}} = 0.00020 \times \frac{2.750 \text{ lb TDS}}{10^6 \text{ lb drift}} \times \frac{8.34 \text{ lb water}}{\text{gal water}} = 0.00459 \frac{\text{lb TDS}}{1000 \text{ gal}} = 0.00459 \frac{\text{lb PM}_{10}}{1000 \text{ gal}}
\]

\[
D_{uncontrolled} = \frac{0.005\%}{0.020\%} = 0.25
\]

\[
EL_{PM_{10} lb/yr} = 0.00459 \frac{\text{lb PM}_{10}}{1000 \text{ gal}} \times 10,500 \frac{\text{gal}}{\text{min}} \times 60 \frac{\text{min}}{\text{hour}} \times 0.25 = 0.723 \frac{\text{lb}}{\text{hour}}
\]

\[
EL_{PM_{10} ton/yr} = \frac{0.723 \frac{\text{lb}}{\text{hour}} \times 8,760 \frac{\text{hour}}{\text{year}}}{2,000 \frac{\text{lb}}{\text{ton}}} = 3.167 \frac{\text{ton}}{\text{year}}
\]

\[
EL_{PM_{10} ton/yr} = 0.724 \frac{\text{lb}}{\text{hour}} \times 8,760 \frac{\text{hours}}{\text{year}} = 6,340 \frac{\text{lb}}{\text{year}}
\]

Notes: The end result emission limits may be intentionally rounded up in the table so that all emissions were included, even when the answer is held to two significant figures.

In this calculation TLDL = 0.020\% = 0.00020.

With cooling towers, all particulate matter is assumed to be equal to PM_{10}, thus PM = PM_{10} = PM_{2.5}.

If the Applicant does not provide the Drift Loss percentage (D_{loss}), then D_{loss} defaults to an assumed value of 0.020\% and D_{uncontrolled} = \frac{0.020\%}{0.020\%} = 1.

If \( EL_{PM_{10} lb/yr} \) is less than 4,000 \( \frac{\text{lb}}{\text{year}} \), then the Applicant may request a determination by the BAPC that the unit be considered an Insignificant Activity.

If \( EL_{PM_{10} lb/yr} \) is greater than 4,000 \( \frac{\text{lb}}{\text{year}} \), then the cooling tower may not be considered an Insignificant Activity and must be a permitted system.
Appendix 8

EXAMPLE OF EMISSION LIMIT CALCULATIONS FOR DRYING OVEN COMBINED EMISSIONS
## Guide for completing the application for a Class I Air Quality Operating Permit

### Hourly Rate Yearly Rate
(lbs/hr) (tons/yr)

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Factor</th>
<th>Unit</th>
<th>Type</th>
<th>Daily</th>
<th>Annual</th>
<th>Hourly</th>
<th>Annual</th>
<th>Operating Hours</th>
<th>Units</th>
<th>Tons of Metallic Ore</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM 10</td>
<td>0.06</td>
<td>lb/ton</td>
<td>0.3</td>
<td>0.9</td>
<td>AP-42 Ch. 11.24, Table 11.24-2 (Uncontrolled)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM 2.5</td>
<td>0.009</td>
<td>lb/ton</td>
<td>0.045</td>
<td>0.135</td>
<td>AP-42 Ch. 11.24, Table 11.24-2 (Uncontrolled)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM 0.1</td>
<td>0.12</td>
<td>lb/ton</td>
<td>1.8</td>
<td>5.4</td>
<td>AP-42 Ch. 11.24, Table 11.24-2 (Uncontrolled)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Power Output

<table>
<thead>
<tr>
<th>Operating Hours</th>
<th>Material Throughput or Fuel Usage</th>
<th>Fuel Usage</th>
<th>Controls</th>
<th>Emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>Annual</td>
<td>Hourly</td>
<td>Annual</td>
<td>Hourly</td>
</tr>
<tr>
<td>24</td>
<td>6,000</td>
<td>1.5</td>
<td>8,096</td>
<td>1,470</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### References

- AP-42 Ch. 1.4, Table 1.4-1
- AP-42 Ch. 1.4, Table 1.4-2
- AP-42 Ch. 11.24, Table 11.24-2 (Uncontrolled)
<table>
<thead>
<tr>
<th>Unit No.</th>
<th>Unit Description</th>
<th>Emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pollutant</td>
</tr>
<tr>
<td>System 06 - Industrial Drying Oven</td>
<td>2-Methylnaphthalene</td>
<td>2.35E-08 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>3-Methylcholanthrene</td>
<td>1.76E-09 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>7,12-Dimethylbenz(a)anthracene</td>
<td>1.57E-08 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Acenaphthene</td>
<td>1.76E-09 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Acenaphthylene</td>
<td>1.76E-09 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Anthracene</td>
<td>2.35E-09 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Benz(a)anthracene</td>
<td>1.76E-09 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Benzene</td>
<td>2.06E-06 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Benzo(a)pyrene</td>
<td>1.18E-09 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Benzo(b)fluoranthene</td>
<td>1.76E-09 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Benzo(g,h,i)perylene</td>
<td>1.76E-09 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Benzo(k)fluoranthene</td>
<td>2.06E-06 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Chrysene</td>
<td>1.76E-09 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Dibenzo(a,h)anthracene</td>
<td>1.18E-09 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Dichlorobenzene</td>
<td>1.18E-06 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Fluoranthene</td>
<td>2.94E-09 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Fluorene</td>
<td>2.75E-09 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Formaldehyde</td>
<td>7.35E-05 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Hexane</td>
<td>1.76E-03 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Indeno(1,2,3-cd)pyrene</td>
<td>1.76E-09 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Naphthalene</td>
<td>5.98E-07 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Phenanthrene</td>
<td>1.67E-08 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Pyrene</td>
<td>4.90E-09 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Toluene</td>
<td>3.35E-06 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Arsenic</td>
<td>1.90E-07 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Beryllium</td>
<td>1.18E-08 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Cadmium</td>
<td>1.06E-06 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Chromium</td>
<td>1.37E-06 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Cobalt</td>
<td>8.24E-08 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Manganese</td>
<td>3.73E-07 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Mercury</td>
<td>2.55E-07 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Nickel</td>
<td>2.06E-06 lb/MMBtu</td>
</tr>
<tr>
<td></td>
<td>Selenium</td>
<td>2.35E-08 lb/MMBtu</td>
</tr>
</tbody>
</table>

Hazardous Air Pollutants (HAPs) Totals:

- 52
Formulas Used for Calculating Emission Limits

\[
ER_{Th}^{\text{lb}} = (Th_{\text{hour}} \times EF_{Th}) \times (1 - C_{\text{eff}})
\]

\[
ER_{Th}^{\text{ton}} = \frac{(Th_{\text{year}} \times EF_{Th}) \times (1 - C_{\text{eff}})}{2000 \text{ lb ton}}
\]

\[
ER_{C}^{\text{lb}} = (FC_{\text{hour}} \times EF_{C}) \times (1 - C_{\text{eff}})
\]

\[
ER_{C}^{\text{ton}} = \frac{(FC_{\text{year}} \times EF_{C}) \times (1 - C_{\text{eff}})}{2000 \text{ lb ton}}
\]

\[
EL_{\text{lb}}^{\text{hr}} = ER_{Th}^{\text{lb}} + ER_{C}^{\text{lb}}
\]

\[
EL_{\text{ton}}^{\text{year}} = ER_{Th}^{\text{ton}} + ER_{C}^{\text{ton}}
\]

Where:

- \(C_{\text{eff}}\) = The listed Control Efficiency for a given control and pollutant.
- \(EL_{\text{lb}}^{\text{hr}}\) = The requested Permit Emission Limit for a given pollutant in pounds per hour.
- \(EL_{\text{ton}}^{\text{year}}\) = The requested Permit Emission Limit for a given pollutant in tons per year.
- \(EF_{Th}\) = The listed Uncontrolled Emission Factor for a given pollutant for the throughput of material through the Drying Oven.
- \(EF_{C}\) = The listed Uncontrolled Emission Factor for a given pollutant for the combustion within Drying Oven.
- \(ER_{Th}^{\text{lb}}\) = The calculated Emission Rate for a given pollutant from the throughput of material through the Drying Oven, in pounds per hour.
- \(ER_{Th}^{\text{ton}}\) = The calculated Emission Rate for a given pollutant from the throughput of material through the Drying Oven, in tons per year.
- \(ER_{C}^{\text{lb}}\) = The calculated Emission Rate for a given pollutant from combustion within Drying Oven, in pounds per hour.
- \(ER_{C}^{\text{ton}}\) = The calculated Emission Rate for a given pollutant from combustion within Drying Oven, in tons per year.
- \(FC_{\text{hour}}\) = The Fuel Combustion rate in units of volume per hour. The units for FC will vary depending on the type of fuel being combusted.
- \(FC_{\text{year}}\) = The Fuel Combustion rate in units of volume per year.
- \(Th_{\text{hour}}\) = The throughput of ore through the drying oven in tons per hour.
- \(Th_{\text{year}}\) = The throughput of ore through the drying oven in tons per year.

Multipliers Used for Calculating Greenhouse Gas (CO\(_2\)) Emissions

When calculating Greenhouse Gas (otherwise known as CO\(_2\)) emissions, the chemical-specific global warming potentials (GWP) of Carbon Dioxide (CO2), Methane (CH4), and Nitrous Oxide (N2O) are multiplied by their respective GWP factors (1, 25, and 298, respectively), as specified under Table A-1 to Subpart 98 Global Warming Potentials, and added together.

**Note:** For default Heat Content Values see Chapter 5.1.3 For Reciprocating Internal Combustion Engines (RICE) Only.

*Uncontrolled emissions must be included for each unit.*
Example Calculation:

\[
ER_{Th \, lb \, for \, PM} = \left( \frac{5 \, \text{ton}}{\text{hour}} \times 0.12 \, \frac{\text{lb}}{\text{ton}} \right) \times (1 - 0) = 0.600 \, \frac{\text{lb}}{\text{hour}}
\]

\[
ER_{Th \, ton \, for \, PM} = \left( \frac{30,000 \, \text{ton}}{\text{year}} \times 0.12 \, \frac{\text{lb}}{\text{ton}} \right) \times (1 - 0) = 1.800 \, \frac{\text{ton}}{\text{year}}
\]

\[
ER_{C, \, lb \, for \, PM} = \left( \frac{1.470 \, \text{cubic feet}}{\text{hour}} \times \frac{7.6 \, \text{lb}}{10^6 \, \text{cubic feet}} \right) \times (1 - 0) = 0.011 \, \frac{\text{lb}}{\text{hour}}
\]

\[
ER_{C, \, ton \, for \, PM} = \left( \frac{8,820,000 \, \text{cubic feet}}{\text{year}} \times \frac{7.6 \, \text{lb}}{10^6 \, \text{cubic feet}} \right) \times (1 - 0) = 0.034 \, \frac{\text{ton}}{\text{year}}
\]

\[
EL_{lb \, for \, PM} = 0.011 \, \frac{\text{lb}}{\text{hour}} + 0.60 \, \frac{\text{lb}}{\text{hour}} = 0.611 \, \frac{\text{lb}}{\text{hour}}
\]

\[
EL_{ton \, for \, PM} = 1.800 \, \frac{\text{ton}}{\text{year}} + 0.034 \, \frac{\text{ton}}{\text{year}} = 1.834 \, \frac{\text{ton}}{\text{year}}
\]

Notes: The end result emission limits may be intentionally rounded up in the table so that all emissions were included, even when the answer is held to two significant figures.

In this example the system is uncontrolled so \(C_{eff} = 0\).
Appendix 9

EXAMPLE OF EMISSION LIMIT CALCULATIONS FOR RECIPROCATING INTERNAL COMBUSTION ENGINES (RICE)
Any referenced manufacturer’s guarantee must be included in application.
Formulas Used for Calculating Emission Limits

\[ \frac{EL}{hr} = (HP \times EF) \times (1 - C_{eff}) \]

\[ EL_{ton} = \frac{\frac{(HP \times EF) \times (1 - C_{eff}) \times t_{year}}{2000 \frac{lb}{ton}}}{2000 \frac{lb}{ton}} \]

Where:

\[ C_{eff} = \text{The listed Control Efficiency for a given control and pollutant} \]

\[ EF = \text{The listed Uncontrolled Emission Factor for a given pollutant in pounds per horsepower hour} \]

\[ EL_{lb} = \text{The requested Permit Emission Limit for a given pollutant in pounds per hour} \]

\[ EL_{ton} = \text{The requested Permit Emission limit for a given pollutant in tons per year} \]

\[ HP = \text{The power output for the system in horsepower} \]

\[ t_{year} = \text{The requested operating hours in hours per year} \]

*Uncontrolled emissions must be included for each unit.

Example Calculation:

\[ EL_{lb} = (2,944 \text{ hp} \times 0.0000272 \frac{lb}{hp \cdot hr}) \times (1 - 0) = 0.080 \frac{lb}{hr} \]

\[ EL_{ton} = \frac{(2,944 \text{ hp} \times 0.0000272 \frac{lb}{hp \cdot hr}) \times (1 - 0) \times 8,760 \frac{hr}{year}}{2,000 \frac{lb}{ton}} = 0.350 \frac{ton}{year} \]

Notes: The end result emission limits may be intentionally rounded up in the table so that all emissions were included, even when the answer is held to two significant figures.

In this example the system is uncontrolled so \( C_{eff} = 0 \).